1965

# Water Resources Data for New Mexico

## Part 1. Surface Water Records


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Prepared in cooperation with the State of New Mexico
and with other agencies

United States Department of the Interior
Geological Survey - Water Resources Division

# WATER RESOURCES DATA FOR NEW MEXICO

1965

## Part 1: Surface Water Records

Prepared in cooperation with

Office of the State Engineer
Interstate Stream Commission
State Department of Game and Fish
Pecos River Commission
State Highway Department
Rio Grande Compact Commission
Costilla Creek Compact Commission
Bureau of Reclamation, U. S. Department of the Interior
Corps of Engineers, U. S. Army
Bureau of Public Roads, U. S. Department of Commerce
Bureau of Indian Affairs, U. S. Department of the Interior
Fish and Wildlife Service, U. S. Department of the Interior
Soil Conservation Service, U. S. Department of Agriculture
National Park Service, U. S. Department of the Interior
Weather Bureau, U. S. Department of Commerce

Copies of this report may be obtained from
District Chief, Water Resources Division
U. S. Geological Survey
P. O. Box 4217
Albuquerque, New Mexico 87106

Water resources records, 1965, for New Mexico are in the following reports of the U. S. Geological Survey:

1. Water Resources Data for New Mexico
   Part 1: Surface Water Records

2. Water Resources Data for New Mexico
   Part 2: Water Quality Records

# CALENDAR FOR WATER YEAR 1965

## OCTOBER 1964

| S | M | T | W | T | 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 |

## NOVEMBER 1964

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| 29 | 30 | | | | | |

## DECEMBER 1964

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| 20 | 21 | 22 | 23 | 24 | 25 | 26 |
| 27 | 28 | 29 | 30 | 31 | | |

## JANUARY 1965

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| 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| 31 | | | | | | |

## FEBRUARY 1965

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| 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 |
| 28 | | | | | | |

## MARCH 1965

| S | M | T | W | T | F | S |
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| 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 | | | |

## APRIL 1965

| S | M | T | W | T | F | S |
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| 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| 25 | 26 | 27 | 28 | 29 | 30 | |

## MAY 1965

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| 16 | 17 | 18 | 19 | 20 | 21 | 22 |
| 23 | 24 | 25 | 26 | 27 | 28 | 29 |
| 30 | 31 | | | | | |

## JUNE 1965

| S | M | T | W | T | F | S |
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| 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 | | | |

## JULY 1965

| S | M | T | W | T | 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 |

## AUGUST 1965

| S | M | T | W | T | 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 | | | | |

## SEPTEMBER 1965

| S | M | T | W | T | F | S |
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| 12 | 13 | 14 | 15 | 16 | 17 | 18 |
| 19 | 20 | 21 | 22 | 23 | 24 | 25 |
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# WATER RESOURCES DATA FOR NEW MEXICO-1965

## Part 1: Surface Water Records

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## INTRODUCTION

The surface-water records for the 1965 water year for gaging stations, partial-record stations, and miscellaneous sites within the State of New Mexico are given in this report. For convenience there are also included records for a few pertinent gaging stations in bordering States. The records were collected and computed by the Water Resources Division of the U.S. Geological Survey, under the direction of W. E. Hale, District Chief, Water Resources Division.

This report is the fifth in a series presenting, annually, basic data on surface-water records by States. Through September 30, 1960, the records of discharge and stage of streams and contents and stage of lakes or reservoirs were published in an annual series of U. S. Geological Survey water-supply papers entitled "Surface Water Supply of the United States." Since 1951 there have been 20 volumes in the series; each volume covered an area whose boundaries coincided with those of certain natural drainage areas. The records in New Mexico were contained in Parts 7, 8, and 9 of that series.

Beginning with the 1961 water year, streamflow records and related data will be released by the Geological Survey in annual reports on a State-boundary basis. Distribution of these basic-data reports will be limited and primarily for local needs. The records later will be published in Geological Survey water-supply papers at 5-year intervals. These 5-year water-supply papers will show daily discharge and will be compiled on the same geographical areas previously used for the annual series; however, some of the 14 parts of conterminous United States will be further subdivided.

The records for New Mexico will be published in water-supply papers covering Part 7 for stations in the Lower Mississippi River drainage, Part 8 for Western Gulf of Mexico drainage, and Part 9 for Colorado River drainage. For 1960 water year, the WSP Numbers for these parts were 1711, 1712, 1713 respectively. A compilation of records for these parts through 1950 water year is contained in WSP Nos. 1311, 1312, 1313 respectively; a 1951-60 compilation series has WSP Nos. 1731, 1732, 1733.

## COOPERATION

The first gaging station established by the Geological Survey in the United States was on the Rio Grande at Embudo Jan. 1, 1889. Cooperation with the Territory of New Mexico began about 1907, and Territory or State cooperation in varying amounts continued until 1915, the work being directed from the Denver office. From 1916 to 1930 the State conducted its own stream-gaging program. In 1931 a new State cooperative program was begun and a Geological Survey district office established in Santa Fe. Agreements have also existed with county, municipal, and private organizations, and with other Federal agencies. Organizations that supplied data are acknowledged in station descriptions.

Organizations that assisted in collecting data through cooperative agreements with the Survey in 1965 are:

Office of the State Engineer, S. E. Reynolds
Interstate Stream Commission, S. E. Reynolds, Secretary
State Department of Game and Fish, Ladd S. Gordon, Director
Pecos River Commission, Berkeley Johnson, Federal Representative and Chairman, T. E. Lusk, Commissioner for New Mexico, J. C. Wilson, Commissioner for Texas.
State Highway Department, T. B. White, State Highway Engineer
Rio Grande Compact Commission, Berkeley Johnson, Federal Representative and Chairman, J. E. Whitten, Commissioner for Colorado, succeeded by A. Ralph Owens, S. E. Reynolds, Commissioner for New Mexico, L. A. Scott, Commissioner for Texas.
Costilla Creek Compact Commission, S. E. Reynolds, Commissioner for New Mexico, J. E. Whitten, Commissioner for Colorado, succeeded by A. Ralph Owens.

Assistance in the form of funds or services was furnished by the following Federal Agencies.

Corps of Engineers, U. S. Army in the operation of 24 gaging stations.
Bureau of Reclamation, U. S. Department of the Interior in the operation of 17 gaging stations.
Bureau of Public Roads, U. S. Department of Commerce for research study on small drainage areas.
Bureau of Indian Affairs, U. S. Department of the Interior in the operation of 4 gaging stations.
Fish and Wildlife Service, U. S. Department of the Interior in the operation of 4 gaging stations.
Soil Conservation Service, U. S. Department of Agriculture in the operation of 2 gaging stations.
National Park Service, U. S. Department of the Interior in the operation of 1 gaging station.
Public Health Service, U. S. Department of Health, Education and Welfare for miscellaneous discharge measurements at one site.

Assistance in the form of funds or services was also given by the following organizations:

Forest Service, U. S. Department of Agriculture; Weather Bureau, U. S. Department of Commerce; the City of Ruidoso; Carlsbad Irrigation District; Public Service Company of New Mexico; Middle Rio Grande Conservancy District.

## DEFINITIONS OF TERMS AND ABBREVIATIONS

The terms of streamflow and other hydrologic data, as used in this report, are defined as follows:

Gaging station is a particular site on a stream, canal, lake or reservoir where systematic observations of gage height or discharge are obtained. When used in connection with a discharge record, the term is applied only to those gaging stations where a continuous record of discharge is obtained.

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

Cubic foot per second (cfs) is the rate of discharge of a stream whose channel is 1 square foot in cross-sectional area and whose average velocity is 1 foot per second.

Acre-foot (ac-ft) is the quantity of water required to cover an acre to the depth of 1 foot and is equivalent to 43,560 cubic feet.

Cfs-day is the volume of water represented by a flow of 1 cubic foot per second for 24 hours. It is equivalent to 86,400 cubic feet, 1.983471 acre-feet, or 646,317 gallons, and represents a runoff of 0.0372 inch from 1 square mile.

Stage-discharge relation is the relation between gage height and the amount of water flowing in a channel, expressed as volume per unit of time.

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

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

Capacity, as applied to reservoirs, expresses space available for contents below a specific elevation or gage height; hence, capacity table.

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

WSP is used as an abbreviation for "Water-Supply Paper" in references to previously published reports, or pending reports.

## DOWNSTREAM ORDER AND STATION NUMBERS

Stations are listed in the same downstream order used in the water-supply papers. Records are listed in a downstream direction along the main stem with all stations on a tributary entering above a main-stem station listed before that station. If a tributary enters between two main-stem stations, it is listed between them. A similar order is followed listing stations on first rank, second rank, and other ranks of tributaries. To indicate the rank of any tributary on which a gaging station is situated and the stream to which it is immediately tributary, each indention in the listing of gaging stations in the table of contents of this report represents one rank. This downstream order and system of indention shows which gaging stations are on tributaries between any two stations on a main stem and the rank of the tributary on which each gaging station is situated.

As an added means of identification, each gaging station and partial-record station has been assigned a station number. The numbers have been assigned in the same downstream order used in the annual series of water-supply papers. In assigning station numbers, no distinction is made between partial-record stations and continuous-record gaging stations, so that the station number for a partial-record station indicates downstream order position in a list made up of both types of stations. Gaps are left in the numbers to allow for new stations that may be established; hence the numbers are not consecutive.

The complete number for each station, such as 09-3545.00, includes the part number "9" and a six digit station number. In this report, the part number and only the essential digits of the station number are shown. For example, the complete number 09-3545.00 would appear as 9-3545., just to the left of the station name. In this report, the records are listed in downstream order by parts. All records for a drainage basin encompassing more than one State could be arranged in downstream order by assembling pages from the various State reports by station number to include all records in the basin.

## EXPLANATION OF DATA

The base data collected at gaging stations consist of records of stage and measurements of discharge. In addition, observations of factors affecting the stage-discharge relation, weather records, and other information are used to supplement base data in determining the daily flow. Records of stage are obtained from a graphic water-stage recorder that gives a continuous chart, or a digital water-stage recorder that produces a punched tape at predetermined intervals of the stage fluctuations or from direct readings on a nonrecording gage. Measurements of discharge are made with a current meter by the general methods adopted by the Geological Survey on the basis of experience in stream gaging since 1888. These methods are described in Water-Supply Paper 888 and are also outlined in standard textbooks on the measurement of stream discharge. Low-flow measurements may also be made by volumetric methods or by use of portable flumes or weirs of rated capacity.

Rating tables giving the discharge for any stage are prepared from stage-discharge relation curves defined by discharge measurements. If extensions to the rating curves are necessary to define the extremes of discharge, they are made on the basis of indirect measurements of peak discharge (such as slope-area or contracted-opening measurements, or computation of flow over dams or weirs), velocity-area studies, and logarithmic plotting. The application of the daily mean gage height to those rating tables gives the daily mean discharge, from which the monthly and the yearly mean discharge are computed. If the stage-discharge relation is subject to change because of frequent or continual change in the physical features that form the control, the daily mean discharge is determined by the shifting-control method, in which correction factors based on individual discharge measurements and notes by engineers and observers are used in applying the gage heights to the rating tables. If the stage-discharge relation for a station is temporarily changed by the presence of aquatic growth or debris on the control, the daily mean discharge is computed by what is in effect the shifting-control method.

At some gaging stations the stage-discharge relation is affected by ice during the winter, and it becomes impossible to compute the discharge in the usual manner. Discharge for periods of ice effect is computed on the basis of the gage-height record and occasional winter discharge measurements, consideration being given to the available information on temperature and precipitation, notes by gage observers and engineers, and comparable records of discharge for other stations in the same or nearby basins.

For some gaging stations there are periods when no gage-height record or punched tape are obtained or the recorded gage height is so faulty that it cannot be used to compute the daily discharge. This happens when the recorder stops or otherwise fails to operate properly, intakes are plugged, float is frozen in the well, or for various other reasons. For such periods the daily discharges are estimated on the basis of recorded range in stage, adjoining good record, discharge measurements, weather records, and comparison with other station records from the same or nearby basins.

The data in this report generally comprise a description of the station, a skeleton rating table, and a table showing the daily discharge and monthly and yearly discharge of the stream. Records are published for the water year which begins on October 1 and ends on September 30. A calendar for the 1965 water year is shown on page III to facilitate finding the day of the week for any date.

The description of the station gives the location, drainage area, records available, type and history of gages, average discharge, extremes of discharge, and general remarks. The location of the gaging station and the drainage area are obtained from the most accurate maps available. Under "Records available" are given periods for which there are published records for the present station or for stations generally equivalent to the present one. Under "Gage" are given the type of gage currently in use and the datum of the gage above mean sea level, and a condensed history of the types, locations, and datums of previous gages used during the period of records available. The references to "datum of 1929" and adjustments of other years are to the datum and adjustments of the U. S. Coast and Geodetic Survey. Under "Average discharge" is given the average discharge for the number of years indicated. It is not given for stations having fewer than five complete years of record or for stations where changes in water development during the period of record cause the figure to have little significance. Under "Extremes" are given the maximum discharge and gage height; the minimum daily discharge, and/or the minimum discharge if it is meaningful. In the first paragraph, the data given are for the complete current water year unless otherwise specified. In the second paragraph, the data given are for the periods of record within the calendar year dates in the heading (not necessarily those for the complete years indicated by the heading dates). Reliable information concerning major floods that have occurred outside the period of record are given in the third or last paragraph under "Extremes." Unless otherwise qualified, the maximum discharge corresponds to the crest stage obtained by use of a water-stage recorder, a crest-stage indicator, or a nonrecording gage read at the time of the crest. Digital recorders are equipped with a crest-stage indicator, or they may be operated with a companion graphic recorder. If the maximum gage height did not occur at the same time as the maximum discharge, it is given separately. Information pertaining to the accuracy of the records and to conditions which affect the natural flow at the gaging station is given under "Remarks."

Skeleton rating tables are published for all stations except those for which the daily discharge for the greater part of the open-water period was determined by the shifting-control method, the slope method, or other special methods involving an equivalent adjustment to the gage height of more than one-tenth foot. Skeleton rating tables generally are not published for canals, ditches, drains, or springs.

The daily table gives the discharge corresponding to the daily mean gage height unless there are large or rapid changes in discharge during a day. For days having large or rapid changes, discharge for the day is computed by averaging the mean discharges for several parts of a day. Digital recorders are usually equipped to subdivide the day into 24, 48, or 96 parts, one of these frequencies having been preselected.

In the table of daily discharge, the figures for the maximum day and the minimum day for each month are underlined. If the figure is repeated, it is underlined only on the first day of its occurrence.

In the monthly summary below the daily table, the line headed "Total" gives the sum of the daily figures; it is the total cfs-days for the month. The line headed "Mean" gives the average flow in cubic feet per second during the month. Total discharge, or runoff for the month is in acre-feet.

In the yearly summary below the monthly summary, the figures of maximum are the maximum daily discharges, not the momentary discharges when the water was at crest stage. Likewise, the minimums in this summary are the minimum daily discharges.

Peak discharges and the times of their occurrence and corresponding gage heights for most stations are listed below the table of daily and monthly discharge. All independent peaks above the selected base are given. The base discharge, which is given in parentheses, is selected so that an average of about three peaks a year can be presented. Peak discharges are not published for any stream for which the peaks are subject to substantial control by man, unless they are meaningful. Time of day is expressed in 24-hour time, for example 12:30 a.m. is 0030, 1:30 p.m. is 1330.

Footnotes to the table of daily discharge indicate periods for which discharge was computed or estimated by unusual or special methods because of no gage-height record, ice effect, or other conditions that reduce the degree of accuracy of the records. The footnotes are either reference footnotes, with corresponding symbols used in the table of daily discharge to indicate the days included, or general footnotes, introduced by the word "Note," in which the days included are stated.

For most gaging stations on lakes and reservoirs the data presented comprise a description of the station and a monthly summary table of stage and contents. A skeleton table of capacity at given stages is not published for reservoirs for which only monthly data are given, but will be shown for any reservoir for which daily contents are published.

## ACCURACY OF FIELD DATA AND COMPUTED RESULTS

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

The station description states the degree of accuracy of the records. "Excellent" indicates that, in general, the error in the daily records is believed to be less than 5 percent; "good," less than 10 percent; "fair," less than 15 percent; and "poor," probably more than 15 percent. The records of monthly and yearly mean discharge and runoff are, in general, more nearly accurate than the daily records.

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

## SUPPLEMENTAL DATA

Data collected at partial-record stations and at miscellaneous sites are given at the end of each report. Data for partial-record stations are presented in two tables. The first is a table of discharge measurements at low-flow partial-record stations, and the second is a table of annual maximum stage and discharge at crest-stage stations. Discharge measurements at miscellaneous sites are given in a third table.

Seepage investigations are presented following measurements at miscellaneous sites. These consist of text and tabulations summarizing data derived primarily from associated series of discharge measurements and observations made within a short time period along a given reach of channel, preferably during a period of relatively stable conditions. The objectives may vary, but usually include the study of seepage gains or losses, surface inflow, diversions (including pumps), areas of springs, water temperatures, low-flow characteristics of the area, and chemical quality (published in Part 2). These investigations may be repeated periodically or at random intervals for some reaches of certain channels. Indicated gains and/or losses as shown may be substantially affected by small inaccuracies of open channel measurements. Small differences between large measurements will have a lower degree of accuracy than the same differences between smaller measurements.

Information of a more detailed nature than that published for most of the gaging stations is on file in the district office. About half the gaging-station records in the state (through 1954 for Part 9, 1958 for Parts 7 and 8) have been analyzed by electronic computer to give: (1) the number of days in each year that the daily discharge was between selected limits (duration tables); (2) the lowest mean discharge for selected numbers of consecutive days in each year; and (3) the highest mean discharge for selected numbers of consecutive days in each year. This information is now available in printed form under title, "Flow Characteristics of New Mexico Streams," an unnumbered special Report, from New Mexico State Engineer, Capitol Building, Santa Fe, N. Mex. At some gaging stations water samples are collected from the stream for the purpose of making chemical analyses; measuring water temperatures; or computing dissolved solids, suspended sediment loads, and particle-size distribution. For most of these samples, the results are published in Part 2 of this report. A reference is made herein, under the Remarks paragraph of the gaging station description, to water quality records collected on a regular basis.

## HYDROLOGIC CONDITIONS

Wide variations in hydrologic conditions and runoff characteristics are the rule in New Mexico. Many streams in the east, south, and central west are chiefly arroyo-type and derive a large part of their runoff from scattered storms of short duration. Rainfall patterns are as variable as fingerprints, and flood-frequency studies have been most difficult.

Runoff for the first quarter of the 1965 water year can be characterized as below median or deficient, except Gila River basin which was above median to excessive. January to March was at or near median, except Pecos River which was deficient, and the Gila which remained above median. During this first six months reservoir storage was generally low, and improvement was below average. March runoff for Pecos River at Carlsbad was lowest in 48 years of record.

April runoff was at or above median. May was the same or higher. May 30 floods in tributaries near Carlsbad were substaintial. South Seven Rivers peak was highest in 50 years, and gaging station was overturned.

Most basins went above median in June. The northeast or Canadian River basin experienced the highest floods in at least 80 years, possibly longer. At Raton Airport June precipitation was 11.93 inches, 5.60 inches falling on June 17. Lake Maloya had 10.89 inches for the month, 7.17 inches during the 3 days June 16-18. Unofficial accounts indicated the possibility of even higher intensities in localized areas.

On the Canadian River and tributaries five gaging stations were destroyed and others damaged or inundated. 14 highway bridges were reported destroyed. 4 lives were lost as a result of the storm, and property damage was high. Canadian River peaks at gaging stations near Taylor Springs, near Roy and near Sanchez were 162,000, 172,000, and 145,000 cfs respectively. Conchas Reservoir rose from 43 percent of capacity and spilled on June 30. This is also significant in that it prevented flood damage farther downstream.

The upper tributaries of Canadian River also had substantial peaks, with record flows in Chicorica, Raton, Cimarron and Rayado Creeks. Vermejo drainage had less rainfall, as did Conchas River and Ute Creek. The rains pushed over the divide and caused moderately high flows in left-bank tributaries of upper Rio Grande.

June 17 rains in upper Rio Hondo valley west of Roswell were quite heavy, reaching a recorded 5.11 inches at Ruidoso and possibly 6½ inches nearby. Record peaks passed Hondo, Picacho, and Diamond-A Ranch gaging station. The flow was easily contained in Two Rivers Reservoir and downstream damage avoided. Nevertheless, crop and property damage upstream was estimated at about $12 million.

Flow continued excessive in upper Canadian for August and September. Rayado had highest August runoff in 46 years of record. Other drainages were near median to excessive excepting upper Pecos which had a short period below median.

In summary the annual runoff averaged median or above, with some variables. The annual means for a few gaging stations in percent of long term averages were as follows:

| | |
|---|---|
| Vermejo River | 161 |
| Rayado Creek | 285 |
| Canadian River nr Sanchez | 151 |
| Conchas River at Variadero | 100 |
| Ute Creek nr Logan | 112 |
| Animas River at Farmington | 124 |
| San Francisco River nr Glenwood | 92 |
| Gila River near Gila | 94 |
| Rio Grande near Cerro | 176 |
| Red River at mouth | 123 |
| Willow Creek nr Park View | 119 |
| Santa Cruz River at Cundiyo | 127 |
| Rio Grande at Otowi (unadjusted) | 105 |
| Jemez River nr Jemez | 99 |
| Rio Puerco nr Bernardo | 83 |
| Pecos River nr Pecos | 121 |
| Pecos River nr Puerto de Luna | 84 |
| Rio Hondo at Diamond A | 161 |
| Delaware River nr Red Bluff | 90 |
| Mimbres River nr Mimbres | 88 |

7-1535. Cimarron River near Guy, N. Mex.

Location.--36°59'15", long 103°25'25", in SE¼ sec.21, T.32 N., R.33 E., on right bank 1.5 miles upstream from Baker damsite, 1.7 miles northwest of Valley, 3 miles upstream from Travesser Creek, 12 miles north of Guy, and 27 miles northwest of Kenton, Okla.

Drainage area.--545 sq mi.

Records available.--April 1942 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 4,900 ft (from topographic map). Prior to Oct. 1, 1943, at datum 0.44 ft higher.

Average discharge.--23 years, 11.7 cfs (8,470 acre-ft per year).

Extremes.--Maximum discharge during year, 46,100 cfs Aug. 21 (gage height, 22.00 ft), from rating curve extended above 3,000 cfs on basis of slope-area measurements at gage heights 15.7 and 22.00 ft; no flow Oct. 8.
1942-65: Maximum discharge, that of Aug. 21, 1965; no flow at times.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 6,500 acres above station. Records of water temperatures and suspended sediment loads for water year 1965 are published in part 2 of this report.

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.3 | 0.4 | 1.2 | 1.5 | 1.1 | 1.8 | 1.9 | 0.6 | a 0.6 | 2.6 | 3.2 | 5.4 |
| 2 | .3 | .4 | 1.2 | b 1.2 | .9 | b 1.0 | 2.7 | .4 | a .5 | 2.2 | 2.6 | * 5.4 |
| 3 | .3 | .8 | b 1.2 | 1.1 | 1.0 | b.7 | 2.5 | .4 | a .4 | 2.6 | 2.0 | 5.8 |
| 4 | .2 | 1.0 | b 1.0 | 1.2 | 1.2 | b.8 | 2.9 | .3 | a .4 | 2.0 | 35 | 4.6 |
| 5 | .3 | 1.1 | b.6 | 1.7 | 1.2 | b 1.0 | 1.7 | .3 | a5.0 | 1.7 | 6.3 | 4.3 |
| 6 | .4 | 1.1 | b.6 | 1.7 | 1.1 | b 1.2 | 1.5 | .6 | a2.5 | 52 | 2.2 | 4.3 |
| 7 | .3 | 1.1 | b.6 | 1.5 | 1.1 | 1.5† | * 1.7 | .5 | a2.0 | 68 | 1.4 | 5.8 |
| 8 | .1 | 1.0 | b.7 | 1.5 | 1.2 | 1.8 | 1.5 | .5 | a1.4 | 10 | 1.3 | 6.7 |
| 9 | .3 | * 1.1 | * b.8 | b 1.3 | 1.3 | 1.9 | 1.4 | .5 | *1.4 | 5.0 | 1.2 | 5.8 |
| 10 | .3 | 1.0 | b.7 | b 1.3 | 1.2 | * 1.9 | 1.2 | .6 | 1.4 | 3.2 | 1.4 | 3.2 |
| 11 | .3 | .8 | b.8 | * b 1.4 | b 1.0 | 2.0 | 1.5 | * .8 | 1.3 | 3.6 | * 1.2 | 2.8 |
| 12 | .3 | .7 | b.8 | 1.3 | b.6 | 2.4 | 1.3 | .9 | 1.2 | 1.7 | 1.2 | 2.8 |
| 13 | * .4 | .7 | b.6 | 1.4 | b.8 | 2.4 | 1.4 | 21 | .6 | 1.7 | 1.2 | 2.6 |
| 14 | .5 | .7 | b.8 | 1.5 | b 1.0 | 2.3 | 1.5 | 2.7 | .4 | 2.2 | 1.0 | 2.0 |
| 15 | .6 | .7 | b 1.0 | 1.8 | b 1.2 | 2.0 | 1.5 | .6 | .4 | 1.6 | 1.0 | 1.7 |
| 16 | .4 | 1.2 | b 1.2 | 1.8 | * b 1.3 | 2.0 | 1.4 | .4 | 264 | 1.4 | 1.0 | 1.7 |
| 17 | .4 | 1.8 | b.6 | 1.7 | b 1.4 | 2.0 | 1.3 | .3 | 1,670 | 1.2 | 1.0 | 1.7 |
| 18 | .4 | 1.5 | b 1.2 | 1.5 | b 1.6 | b 1.2 | 1.4 | .3 | a150 | 1.0 | 8.6 | 1.8 |
| 19 | .5 | 1.5 | 1.9 | 1.5 | 1.8 | b 1.2 | 1.4 | .3 | a50 | .8 | 28 | 2.2 |
| 20 | .4 | 1.2 | 2.0 | 1.7 | 1.5 | b 1.6 | 1.4 | .3 | *21 | * .8 | 8.0 | 50 |
| 21 | .2 | 1.3 | 1.8 | 1.7 | 1.4 | b 2.0 | 1.4 | .2 | *13 | .6 | * 4,310 | 11 |
| 22 | .2 | 1.2 | 2.4 | 1.5 | 1.4 | 2.1 | 1.2 | .3 | 6.7 | .6 | 2,120 | * 3.9 |
| 23 | .2 | 1.2 | 2.1 | b 1.3 | b.8 | 1.9 | 1.1 | 176 | 3.6 | .6 | 1,410 | 2.6 |
| 24 | .2 | 1.2 | 1.8 | b 1.4 | b 1.0 | 2.0 | .6 | *a 20 | 2.8 | .6 | 130 | 2.6 |
| 25 | .2 | 1.2 | 1.4 | b 1.8 | b 1.4 | 1.9 | .5 | a 8.0 | 9.2 | .7 | 55 | 2.4 |
| 26 | .3 | 1.2 | 1.3 | b1.0 | 1.7 | 1.8 | .7 | a 4.0 | 84 | 1.4 | 36 | 2.2 |
| 27 | .3 | 1.2 | 1.4 | b1.0 | 1.5 | 2.0 | 1.0 | a 2.5 | 13 | 2.4 | 18 | 2.2 |
| 28 | .3 | 1.2 | 1.3 | b1.6 | 1.4 | 1.9 | 1.1 | a 2.0 | 10 | 71 | 12 | 2.2 |
| 29 | .4 | 1.2 | 1.2 | 1.2 | — | 1.8 | 1.2 | a 1.4 | 5.4 | 30 | 9.4 | 2.0 |
| 30 | .4 | 1.2 | 1.2 | 1.0 | ------- | 2.0 | 1.0 | a 1.0 | 3.6 | 5.0 | 9.0 | 1.4 |
| 31 | .4 | ------- | 1.4 | 1.0 | ------- | 2.0 | ------- | a .8 | ------- | 4.3 | 7.1 | ------- |
| Total | 10.1 | 31.9 | 36.8 | 44.1 | 34.1 | 54.1 | 42.9 | 248.5 | 2,408.6 | 282.5 | 8,225.3 | 153.1 |
| Mean | 0.33 | 1.06 | 1.19 | 1.42 | 1.22 | 1.75 | 1.43 | 8.02 | 80.3 | 9.11 | 265 | 5.10 |
| Ac-ft | 20 | 63 | 73.0 | 87 | 68 | 107 | 85 | 493 | 4,780 | 560 | 16,300 | 304 |

Calendar year 1964: Max 450 Min 0 Mean 6.81 Ac-ft 4,940
Water year 1964-65: Max 4,310 Min 0.1 Mean 31.7 Ac-ft 22,940

Peak discharge (base, 1,000 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 5-24 | about 0130 | †15.7 | 5,310 | 8-21 | 2200 | 22.00 | 46,100 |
| 6-17 | about 1300 | †16.5 | 5,750 | 8-23 | 0330 | 13.60 | 4,310 |

* Discharge measurement made on this day.
† From Floodmarks.
a No gage-height record.
b Stage-discharge relation affected by ice.

## 7-1545. Cimarron River near Kenton, Okla.

Location.--Lat 36°56', long 102°57', in SE¼ sec.4, T.5 N., R.1 E., near right bank on downstream side of pier of highway bridge, 1.5 miles upstream from Carrizo Creek, 1.7 miles northeast of Kenton, 2.2 miles downstream from Carrizozo Creek, and at mile 594.0.

Drainage area.--1,106 sq mi, of which 68 sq mi is probably noncontributing.

Records available.--April 1904 to July 1905 (gage heights only), October 1950 to September 1965.

Gage.--Water-stage recorder. Datum of gage is 4,267.08 ft above mean sea level, datum of 1929 (levels by State Highway Commission). April 1904 to July 1905 staff gage at site 0.9 mile upstream at different datum.

Average discharge.--15 years, 26.3 cfs (19,040 acre-ft per year).

Extremes.--Maximum discharge during year, 23,400 cfs June 17, (gage height, 15.92 ft); no flow at times.
1950-65: Maximum discharge, 26,300 cfs July 6, 1958 (gage height, 13.67 ft), from rating curve extended above 6,000 cfs by logarithmic plotting; maximum gage height, that of June 17, 1965; no flow at times in most years.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Diversions for irrigation of about 7,400 acres above station.

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | *0 | *0.1 | | 0 | 6.1 | 15 | 7.6 | a 2.4 |
| 2 | | | | | 0 | .1 | | 0 | .7 | 9.2 | 5.1 | a 2 |
| 3 | | | | | 0 | .1 | | 0 | .5 | 8.0 | 3.3 | a 1.6 |
| 4 | | (*) | | | .3 | .1 | | 0 | .6 | 7.6 | 57 | a 2 |
| 5 | | | | | .3 | .1 | | 0 | .6 | 7.2 | 4.6 | a 2.6 |
| 6 | | | | | .3 | .1 | | 0 | .5 | *6.8 | 3.4 | a 3 |
| 7 | | | | | .1 | .1 | | 0 | *.4 | 35 | 1.1 | a 20 |
| 8 | | | | | .2 | .1 | | 0 | .4 | 104 | .4 | *16 |
| 9 | | | | | .2 | 0 | | 0 | .4 | 25 | *.3 | 10 |
| 10 | | | | | .2 | 0 | | *0 | .5 | 25 | .2 | 9.1 |
| 11 | | | | (*) | .4 | 0 | | 0 | .5 | 21 | 0 | 9.1 |
| 12 | | | | | .5 | 0 | (*) | 0 | .5 | 10 | 0 | 8.2 |
| 13 | | | | | .5 | 0 | | 1.2 | .3 | 8.8 | 0 | 7.8 |
| 14 | | | (*) | | .5 | 0 | | .3 | 316 | 34 | 0 | 7.8 |
| 15 | | | | | *.5 | *0 | | 0 | 11 | 8.8 | 0 | 7.8 |
| 16 | | (*) | | | .5 | 0 | | 0 | .5 | 7.6 | 2.9 | 7.0 |
| 17 | | | | | .5 | 0 | | 0 | 11,000 | 6.0 | .7 | 6.6 |
| 18 | | | | | .5 | 0 | | 0 | *3,350 | 5.1 | 5.3 | 355 |
| 19 | | | | | .4 | 0 | | 0 | *267 | *4.2 | 1,230 | 577 |
| 20 | (*) | | | | .3 | 0 | | 0 | 89 | 2.8 | 976 | 1,890 |
| 21 | | | | | .2 | 0 | | 0 | 43 | 1.6 | 1,090 | 257 |
| 22 | | | | | .1 | 0 | | 0 | 35 | 1.2 | 6,110 | a 40 |
| 23 | | | | | .1 | 0 | | 0 | 24 | .9 | 2,200 | a 30 |
| 24 | | | | | .1 | 0 | | *2,490 | 22 | .8 | 642 | *24 |
| 25 | | | | | .2 | 0 | | *205 | 30 | .6 | 190 | 20 |
| 26 | | | | | .1 | 0 | (*) | 15 | 107 | .6 | a30 | 18 |
| 27 | | | | | .1 | 0 | | 2.8 | 67 | .7 | a15 | 17 |
| 28 | | | (*) | | .1 | 0 | | 2.4 | 24 | 28 | a8 | 16 |
| 29 | | | | | | *0 | | 1.9 | 14 | 160 | a5 | 14 |
| 30 | | (*) | | | ------ | 0 | | 1.3 | 12 | 24 | a4 | 13 |
| 31 | | ------ | | | ------ | 0 | ------ | 16 | ------ | 8.4 | a3 | ------ |
| Total | 0 | 0 | 0 | 0 | 7.2 | 0.8 | 0 | 2,735.9 | 15,423.5 | 577.9 | 12,594.9 | 3,394.0 |
| Mean | 0 | 0 | 0 | 0 | 0.26 | 0.03 | 0 | 88.3 | 514 | 18.6 | 406 | 113 |
| Ac-ft | 0 | 0 | 0 | 0 | 14 | 1.6 | 0 | 5,430 | 30,590 | 1,150 | 24,980 | 6,730 |

Calendar year 1964: Max 843 Min 0 Mean 4.68 Ac-ft 3,390
Water year 1964-65: Max 11,000 Min 0 Mean 95.2 Ac-ft 68,900

Peak discharge (base, 3,000 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 5-24 | 1500 | 12.06 | 6,860 | 8-22 | 1300 | 13.10 | 16,800 |
| 6-17 | 0730 | 15.92 | 23,400 | 8-23 | 1600 | 8.48 | 5,100 |
| 8-19 | 2145 | 9.75 | 7,410 | 9-18 | 2200 | 8.47 | 5,100 |
| 8-20 | 1930 | 7.30 | 3,440 | 9-20 | 1700 | 8.96 | 5,950 |

* Discharge measurement or observation of no flow made on this day.
a No gage-height record.

7-1990. Canadian River near Hebron, N. Mex.

Location.--Lat 36°47'10", long 104°27'45", in Maxwell Grant, near right bank at downstream end of bridge pier on U. S. Highways 64 and 85, 3¼ miles north of Hebron, 5 miles upstream from Chicorica Creek, and 8 miles south of Raton.

Drainage area.--229 sq mi.

Records available.--June 1946 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 6,248 ft (from topographic map). June 1, 1946, to Sept. 30, 1952, on bridge pier 150 ft upstream and Oct. 1, 1952, to July 13, 1955, on bridge pier 200 ft upstream, both at datum 2.00 ft higher. July 14, 1955, to Aug. 11, 1964, at present site at datum 0.90 ft higher. Aug. 12, 1964, to Aug. 17, 1965, at present site at datum 2.00 ft higher.

Average discharge.--19 years, 7.34 cfs (5,310 acre-ft per year).

Extremes.--Maximum discharge during year, 62,400 cfs June 17 (gage height, 26.2 ft, from floodmark, datum then in use), from rating curve extended above 1300 cfs on basis of slope-area measurement of peak flow; no flow for many days.
1946-65: Maximum discharge, that of June 17, 1965; no flow at times.
Flood in 1942 reached a stage of about 26 ft at site 150 ft upstream, datum 2 ft higher, from information by local residents.

Remarks.--Records poor. Diversions above station for irrigation of a few hundred acres. Part or all of low flow can be diverted to left bank a few hundred yards above station for stock water, off-channel storage and irrigation.

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | 0.1 | 0 | *0.1 | 0.1 | 0.1 | 0.1 | a 0.1 | 1 | 3.6 | 10 |
| 2 | | | * .1 | 0 | b .1 | * b .1 | * .1 | .1 | a 0 | 1 | 3.6 | 8.5 |
| 3 | | | .1 | 0 | 0 | b .1 | .1 | * .1 | * 0 | 5 | 135 | 6.7 |
| 4 | | | .1 | 0 | 0 | b 0 | 0 | .1 | 0 | 2 | * 138 | 4.9 |
| 5 | | (*) | .1 | 0 | 0 | b 0 | .1 | .1 | .1 | 1 | 29 | 3.6 |
| 6 | | | 0 | * 0 | 0 | b.1 | .1 | .1 | 0 | 1 | 25 | 4.9 |
| 7 | (*) | | .1 | 0 | 0 | .1 | 0 | .1 | 0 | 2 | 10 | * 40 |
| 8 | | | b .1 | 0 | 0 | 0 | 0 | .1 | 0 | 1 | 4.9 | 22 |
| 9 | | | .1 | 0 | 0 | 0 | 0 | .1 | 3.2 | 166 | 21 | 19 |
| 10 | | | b .1 | 0 | b .1 | 0 | .1 | .2 | .1 | 119 | 29 | 60 |
| 11 | | | b .1 | 0 | b .1 | 0 | 0 | .2 | .1 | 10 | * 3.6 | 53 |
| 12 | | | b .1 | 0 | a .1 | 0 | .1 | .3 | 0 | 8.6 | * 8.5 | 6.7 |
| 13 | | | b0 | 0 | b .1 | 0 | .1 | 20 | .1 | * 6.7 | 6.7 | 4.9 |
| 14 | | | b0 | 0 | b 0 | 0 | .1 | 4.8 | .1 | 3.6 | 3.6 | 3.6 |
| 15 | | | b0 | 0 | b 0 | .1 | .1 | 3.7 | 447 | 37 | 19 | 3.6 |
| 16 | | | b0 | 0 | b 0 | * .1 | .1 | a 2 | 2.160 | 25 | 318 | 3.6 |
| 17 | | | b0 | 0 | b 0 | .1 | .1 | a.5 | *7.800 | 13 | 22 | 6.7 |
| 18 | | | a0 | 0 | * .1 | b .1 | .1 | a.1 | *2.160 | 3.6 | 29 | 14 |
| 19 | | | a0 | * 0 | * .1 | b .2 | .1 | * .1 | . 132 | .5 | a 350 | 13 |
| 20 | | | a0 | 0 | 0 | b .1 | .1 | .1 | 46 | 19 | a 80 | 10 |
| 21 | | | b.1 | 0 | 0 | b .1 | .1 | 0 | 25 | 60 | a 70 | 10 |
| 22 | | | b.1 | 0 | 0 | 0 | .1 | 105 | 19 | 41 | a 300 | 10 |
| 23 | (*) | | .1 | 0 | b .1 | 0 | .1 | 194 | 13 | 13 | a 500 | 10 |
| 24 | | | 0 | 0 | b .1 | 0 | .1 | 194 | 7 | 4.9 | a 200 | 10 |
| 25 | | | 0 | 0 | b .1 | .1 | .1 | a 40 | 520 | 35 | a 70 | 8 |
| 26 | | | 0 | 0 | b .1 | .1 | .4 | a 10 | 441 | 8.5 | a 30 | 8 |
| 27 | | | 0 | .1 | 0 | .1 | .3 | a 5 | 33 | 232 | a 20 | 7 |
| 28 | | | 0 | 0 | 0 | .1 | .2 | a 3 | 22 | 32 | a 15 | 7 |
| 29 | | | 0 | 0 | — | .1 | .1 | a 2 | 10 | 1.0 | a 13 | 5 |
| 30 | | | 0 | .1 | ------ | .1 | .1 | a 1 | 5 | 4.9 | a 11 | 4 |
| 31 | | ------ | 0 | .1 | ------ | .1 | ------ | a .5 | ------ | 13 | 22 | ------ |
| Total | 0 | 0 | 1.4 | 0.3 | 1.2 | 2.0 | 3.1 | 587.4 | 13.8438 | 871.3 | 2.490.5 | 377.7 |
| Mean | 0 | 0 | 0.05 | 0.01 | 0.04 | 0.06 | 0.10 | 18.9 | 461 | 28.1 | 80.3 | 12.6 |
| Ac-ft | 0 | 0 | 2.8 | 0.6 | 2.4 | 4.0 | 6.1 | 1.170 | 27.460 | 1.730 | 4.940 | 749 |

Calendar year 1964: Max 73 Min 0 Mean 0.78 Ac-ft 566
Water year 1964-65: Max 7,800 Min 0 Mean 49.8 Ac-ft 36,060

Peak discharge (base, 1,000 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 5-22 | 2230 | 4.60 | 2,000 | 7-27 | 2100 | 3.05 | 3,270 |
| 6-15 | 2330 | 8.60 | 6,500 | 8-16 | 1430 | 2.85 | 2,950 |
| 6-17 | 2000 | †26.2 | 62,400 | 8-19 | 1300 | 6.50 | 5,720 |
| 6-25 | 2300 | 7.30 | 11,200 | 9-10 | 2200 | 3.80 | 1,450 |
| 7- 9 | 2200 | 3.70 | 3,510 | | | | |

* Discharge measurement or observation of no flow made on this day.
† From floodmark.
a No gage-height record.
b Stage-discharge relation affected by ice.

## 7-2030. Vermejo River near Dawson, N. Mex.

Location.--Lat 36°40'50", long 104°47'05", T.28 N., R.20 E., in Maxwell Grant, on left bank, 1½ miles north of Dawson, and 2 miles upstream from Rail Canyon.

Drainage area.--301 sq mi.

Records available.--October 1915 to July 1918, April 1919 to May 1921, January 1927 to September 1965. Monthly discharge only for some periods, published in WSP 1311.

Gage.--Water-stage recorder. Datum of gage is 6,383 ft above mean sea level, datum of 1929. Prior to Sept. 17, 1921, staff gage and Sept. 17, 1921, to May 31, 1932, water-stage recorder, at sites about 1 mile upstream at different datums. Feb. 25, 1927, to Sept. 23, 1953, water-stage recorder at several sites about three-quarters of a mile upstream at datums 8 to 12 ft higher.

Average discharge.--41 years (1915-17, 1919-20, 1927-65), 19.7 cfs (14,260 acre-ft per year).

Extremes.--Maximum discharge during year, 12,600 cfs June 17 (gage height, 15.25 ft), from rating curve extended above 400 cfs on basis of former ratings, logarithmic plotting, and slope-area measurement of peak flow; minimum discharge recorded, 0.2 cfs Feb. 17, result of freezeup.

1927-65. Maximum discharge, that of June 17, 1965; no flow at times.

A major flood occurred Aug. 2, 1921, when discharge probably exceeded 10,000 cfs.

Remarks.--Records good except those for periods of ice effect, no gage-height record, or indefinite stage-discharge relation, which are poor. Diversions for irrigation of small acreage and mountain meadows above station. Records of chemical analyses and water temperatures for the water year 1965 are published in part 2 of this report.

Rating tables, except periods of ice effect or indefinite stage-discharge relation (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used June 21 to July 15, July 20 to Aug. 24)

| Oct. 1 to May 23 | | | | | | May 24 to Sept. 30 | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1.3 | 0.2 | 1.9 | 13 | 3.0 | 122 | 2.0 | 14 | 4.0 | 400 |
| 1.4 | .9 | 2.1 | 20 | 3.5 | 265 | 2.2 | 27 | 5.0 | 800 |
| 1.5 | 2.5 | 2.3 | 29 | 4.0 | 450 | 2.5 | 56 | 6.0 | 1,310 |
| 1.7 | 7.6 | 2.6 | 54 | 4.5 | 660 | 3.0 | 135 | 7.5 | 2,310 |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.9 | 1.5 | 0.7 | 2.3 | * b 4.0 | 3.6 | * 2.7 | 17 | a 45 | 57 | 83 | 43 |
| 2 | .6 | 1.5 | * .9 | b 2.0 | b 3.5 | b3.0 | 3.6 | 45 | a 42 | 29 | 80 | 30 |
| 3 | .5 | 1.8 | 1.3 | b 2.0 | b 3.5 | * b2.5 | 2.7 | 48 | * 41 | 25 | 107 | 24 |
| 4 | .5 | 2.0 | b 1.0 | b 2.5 | b 3.8 | b3.0 | 3.1 | * 39 | 43 | 22 | * 130 | 22 |
| 5 | .4 | * 1.8 | b.8 | * b 3.0 | b 4.0 | b3.0 | 3.8 | 32 | 61 | 23 | 58 | 20 |
| 6 | .4 | 1.8 | b.8 | 3.6 | 4.1 | b4.0 | 4.3 | 29 | 52 | 26 | 47 | 20 |
| 7 | * .4 | 1.6 | b 1.1 | 6.5 | 3.8 | b4.0 | 4.1 | 26 | 45 | 92 | 41 | 21 |
| 8 | .4 | 1.5 | b 1.5 | b 4.0 | 2.7 | b4.5 | 3.1 | 30 | 29 | a 45 | 41 | * 24 |
| 9 | .4 | 1.6 | b 1.5 | b 2.0 | b3.0 | b4.5 | 3.1 | 29 | 28 | a 25 | 39 | 26 |
| 10 | .5 | 1.6 | b 1.5 | b 2.3 | b3.0 | 5.1 | 3.4 | 26 | 37 | a 20 | 41 | 21 |
| 11 | .8 | 1.5 | b 2.0 | b 2.5 | b2.5 | 4.8 | 2.7 | 20 | 55 | a 18 | 35 | 19 |
| 12 | 1.0 | 1.3 | b 1.5 | b 2.8 | b1.5 | 5.9 | 3.1 | 17 | 39 | *16 | * 30 | 20 |
| 13 | 1.2 | 1.2 | b 1.5 | b 2.8 | b1.8 | 4.6 | 3.1 | 26 | 42 | 16 | 24 | 19 |
| 14 | 1.2 | 1.0 | b 2.5 | b 3.0 | b2.0 | 4.6 | 2.7 | 39 | 37 | 41 | 143 | 16 |
| 15 | 1.0 | 1.0 | b 3.5 | b 3.0 | b2.0 | 4.1 | 3.1 | 34 | 44 | 46 | a 60 | e 15 |
| 16 | .9 | b 1.2 | 4.1 | b 3.3 | b2.0 | 4.3 | 2.9 | 44 | 1,280 | * 31 | a 50 | e 14 |
| 17 | .9 | b 1.2 | b 1.3 | b 3.5 | b2.5 | * 3.8 | 2.2 | 40 | *2,260 | 29 | a 40 | e 13 |
| 18 | 1.2 | b 1.0 | b 1.4 | b 3.5 | * b3.0 | b3.0 | 1.5 | 42 | 392 | 30 | a 30 | e 20 |
| 19 | 1.3 | b.8 | 1.5 | * b 3.5 | b3.5 | b2.5 | 1.3 | 57 | a 90 | 28 | 125 | e 18 |
| 20 | 1.3 | b.8 | 2.2 | b 3.5 | b3.5 | b3.0 | 2.3 | * 68 | a 75 | 24 | a 40 | e 16 |
| 21 | 1.3 | b1.0 | 1.8 | b 3.5 | b3.5 | b 4.0 | 2.3 | 76 | * 62 | 21 | a 50 | e 14 |
| 22 | 1.3 | b1.0 | 2.0 | b 3.5 | b3.0 | b 4.5 | 3.4 | 82 | 55 | 18 | 130 | e 14 |
| 23 | 1.0 | b1.0 | 2.9 | b 3.5 | b3.0 | 5.1 | 2.5 | 500 | 52 | * 14 | 210 | e 12 |
| 24 | 1.0 | b1.2 | 4.8 | b 3.5 | b2.5 | 4.6 | 3.6 | 181 | 50 | 17 | 115 | e 12 |
| 25 | 1.0 | 1.5 | 3.6 | b2.5 | b3.0 | b3.5 | 9.5 | a 100 | 165 | 26 | * 51 | e 11 |
| 26 | 1.0 | 1.3 | b2.5 | b2.5 | b3.5 | 4.1 | 20 | a 70 | 89 | 21 | 41 | e 11 |
| 27 | 1.0 | 1.3 | b2.7 | b3.0 | b5.0 | 4.6 | 21 | a 60 | a 50 | 111 | 36 | e 10 |
| 28 | 1.2 | 1.0 | 5.7 | b3.5 | 5.4 | 4.1 | 19 | a 55 | a 40 | 60 | 34 | e 10 |
| 29 | 1.2 | 1.0 | 1.8 | b4.0 | | 4.6 | 18 | a 50 | a 35 | 40 | 33 | e 9.5 |
| 30 | 1.2 | .8 | b1.4 | b4.0 | | 4.6 | 17 | a 50 | a 30 | 80 | 29 | e 9.5 |
| 31 | 1.3 | | b2.3 | b4.0 | | 3.4 | | a 45 | | a 60 | 20 | |
| Total | 28.3 | 38.8 | 64.1 | 99.1 | 88.6 | 124.9 | 175.1 | 1,977 | 5,365 | 1,111 | 1,993 | 534.0 |
| Mean | 0.91 | 1.29 | 2.07 | 3.20 | 3.16 | 4.03 | 5.84 | 63.8 | 179 | 35.8 | 64.3 | 17.8 |
| Ac-ft | 56 | 77 | 127 | 197 | 176 | 248 | 347 | 3,920 | 10,640 | 2,200 | 3,950 | 1,060 |

Calendar year 1964: Max 76 Min 0.3 Mean 4.68 Ac-ft 3,400
Water year 1964-65: Max 2,260 Min 0.4 Mean 31.8 Ac-ft 23,000

Peak discharge (base, 800 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 5-23 | 1930 | 8.65 | 3,020 | 7- 7 | 2000 | 5.60 | 1,100 |
| 6-16 | 1930 | 12.80 | 7,880 | 8-14 | 1700 | 7.65 | 2,420 |
| 6-17 | 2130 | 15.25 | 12,600 | 8-19 | 1430 | 6.70 | 1,250 |
| 6-25 | 2130 | 6.30 | 1,490 | 8-23 | 1630 | 11.80 | 5,720 |

* Discharge measurement made on this day.
a No gage-height record.
b Stage-discharge relation affected by ice.
e Stage-discharge relation indefinite.

## 7-2040. Moreno Creek at Eagle Nest, N. Mex.

Location.--Lat 36°33'12", long 105°16'03", in Maxwell Grant, on left upstream wingwall of a multi-culvert structure under U. S. Highway 64, 200 ft west of intersection of highways U. S. 64 and State 38, about 800 ft upstream from flow line of Eagle Nest Reservoir and 1,000 ft west of Eagle Nest.

Drainage area.--73.8 sq mi (revised).

Records available.--April 1928 to October 1955, June 1964 to September 1965. No winter records except 1932. Prior to October 1930 monthly discharge only, published in WSP 1311. Records for December 1930 to March 1931 published in WSP 732, have been found to be unreliable and should not be used.

Gage.--Water-stage recorder and concrete control at present site since Oct. 3, 1952. Datum of gage is 8,195.98 ft above mean sea level, datum of 1929, supplementary adjustment of 1957. Prior to May 9, 1928, staff gage at nearby site downstream from culvert at different datum. May 9, 1928, to June 9, 1952, water-stage recorder about 75 to 100 ft downstream at different datums within 1.3 ft of present datum. June 9 to Oct. 2, 1952, temporary staff gage about 300 ft upstream at different datum. Oct. 2, 1952 to Oct. 25, 1955, water-stage recorder at present site at datum 0.27 ft lower.

Extremes.--1964: Maximum discharge during period June to September, 3.4 cfs Aug. 7 (gage height, 1.38 ft); no flow for many days.
1964-65: Maximum discharge during water year, 97 cfs June 30 (gage height, 2.59 ft); no flow for many days.
1928-55, 1965: Maximum discharge, 240 cfs Sept. 1, 1946; maximum gage height recorded, 3.16 ft Aug. 19, 1940, site and datum then in use; no flow at times.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 1,200 acres above station.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used July 25 to Aug. 31, 1965)

| | | | | | |
|---|---|---|---|---|---|
| 1.0 | 0.01 | 1.4 | 3.8 | 1.9 | 25 |
| 1.1 | .3 | 1.5 | 6.3 | 2.1 | 40 |
| 1.2 | .9 | 1.6 | 9.6 | 2.3 | 59 |
| 1.3 | 2.1 | 1.7 | 14 | | |

Discharge, in cubic feet per second, during period June to September 1964

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | - | 0.1 | 0.5 | 0.1 |
| 2 | | | | | | | | | - | 0 | .5 | .1 |
| 3 | | | | | | | | | - | 0 | .2 | * 0 |
| 4 | | | | | | | | | - | 0 | .2 | .1 |
| 5 | | | | | | | | | - | 0 | .5 | .2 |
| 6 | | | | | | | | | - | 0 | * .3 | .1 |
| 7 | | | | | | | | | - | 0 | .3 | 0 |
| 8 | | | | | | | | | - | .1 | .3 | 0 |
| 9 | | | | | | | | | - | * .1 | .7 | 0 |
| 10 | | | | | | | | | - | .1 | .4 | 0 |
| 11 | | | | | | | | | - | .1 | .5 | .1 |
| 12 | | | | | | | | | - | .1 | 2.9 | 0 |
| 13 | | | | | | | | | - | .1 | 2.5 | 0 |
| 14 | | | | | | | | | - | .1 | 1.8 | 0 |
| 15 | | | | | | | | | - | .2 | 2.2 | 0 |
| 16 | | | | | | | | | - | .2 | 1.6 | 0 |
| 17 | | | | | | | | | - | .2 | 1.3 | 0 |
| 18 | | | | | | | | | - | .1 | .8 | 0 |
| 19 | | | | | | | | | - | .2 | .7 | 0 |
| 20 | | | | | | | | | - | .2 | .7 | .1 |
| 21 | | | | | | | | | - | .2 | .5 | .1 |
| 22 | | | | | | | | | - | .3 | .3 | .2 |
| 23 | | | | | | | | | - | .3 | .3 | .3 |
| 24 | | | | | | | | | 0.1 | .5 | .3 | .1 |
| 25 | | | | | | | | | .1 | .6 | .2 | .2 |
| 26 | | | | | | | | | .1 | 1.6 | .2 | .1 |
| 27 | | | | | | | | | .1 | .9 | .2 | 0 |
| 28 | | | | | | | | | 0 | .3 | .1 | 0 |
| 29 | | | | | | | | | .1 | .5 | .1 | 0 |
| 30 | | | | | ---------- | | | | .1 | .7 | .1 | 0 |
| 31 | | ---------- | | | ---------- | | ---------- | | ---------- | .7 | .1 | ---------- |
| Total | | | | | | | | | - | 8.5 | 21.3 | 1.8 |
| Mean | | | | | | | | | - | 0.27 | 0.69 | 0.06 |
| Ac-ft | | | | | | | | | - | 17 | 42 | 3.6 |

| | | | | |
|---|---|---|---|---|
| Calendar year | : Max | Min | Mean | Ac-ft |
| Water year | : Max | Min | Mean | Ac-ft |

Peak discharge (base, 50 cfs).--No peak above base.

* Discharge measurement made on this day.

Moreno Creek at Eagle Nest, N. Mex.--Continued

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 0 | | | | | 12 | 44 | 15 | 15 | 25 | 3.8 |
| 2 | | 0 | | | | | b 14 | 53 | 12 | 7.6 | 19 | 3.7 |
| 3 | | .1 | | | | | 14 | 52 | 11 | 6.9 | 18 | 3.6 |
| 4 | | * .2 | | | | | 13 | 53 | 12 | 6.0 | 12 | 3.6 |
| 5 | | .3 | | | | | 12 | * 48 | 12 | 5.5 | 11 | 3.6 |
| 6 | | .1 | | | | | * 11 | 42 | 11 | 3.6 | * 11 | 3.6 |
| 7 | | .1 | | | | | 10 | 39 | 8.9 | 2.7 | 9.6 | 3.6 |
| 8 | (*) | .1 | | | | | 7.6 | 36 | * 7.6 | 3.4 | 8.5 | 5.5 |
| 9 | | .1 | | | | | 7.6 | 35 | 6.3 | 3.4 | 7.5 | * 5.0 |
| 10 | | .2 | | | | | 7.9 | 33 | 7.2 | 3.2 | 6.5 | 4.5 |
| 11 | | .2 | | | | | b 7.0 | 30 | 10 | 3.4 | 6.0 | 4.3 |
| 12 | | .2 | | | | | b 9.0 | 28 | 9.6 | 3.2 | 5.5 | 4.5 |
| 13 | | .3 | | | | | 12 | 51 | 8.2 | 5.1 | 5.2 | 4.3 |
| 14 | | .2 | | | | | 10 | 41 | 7.6 | * 4.7 | 5.0 | 3.6 |
| 15 | | .3 | | | | | 8.6 | 44 | 6.6 | 5.2 | 7.0 | 3.4 |
| 16 | | .3 | | | | | 9.3 | 42 | 13 | 4.7 | 6.0 | 3.2 |
| 17 | | .4 | | | | | 11 | 33 | 17 | 4.7 | 5.5 | 4.7 |
| 18 | | b .2 | | | | | 14 | 34 | 11 | 4.5 | 6.0 | 6.6 |
| 19 | | b .1 | | | | | 17 | 47 | 15 | 3.4 | 6.0 | 5.5 |
| 20 | | .1 | | | | | 20 | 43 | 10 | 2.7 | 5.5 | 5.2 |
| 21 | | .1 | | | | | 25 | * 38 | 8.2 | 2.2 | 5.0 | 5.2 |
| 22 | | .1 | | | | | 30 | 36 | 7.6 | 1.9 | 4.8 | 5.0 |
| 23 | | .1 | | | | | * 38 | 53 | 7.2 | 1.9 | 4.6 | 4.7 |
| 24 | | .1 | | | | | 41 | 46 | 7.2 | 2.2 | 4.4 | 4.5 |
| 25 | | .1 | | | | | 42 | 37 | 8.2 | 2.7 | 4.2 | 4.3 |
| 26 | | .1 | | | | | 49 | 32 | 8.6 | 13 | 4.0 | 3.8 |
| 27 | | b .4 | | | | | 47 | 28 | 6.3 | 12 | 4.0 | 3.8 |
| 28 | | b .3 | | | | | 39 | 23 | 5.5 | 12 | 4.0 | 4.0 |
| 29 | | b .2 | | | | | 35 | 20 | 4.7 | 13 | 3.8 | 3.8 |
| 30 | | .1 | | | | | 38 | 18 | 9.4 | 13 | 3.8 | 3.6 |
| 31 | | | | | | | | 18 | | 19 | 3.8 | |
| Total | 0 | 5.1 | - | - | - | - | 611.0 | 1,177 | 283.9 | 216.1 | 232.2 | 128.5 |
| Mean | 0 | 0.17 | - | - | - | - | 20.4 | 38.0 | 9.46 | 6.97 | 7.49 | 4.28 |
| Ac-ft | 0 | 10 | - | - | - | - | 1,210 | 2,330 | 563 | 429 | 461 | 255 |

Calendar year : Max Min Mean Ac-ft
Water year : Max Min Mean Ac-ft

Peak discharge (base, 50 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 4-26 | 1100 | 2.25 | 54 | 5-23 | 1830 | 2.35 | 65 |
| 5- 4 | 0930 | 2.31 | 60 | 6-30 | 2400 | 2.59 | 97 |
| 5-13 | 0630 | 2.33 | 63 | 7-25 | 0400 | 2.44 | 76 |
| 5-19 | 1000 | 2.23 | 52 | | | | |

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.
Note.--No gage-height record Nov. 20-26, 30, Apr. 1, 3-5, Aug. 8 to Sept. 8.

## 7-2045. Cieneguilla Creek near Eagle Nest, N. Mex.

Location.--Lat 36°29'00", long 105°15'40", in Maxwell Grant, on right bank a quarter of a mile downstream from Schoolhouse Draw, about 3,500 ft upstream from high-water line of Eagle Nest Reservoir, and 5 miles south of Eagle Nest, Colfax County.
Drainage area.--56 sq mi.
Records available.--April 1928 to September 1955, June 1964 to September 1965. No winter records except in water years 1932, 1948, 1951. Monthly discharge only for some periods, published in WSP 1311. Published as "near Therma" 1928-34.
Gage.--Water-stage recorder and concrete control. Altitude of gage is 8,190 ft (from topographic map). Prior to May 8, 1928, staff gage a quarter of a mile downstream at different datum. May 8, 1928 to Sept. 15, 1934, water-stage recorder a quarter of a mile downstream at different datum.
Extremes.--1964: Maximum discharge during period June to September, 316 cfs August 8 (gage-height, 5.10 ft), from rating curve extended above 81 cfs by logarithmic plotting; no flow at times.
1964-65: Maximum discharge during water year, 505 cfs June 16 (gage-height, 5.61 ft), from rating curve extended as explained above; no flow at times.
1928-55, 1964-65: Maximum discharge, that of June 16, 1965; no flow at times.
Remarks.--Records fair except those for periods of ice effect, which are poor. Diversions for irrigation of about 1,000 acres above station. Gage bypassed by ditch on right bank; ditch flow not included in record. This flow enters creek about 300 ft downstream.

Discharge measurements, in cubic feet per second, of Cieneguilla bypass ditch, water year October 1964 to September 1965.

| Date | Discharge | Date | Discharge |
|---|---|---|---|
| Oct. 8 | 0.12 | Apr. 22 | 2.40 |
| Apr. 7 | 2.55 | May 5 | 2.16 |
| Apr. 22 | 2.31 | Sept. 21 | 0 |

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

| | | | | | |
|---|---|---|---|---|---|
| 1.9 | 0 | 2.4 | 1.7 | 3.6 | 44 |
| 2.0 | .1 | 2.5 | 2.6 | 4.0 | 84 |
| 2.1 | .3 | 2.7 | 5.5 | 4.5 | 162 |
| 2.2 | .6 | 3.0 | 12 | 5.0 | 286 |
| 2.3 | 1.0 | 3.3 | 24 | | |

Discharge, in cubic feet per second, June to September 1964

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | - | 0 | 0.7 | 0.2 |
| 2 | | | | | | | | | - | 0 | .4 | " |
| 3 | | | | | | | | | - | 0 | .2 | * " |
| 4 | | | | | | | | | - | 0 | 3.9 | " |
| 5 | | | | | | | | | - | 0 | .3 | " |
| 6 | | | | | | | | | - | 0 | * .2 | " |
| 7 | | | | | | | | | - | 0 | .2 | " |
| 8 | | | | | | | | | - | 0 | 2.8 | " |
| 9 | | | | | | | | | - | *0 | 8.0 | .1 |
| 10 | | | | | | | | | - | 0 | 4.5 | 3.2 |
| 11 | | | | | | | | | - | 0 | 3.6 | .5 |
| 12 | | | | | | | | | - | 0 | 5.8 | .4 |
| 13 | | | | | | | | | - | 0 | 2.0 | " |
| 14 | | | | | | | | | - | 0 | 1.6 | " |
| 15 | | | | | | | | | - | 0 | 1.5 | " |
| 16 | | | | | | | | | - | 0 | .8 | " |
| 17 | | | | | | | | | - | 0 | .4 | " |
| 18 | | | | | | | | | - | 0 | .3 | " |
| 19 | | | | | | | | | - | 0 | " | " |
| 20 | | | | | | | | | - | 0 | " | " |
| 21 | | | | | | | | | - | .1 | " | " |
| 22 | | | | | | | | | 0 | .1 | " | .3 |
| 23 | | | | | | | | | 0 | .1 | " | .3 |
| 24 | | | | | | | | | 0 | 0 | " | .3 |
| 25 | | | | | | | | | 0 | 0 | " | " |
| 26 | | | | | | | | | 0 | .1 | " | " |
| 27 | | | | | | | | | 0 | .1 | " | " |
| 28 | | | | | | | | | 0 | .2 | " | " |
| 29 | | | | | | | | | 0 | .1 | " | " |
| 30 | | | | | ---------- | | | | 0 | .5 | " | " |
| 31 | | ---------- | | | ---------- | | ---------- | | ---------- | .8 | " | ---------- |
| Total | | | | | | | | | - | 2.1 | 65.0 | 9.7 |
| Mean | | | | | | | | | - | 0.07 | 2.10 | 0.32 |
| Ac-ft | | | | | | | | | - | 4.2 | 129 | 19 |

| | | | | |
|---|---|---|---|---|
| Calendar year | : Max | Min | Mean | Ac-ft |
| Water year | : Max | Min | Mean | Ac-ft |

Peak discharge (base, 70 cfs).--Aug. 8 (1500) 316 cfs (5.10 ft).

* Discharge measurement made on this day.

Cieneguilla Creek near Eagle Nest, N. Mex.-- Continued

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.2 | 0.2 | b 0.1 | | | | a 30 | 45 | 15 | 23 | 46 | 5.5 |
| 2 | * .1 | .2 | b.2 | | | | a 33 | 55 | 12 | 19 | 42 | 6.1 |
| 3 | .1 | .4 | b.2 | | | | a 33 | 56 | 11 | 16 | 47 | 6.4 |
| 4 | .1 | * .5 | b.1 | | | | a 31 | 53 | 11 | 15 | 29 | 5.9 |
| 5 | .1 | .7 | b 0 | | | | a 29 | * 44 | 12 | 13 | 22 | 5.5 |
| 6 | .1 | .6 | b 0 | | | | 27 | 38 | 12 | 12 | 18 | 7.0 |
| 7 | .1 | .5 | - | | | | * 22 | 33 | 10 | 11 | 16 | 6.1 |
| 8 | * .1 | .4 | - | | | | 17 | 30 | * 8.3 | 11 | 15 | 9.5 |
| 9 | .1 | .4 | - | | | | 21 | 27 | 7.9 | 10 | 14 | 11 |
| 10 | .1 | .5 | - | | | | 20 | 27 | 8.1 | 9.5 | 14 | 7.0 |
| 11 | .1 | b .3 | - | | | | 14 | 25 | 9.2 | 9.5 | 24 | 6.6 |
| 12 | .1 | b .1 | - | | | | 22 | 23 | 9.2 | 9.0 | 12 | 7.9 |
| 13 | .1 | b .2 | - | | | | 25 | 63 | 8.6 | 9.2 | * 10 | 6.8 |
| 14 | .1 | b .3 | - | | | | 22 | 47 | 6.6 | 12 | 9.7 | 5.3 |
| 15 | .1 | b .3 | - | | | | 16 | 49 | 5.7 | * 14 | 12 | 4.7 |
| 16 | .1 | b .3 | - | | | | 17 | 47 | 132 | 10 | 13 | 4.2 |
| 17 | .1 | b .4 | - | | | | 18 | 32 | 278 | 8.8 | 11 | 5.0 |
| 18 | b .2 | b .5 | - | | | | 24 | 27 | 247 | 7.2 | 12 | 9.0 |
| 19 | b .2 | b .3 | - | | | | 31 | 29 | 231 | 6.3 | 15 | 7.4 |
| 20 | b .2 | b .1 | - | | | | 39 | 26 | 168 | 5.5 | 12 | 6.8 |
| 21 | b .2 | b .1 | - | | | | 55 | * 22 | 112 | 2.6 | 9.0 | * 6.8 |
| 22 | b .2 | b .1 | - | | | | * 83 | 19 | 77 | 3.2 | 9.2 | 5.9 |
| 23 | b .2 | b .2 | - | | | | 89 | 47 | 57 | 3.2 | 9.5 | 5.0 |
| 24 | b .2 | b .2 | - | | | | 82 | 66 | 59 | 3.4 | 8.1 | 4.4 |
| 25 | b .2 | b .2 | - | | | | 73 | 36 | 59 | 10 | 7.4 | 4.2 |
| 26 | b .2 | b .3 | - | | | | 66 | 27 | 44 | 14 | 6.6 | 4.1 |
| 27 | b .2 | b .4 | - | | | | 55 | 23 | 30 | 9.8 | 6.1 | 4.1 |
| 28 | b .2 | b .2 | - | | | | 43 | 20 | 26 | 14 | 6.3 | 4.4 |
| 29 | b .2 | b .2 | - | | | | 55 | 18 | 22 | 26 | 7.2 | 3.9 |
| 30 | b .2 | b .1 | - | | | | 47 | 16 | 21 | 14 | 7.0 | 3.9 |
| 31 | | | - | | | | | 19 | | 30 | 6.3 | |
| Total | 4.6 | 9.2 | - | - | - | - | 1,139 | 1,089 | 1,709.6 | 361.2 | 476.4 | 180.4 |
| Mean | 0.15 | 0.31 | - | - | - | - | 38.0 | 35.1 | 57.0 | 11.7 | 15.4 | 6.01 |
| Ac-ft | 9.1 | 18 | - | - | - | - | 2,260 | 2,160 | 3,390 | 716 | 945 | 358 |

Calendar year : Max Min Mean Ac-ft
Water year : Max Min Mean Ac-ft

Peak discharge (base, 70 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 4-22 | 1930 | 4.44 | 151 | 5-23 | 2030 | 4.24 | 117 |
| 4-29 | 2200 | 3.94 | 78 | 6-16 | 2215 | 5.61 | 505 |
| 5-13 | 0700 | 3.97 | 82 | 8-2 | 2330 | 4.02 | 88 |

* Discharge measurement made on this day.
a No gage-height record.
b Stage-discharge relation affected by ice.

## 7-2050. Six Mile Creek near Eagle Nest, N. Mex.

Location.--Lat 36°31'09", long 105°16'30", in Maxwell Grant, on left upstream wingwall of concrete control, 250 ft downstream from concrete box culvert on U. S. Highway 64, and 2½ miles southwest of Eagle Nest, Colfax County.

Drainage area.--10.5 sq mi.

Records available.--April 1928 to September 1955, July 1958 to September 1965. No winter records 1928-31, 1933-55. Prior to October 1930 monthly discharge only, published in WSP 1311. Records for December 1930 to March 1931 have been found to be unreliable and should not be used. Published as "near Therma" 1928-34.

Gage.--Water-stage recorder. Concrete control Sept. 11, 1931, to May 1933, and since Sept. 13, 1934. Datum of gage is 8,195.16 ft above mean sea level, datum of 1929. Prior to May 18, 1928, staff gage 88 ft upstream at datum 0.98 ft higher. May 18, 1928, to Septm. 11, 1938, water-stage recorder at site 88 ft upstream at datum 0.43 ft higher.

Average discharge.--8 years (1931-32, 1958-65), 2.43 cfs (1,760 acre-ft per year).

Extremes.--Maximum discharge during year, 27 cfs May 13 (gage height, 1.68 ft); maximum gage height, 2.05 ft Jan. 3, backwater from ice; minimum discharge, probably no flow Dec. 7, result of freezeup.
1930-55, 1958-65: Maximum discharge not determined, occurred Apr. 11, 1937 (discharge probably exceeded 125 cfs; maximum gage height recorded, 3.38 ft Apr. 2, 1937 (ice jam), site and datum then in use; no flow at times.

Remarks.--Records good except those for periods of ice effect, no gage-height record or indefinite stage-discharge relation, which are poor. Diversions for irrigation of about 300 acres above station.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Nov. 4, Apr. 3 to Sept. 30

| | | | |
|---|---|---|---|
| 0.3 | 0.1 | 0.8 | 3.2 |
| .4 | .3 | 1.0 | 6.5 |
| .5 | .6 | 1.3 | 14 |
| .6 | 1.2 | 1.6 | 23 |

Nov. 5 to Apr. 2

Note.--Shifting-control method, ice effect, or indefinite stage-discharge relation in effect for most of period.

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.4 | 0.8 | 0.1 | b 0.4 | 0.4 | 1.3 | e 4.0 | 13 | 6.5 | 4.6 | 9.6 | 2.3 |
| 2 | .4 | .8 | .2 | b .3 | * e .5 | b 1.1 | * e 4.3 | 19 | 6.3 | 4.0 | 8.4 | 2.6 |
| 3 | .5 | 1.0 | * .2 | b .2 | * e .6 | b .6 | 4.4 | 23 | 6.1 | 3.8 | 6.7 | 2.5 |
| 4 | .4 | * 1.0 | b .1 | b .2 | b .6 | * b .3 | 4.2 | 24 | 6.1 | 3.5 | 5.4 | 2.4 |
| 5 | .5 | a 1.2 | b .1 | b .2 | b .6 | b .4 | * 4.1 | * 20 | 6.1 | 3.1 | 4.9 | 2.5 |
| 6 | .8 | a 1.0 | b .1 | * b .4 | b .6 | b .5 | 4.0 | 18 | 5.2 | 2.7 | 4.2 | 2.6 |
| 7 | .6 | a .8 | b .1 | b .6 | b .5 | b .5 | 3.8 | 17 | 5.2 | 3.0 | 3.8 | 2.5 |
| 8 | * .1 | a .6 | b .1 | b .5 | b .5 | b .5 | 3.2 | 17 | * 4.9 | 3.4 | 3.6 | 3.4 |
| 9 | .1 | a .6 | b .1 | e .4 | b .4 | b .6 | 3.8 | 15 | 4.9 | 3.4 | 3.5 | 2.7 |
| 10 | .5 | a .8 | b .1 | e .3 | b .4 | b .8 | 2.4 | 14 | 5.4 | 3.1 | 3.5 | 2.5 |
| 11 | .7 | a .6 | b .1 | e .3 | b .3 | b .9 | b 2.3 | 15 | 6.0 | 3.5 | 3.5 | 2.6 |
| 12 | .8 | a .4 | b .1 | e .3 | b .3 | b .8 | b 2.0 | 14 | 5.6 | 2.7 | 3.1 | 2.6 |
| 13 | .5 | a .4 | b .1 | e .3 | a .2 | b .4 | 3.8 | 21 | 5.1 | 2.5 | * 2.8 | 2.4 |
| 14 | .5 | a .4 | a .1 | e .3 | a .3 | b .5 | 3.2 | 19 | 4.2 | * 3.0 | 3.2 | 2.3 |
| 15 | .5 | a .4 | a .1 | e .3 | a .3 | b .7 | 3.1 | 18 | 4.4 | 4.7 | 4.1 | 2.3 |
| 16 | .6 | a .6 | a .2 | e .3 | a .3 | b .9 | 3.5 | 15 | 8.6 | 3.1 | 3.5 | 2.2 |
| 17 | .6 | * .9 | a .2 | e .3 | a .3 | 1.2 | 4.6 | 16 | 7.3 | 2.5 | 3.4 | 3.5 |
| 18 | .6 | b .6 | a .2 | e .3 | a .4 | * 1.4 | 5.8 | 18 | 6.7 | 2.3 | 3.8 | 4.0 |
| 19 | .8 | b .3 | a .2 | a .3 | * b .5 | b 1.1 | 7.6 | 20 | 8.4 | 1.8 | 3.8 | 2.8 |
| 20 | .8 | b .1 | a .2 | * e .4 | .8 | b .9 | 9.8 | 19 | 6.7 | 2.2 | 3.5 | 3.2 |
| 21 | .7 | .1 | a .2 | e .4 | 1.0 | b 1.2 | 12 | * 18 | 6.1 | 1.4 | 3.1 | * 2.7 |
| 22 | * .6 | .1 | * b .2 | e .4 | b .9 | 1.4 | 14 | 17 | 5.8 | 1.7 | 3.0 | 2.7 |
| 23 | .6 | .1 | b .2 | e .4 | b .6 | 2.0 | * 17 | 19 | 5.4 | 1.6 | 2.6 | 2.6 |
| 24 | .5 | .1 | b .2 | e .3 | b .4 | 1.8 | 19 | 17 | 6.0 | 1.4 | 2.6 | 2.4 |
| 25 | .7 | .1 | b .2 | e .2 | b .7 | 1.4 | 19 | 15 | 6.1 | 3.0 | 2.4 | 2.3 |
| 26 | .8 | .1 | b .2 | e .1 | b 1.0 | 1.4 | 17 | 13 | 5.8 | 2.6 | 2.4 | 2.3 |
| 27 | .7 | .1 | b .2 | b .1 | b 1.3 | 2.3 | 14 | 10 | 4.7 | 3.0 | 2.4 | 2.5 |
| 28 | .7 | b .1 | b .2 | b .1 | 1.7 | 2.3 | 11 | 7.8 | 4.4 | 3.0 | 2.4 | 2.5 |
| 29 | .7 | b .1 | b .2 | b .1 | | 1.9 | * 9.1 | 7.1 | 4.0 | 3.1 | 2.5 | 2.3 |
| 30 | .6 | .1 | a .3 | a .1 | - - - - - | e 2.5 | 9.8 | 6.7 | 4.1 | 4.0 | 2.4 | 2.3 |
| 31 | .7 | - - - - - | a .4 | a .3 | - - - - - | e 3.0 | - - - - - | 6.7 | - - - - - | 7.8 | 2.3 | - - - - - |
| Total | 18.0 | 14.3 | 5.2 | 9.1 | 16.4 | 36.6 | 225.8 | 492.3 | 172.1 | 95.5 | 116.4 | 78.5 |
| Mean | 0.58 | 0.48 | 0.17 | 0.29 | 0.59 | 1.18 | 7.53 | 15.9 | 5.74 | 3.08 | 3.75 | 2.62 |
| Ac-ft | 36 | 28 | 10 | 18 | 33 | 73 | 448 | 976 | 341 | 189 | 231 | 156 |

Calendar year 1964 : Max 7.9 Min 0.1 Mean 1.20 Ac-ft 869
Water year 1964-65 : Max 24 Min 0.1 Mean 3.51 Ac-ft 2,540

Peak discharge (base, 15 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 4-25 | 2000 | 1.54 | 21 | 5-23 | 1700 | 1.64 | 26 |
| 5- 4 | 0900 | 1.62 | 25 | 6-16 | 1700 | 1.67 | 25 |
| 5-13 | 0130 | 1.68 | 27 | | | | |

* Discharge measurement made on this day.
a No gage-height record.
b Stage-discharge relation affected by ice.
e Indefinite stage-discharge relation.

7-2055. Eagle Nest Reservoir near Eagle Nest, N. Mex.

Location.--Lat 36°32'05", long 105°14'00", in Maxwell Grant, at upstream face of Eagle Nest Dam on Cimarron Creek, 2 miles southeast of Eagle Nest and 6¼ miles west of Ute Park.

Drainage area.--167 sq mi.

Records available.--December 1927 to December 1944 (month-end contents only, published in WSP 1311), May 1950 to September 1965.

Gage.--Wire-weight gage since May 1950 read 1 to 4 times a month (at random intervals). Datum of gage is 8,056.8 ft (revised) above mean sea level, datum of 1929, leveling of 1965. Prior to 1950, nonrecording gage (type unknown) at same site and datum. Prior to 1965 gage heights were raised by addition of 8,000 ft and called elevations.

Extremes.--Maximum contents observed during year, 26,660 acre-ft Sept. 14, 21 (gage height, 108.25 ft); minimum observed, 11,670 acre-ft Nov. 23 (gage height, 92.10 ft).
1927-44, 1950-65: Maximum contents observed, 78,800 acre-ft May 31, 1942 (gage height, 136.9 ft); minimum observed, 635 acre-ft Dec. 14, 1954(gage height, 61.33 ft).

Remarks.--Reservoir is formed by concrete dam with spillway cut in natural rock; completed June 30, 1918; storage began in June 1917. Capacity, 79,120 acre-ft between gage heights 35.0 (sill of outlet gate) and 137.0 ft (crest of ungated spillway). Dead storage negligible. Records given herein represent usable contents. Water released is used for irrigation. Lake is recreational area. Diversions for irrigation of about 2,500 acres above reservoir.

Cooperation.--Supplemental gage readings furnished by employee of Springer Land and Cattle Co. and by Cimarron Creek watermaster.

Month-end gage height and contents, water year October 1964 to September 1965

| Date | Gage height (feet) | Contents (acre-feet) | Change in contents (acre-feet) |
|---|---|---|---|
| Sept. 30 | - | a13,000 | - |
| Oct. 31 | - | a12,340 | -660 |
| Nov. 30 | - | a12,080 | -260 |
| Dec. 31 | - | a12,430 | +350 |
| Calendar year 1964 | - | - | -5,790 |
| Jan. 31 | - | a13,110 | +680 |
| Feb. 28 | - | a13,520 | +410 |
| Mar. 31 | - | a15,460 | +1,940 |
| Apr. 30 | - | a18,130 | +2,670 |
| May 31 | - | a21,410 | +3,280 |
| June 30 | - | a24,620 | +3,210 |
| July 31 | - | a25,140 | +520 |
| Aug. 31 | 108.10 | 26,470 | +1,330 |
| Sept.30 | - | a26,420 | -50 |
| Water year 1964-65 | - | - | +13,420 |

a No gage-height record; contents estimated or interpolated from a total of 44 observed gage heights during the year and outflow records (Cimarron Creek below Eagle Nest Dam, see following page).

7-2060. Cimarron Creek below Eagle Nest Dam, N. Mex.

Location.--Lat 36°32'05", long 105°13'55", about sec.26, T.27 N., R.16 E. (projected), in Maxwell Grant, on left bank 300 ft downstream from Eagle Nest Dam, 2 miles southeast of Eagle Nest, and 6¼ miles west of Ute Park.

Drainage area.--167 sq mi.

Records available.--May 1950 to September 1965. Prior to October 1952, published as Cimarron River below Eagle Nest Dam.

Gage.--Water-stage recorder (digital, and crest-stage indicator) and Parshall flume. Altitude of gage is 8,000 ft (from topographic map). Prior to May 15, 1951, at datum 0.81 ft higher.

Average discharge.--15 years, 12.9 cfs (9,340 acre-ft per year).

Extremes.--Maximum discharge during year, 157 cfs May 10 (gage height, 2.26 ft); no flow at times.
1950-65: Maximum discharge, 205 cfs June 14, 1955 (gage height, 2.79 ft); no flow at times.

Remarks.--Records good except those for periods of no gage-height record and those below 1 cfs, which are poor. Flow regulated by Eagle Nest Reservoir (see 7-2055). Diversions for irrigation of about 2,500 acres above station.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

| | | | |
|---|---|---|---|
| 0.01 | 0.0 | 0.7 | 23 |
| .1 | 1.0 | 1.0 | 42 |
| .2 | 3.1 | 1.5 | 80 |
| .3 | 5.9 | 2.0 | 128 |
| .4 | 9.4 | 2.5 | 184 |

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1964 TO SEPTEMBER 1965

| DAY | OCT. | NOV. | DEC. | JAN. | FEB. | MAR. | APR. | MAY | JUNE | JULY | AUG. | SEPT. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 20 | 0.1 | | | | | 1.0 | 0 | 8.7 | 0 | 6.1 | 13 |
| 2 | 15 | .1 | | | (**) | | 2.0 | 0 | 7.3 | 0 | .2 | 5.3 |
| 3 | 7.1 | *3.2 | (**) | | | | 2.0 | 0 | 7.3 | 0 | .2 | .4 |
| 4 | 21 | 5.9 | | (**) | | (**) | 4.0 | 0 | 7.3 | 0 | .2 | .4 |
| 5 | 23 | 5.9 | | | | | 5.0 | 0 | 7.3 | 0 | * .2 | .3 |
| 6 | 26 | 6.2 | | | | | 15 | 0 | 16 | 0 | .2 | .3 |
| 7 | 26 | 18 | | | | | * 32 | 0 | 21 | 0 | .2 | 2.8 |
| 8 | * 26 | 28 | | | | | 36 | 117 | * 24 | 0 | .2 | 10 |
| 9 | 21 | 28 | | | | | 36 | 154 | 25 | 0 | .2 | * 10 |
| 10 | 13 | 28 | | | | | 35 | * 155 | 47 | 0 | .2 | 3.7 |
| 11 | 12 | 28 | | | | | 35 | 66 | 56 | 2.9 | .2 | .4 |
| 12 | 11 | 8.0 | | | | | 36 | 16 | 43 | 9.3 | .2 | .4 |
| 13 | 11 | .1 | | | | | 36 | 4.8 | 48 | 17 | .2 | .3 |
| 14 | 6.9 | .1 | | | | | 36 | .2 | 51 | * 17 | .2 | .3 |
| 15 | 5.6 | .1 | | | | | 36 | .2 | 40 | 17 | .2 | .2 |
| 16 | 5.0 | .1 | | | | | 14 | 11 | 13 | 17 | .1 | .2 |
| 17 | 5.3 | .1 | | | | | .1 | 16 | .3 | 17 | .1 | .2 |
| 18 | 6.3 | .1 | | | | | 11 | 16 | .2 | 20 | .1 | .2 |
| 19 | 12 | .1 | | | | | 13 | 16 | .1 | 22 | .1 | .1 |
| 20 | 14 | .1 | | | | | 9.9 | 16 | 0 | 22 | .1 | .1 |
| 21 | 14 | .1 | | | | | 27 | 16 | 0 | 22 | .1 | .1 |
| 22 | 14 | .1 | | | | | 51 | 4.6 | 0 | 22 | .1 | .1 |
| 23 | 13 | .1 | | | | | 51 | .4 | 0 | 22 | .1 | .1 |
| 24 | 11 | 0 | | | | | 51 | .4 | 0 | 25 | .1 | .1 |
| 25 | 13 | 0 | | | | | 56 | 8.4 | 0 | 34 | .1 | 16 |
| 26 | 14 | 0 | | | | | 53 | 17 | 0 | 34 | .1 | 25 |
| 27 | 9.1 | 0 | | | | | 48 | 18 | 0 | 34 | .1 | 25 |
| 28 | 6.3 | 0 | | | | | 12 | 18 | 0 | 34 | .1 | 25 |
| 29 | 5.9 | 0 | | | | | .2 | 6.1 | 0 | 15 | 6.9 | 25 |
| 30 | 2.5 | 0 | | | | | .1 | 7.5 | 0 | .2 | 13 | 25 |
| 31 | .2 | ------ | | | | | | 12 | ------ | 6.4 | 12 | ------ |
| TOTAL | 390.2 | 160.5 | 0 | 0 | 0 | 0 | 744.3 | 696.6 | 422.5 | 409.8 | 42.1 | 190.0 |
| MEAN | 12.6 | 5.35 | 0 | 0 | 0 | 0 | 24.8 | 22.5 | 14.1 | 13.2 | 1.36 | 6.33 |
| AC-FT | 774 | 318 | 0 | 0 | 0 | 0 | 1,480 | 1,380 | 838 | 813 | 84 | 377 |

CALENDAR YEAR 1964 MAX 120 MIN 0 MEAN 15.9 AC-FT 11,590
WATER YEAR 1964-65 MAX 155 MIN 0 MEAN 8.37 AC-FT 6,060

* Discharge measurement made on this day.
** Field estimate made on this day (all less than 0.05 cfs).
Note.--No gage-height record Oct. 31 to Nov. 2, Nov. 13 to Apr.7, Apr. 17, Apr. 29 to May 7, May 14, 15, June 17 to July 10, July 30, Aug. 2-28, Sept. 3-6, 11-24.

## 7-2062. McEvoy Creek near Eagle Nest, N. Mex.

Location.--Lat 36°33'00", long 105°13'30", in Maxwell Grant, on left bank 1.4 miles north of Eagle Nest Dam, and 2 miles east of Eagle Nest, Colfax County.

Drainage area.--1.95 sq mi.

Records available.--September 1961 to September 1965.

Gage.--Water-stage recorder (digital, and crest-stage indicator) and V-notch sharp-crested weir. Altitude of gage is 8,600 ft (from topographic map).

Extremes.--Maximum discharge during year, 1.64 cfs May 21 (gage height, 0.82 ft); minimum, 0.05 cfs Nov. 12, result of freezeup.
1961-65: Maximum discharge, that of May 21, 1965; minimum, 0.003 cfs Nov. 3, 1962, result of freezeup.
Revisions.--The maximum discharge for the water year 1964 has been revised to 0.55 cfs July 16, 1964 (gage height, 0.53 ft), superseding figure published in 1964 Surface Water Records of New Mexico.

Remarks.--Records good except those for periods of ice effect, which are fair.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

| | | | | | |
|---|---|---|---|---|---|
| 0.2 | 0.06 | 0.4 | 0.30 | 0.7 | 1.12 |
| .3 | .15 | .5 | .50 | 0.9 | 2.05 |

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1964 TO SEPTEMBER 1965

| DAY | OCT. | NOV. | DEC. | JAN. | FEB. | MAR. | APR. | MAY | JUNE | JULY | AUG. | SEPT. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.10 | 0.13 | * 0.15 | 0.15 | 0.11 | 0.14 | 0.30 | 0.77 | 0.51 | 0.25 | 0.35 | 0.20 |
| 2 | .10 | .15 | .16 | .14 | * .12 | .14 | .30 | 1.08 | .48 | .23 | .31 | .21 |
| 3 | .10 | .17 | .15 | .14 | .14 | .17 | .32 | 1.24 | .46 | .21 | .31 | .20 |
| 4 | .10 | * .14 | .15 | * .14 | .15 | * .16 | .32 | 1.32 | .45 | .20 | .29 | .19 |
| 5 | .11 | .13 | .12 | .14 | .15 | .18 | .32 | 1.32 | .43 | .20 | * .29 | .21 |
| 6 | .11 | .13 | .15 | .14 | .15 | .18 | .30 | 1.20 | .39 | .19 | .30 | .21 |
| 7 | .11 | .13 | .13 | .15 | .14 | .17 | .30 | 1.12 | .36 | .18 | .28 | .20 |
| 8 | * .10 | .14 | .12 | .15 | .14 | .17 | .29 | 1.08 | * .34 | .18 | .27 | .26 |
| 9 | .11 | .15 | .12 | .14 | .14 | .15 | * .30 | 1.04 | .33 | .17 | .25 | * .22 |
| 10 | .11 | .14 | .10 | .14 | b .14 | .15 | .24 | * .90 | .34 | .16 | .27 | .21 |
| 11 | .11 | .12 | .09 | .14 | b .12 | .15 | .27 | .80 | .33 | .17 | .25 | .22 |
| 12 | .13 | .08 | .10 | .14 | b .11 | .15 | .30 | .79 | .31 | .16 | .23 | .22 |
| 13 | .13 | .11 | .12 | .14 | b .11 | .15 | .32 | .98 | .28 | .20 | .21 | .20 |
| 14 | .13 | .17 | .13 | .14 | b .12 | .15 | .30 | 1.33 | .27 | .25 | .23 | .18 |
| 15 | .13 | .17 | .13 | .15 | b .13 | .17 | .29 | 1.40 | .27 | * .23 | .29 | .18 |
| 16 | .14 | .15 | .13 | .14 | .15 | .17 | .32 | 1.32 | .41 | .19 | .25 | .17 |
| 17 | .12 | .15 | .12 | .14 | .17 | .17 | .36 | 1.19 | .34 | .18 | .24 | .22 |
| 18 | .12 | .15 | .12 | .14 | .15 | .17 | .40 | 1.25 | .32 | .16 | .26 | .24 |
| 19 | .12 | .09 | .12 | .15 | .15 | .14 | .42 | 1.45 | * .33 | .15 | .27 | .22 |
| 20 | .12 | .08 | .12 | .15 | .14 | .15 | .46 | 1.59 | .30 | .15 | .24 | .23 |
| 21 | .12 | .08 | .11 | .15 | .14 | .20 | .58 | 1.61 | .29 | .14 | .23 | .23 |
| 22 | * .12 | .10 | .11 | .14 | .12 | .20 | .72 | 1.53 | .28 | .14 | .22 | .22 |
| 23 | .12 | .12 | .12 | .13 | .11 | .18 | * .84 | 1.49 | .28 | .14 | .22 | .22 |
| 24 | .12 | .13 | .13 | .17 | .13 | .18 | .91 | 1.42 | .29 | .14 | .21 | .21 |
| 25 | .11 | .15 | .14 | .17 | .15 | .18 | .91 | 1.25 | .30 | .20 | .20 | .20 |
| 26 | .11 | .17 | .14 | .15 | .17 | .17 | .84 | 1.04 | .27 | .16 | .19 | .20 |
| 27 | .13 | .15 | .14 | .15 | .15 | .20 | .72 | .87 | .26 | .22 | .19 | .20 |
| 28 | .13 | .15 | .14 | .17 | .15 | .23 | .64 | .74 | .24 | .22 | .20 | .20 |
| 29 | .13 | .17 | .14 | .17 | ------- | .24 | .58 | .65 | .22 | .23 | .20 | .20 |
| 30 | .14 | .15 | .14 | .15 | ------- | .24 | .61 | .60 | .27 | .21 | .20 | .21 |
| 31 | .14 | ------- | .15 | .14 | ------- | .27 | ------- | .55 | ------- | .31 | .19 | ------- |
| TOTAL | 3.67 | 4.05 | 3.99 | 4.55 | 3.85 | 5.47 | 13.78 | 34.92 | 9.95 | 5.92 | 7.64 | 6.28 |
| MEAN | .118 | .135 | .129 | .147 | .138 | .177 | .459 | 1.13 | .332 | .191 | .247 | .209 |
| AC-FT | 7.3 | 8.0 | 7.9 | 9.0 | 7.6 | 11 | 27 | 69 | 20 | 12 | 15 | 12 |

CALENDAR YEAR 1964 MAX .50 MIN .07 MEAN .165 AC-FT 119
WATER YEAR 1964-65 MAX 1.61 MIN .08 MEAN .285 AC-FT 206

Peak discharge (base, 0.6 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 4-25 | 0300 | 0.65 | 0.94 | 6-16 | 1700 | 0.65 | 0.94 |
| 5- 5 | 0500 | .76 | 1.36 | 7-14 | 1800 | .69 | 1.08 |
| 5-21 | 0400 | .82 | 1.64 | 7-15 | 1900 | .61 | .80 |

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

7-2063. Tolby Creek near Eagle Nest, N. Mex.

Location.--Lat 36°31'20", long 105°13'30", in Maxwell Grant, on right bank, 1 mile upstream from mouth and 2.5 miles southeast of Eagle Nest, Colfax County.

Drainage area.--8.5 sq mi.

Records available.--October 1961 to September 1965.

Gage.--Water-stage recorder (digital, and crest-stage indicator) and V-notch sharp-crested weir. Altitude of gage is 8,400 ft (from topographic map).

Extremes.--Maximum discharge during year, 21.7 cfs Apr. 22 (gage height, 1.78 ft); minimum, 0.30 cfs Nov. 11, result of freezeup.
1961-65: Maximum discharge, 32.9 cfs (corrected) Apr. 20, 1962 (gage height, 2.04 ft); minimum, 0.15 cfs Dec. 5, 1962.

Remarks.--Records good except those for periods of no gage-height record, which are fair.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

| | | | |
|---|---|---|---|
| 0.45 | 0.46 | 1.0 | 4.90 |
| .5 | .82 | 1.3 | 9.64 |
| .6 | 1.31 | 1.7 | 19.3 |
| .8 | 2.76 | | |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.54 | 0.70 | * 0.81 | 0.79 | 0.91 | 0.96 | 2.31 | 11.6 | 3.26 | 4.04 | 8.38 | 1.32 |
| 2 | .54 | .73 | .86 | .77 | * .89 | a .85 | 2.65 | 12.8 | 3.02 | 3.48 | 8.40 | 1.32 |
| 3 | .54 | * .83 | .86 | .76 | .83 | a .82 | 3.06 | 12.7 | 2.86 | 3.20 | 7.77 | 1.31 |
| 4 | .54 | .80 | .85 | * .76 | .85 | * .84 | 3.34 | 11.8 | 2.74 | 2.93 | 6.83 | 1.24 |
| 5 | .55 | .82 | .80 | .78 | .86 | .87 | 3.27 | 10.5 | 2.69 | 2.75 | * 6.03 | 1.28 |
| 6 | .57 | .77 | .80 | .83 | .86 | .91 | 2.85 | 9.30 | 2.60 | 2.58 | 5.24 | 1.34 |
| 7 | .58 | .75 | .76 | .92 | .86 | .91 | 2.89 | 8.49 | 2.33 | 2.37 | 4.63 | 1.38 |
| 8 | .58 | .78 | .77 | .86 | .86 | .91 | 2.91 | 7.83 | 2.19 | 2.27 | 4.19 | * 2.03 |
| 9 | * .58 | .80 | .76 | .83 | .83 | .91 | * 3.38 | 7.19 | * 2.09 | 2.10 | 3.83 | 1.47 |
| 10 | .58 | .81 | .74 | .82 | .82 | .93 | 3.36 | * 6.85 | 2.08 | 1.97 | 3.62 | 1.24 |
| 11 | .60 | .69 | .75 | .82 | .81 | .91 | 2.91 | 6.15 | 2.21 | 1.97 | 3.37 | 1.28 |
| 12 | .58 | .81 | a .80 | .85 | .82 | .91 | 2.95 | 6.24 | 2.04 | 1.93 | 3.02 | 1.34 |
| 13 | .59 | .81 | a .70 | .83 | .81 | .91 | 3.39 | 8.36 | 1.87 | 1.79 | 2.75 | 1.14 |
| 14 | .61 | .80 | a .80 | .82 | .79 | .91 | 3.55 | 7.63 | 1.68 | * 1.87 | 2.66 | 1.06 |
| 15 | .61 | .82 | a .80 | .82 | .82 | .93 | 3.62 | 7.64 | 1.66 | 2.06 | 2.78 | 1.00 |
| 16 | .60 | .82 | a .80 | .82 | .82 | .97 | 4.14 | 7.03 | 7.59 | 1.87 | 2.54 | .97 |
| 17 | .61 | .85 | a .70 | .82 | .82 | .98 | 5.15 | 6.51 | 14.2 | 1.65 | 2.37 | 1.15 |
| 18 | .73 | .84 | a .70 | .82 | .82 | .95 | 7.10 | 6.30 | 13.1 | 1.51 | 2.61 | 1.54 |
| 19 | .66 | .79 | a .80 | .85 | .82 | .94 | 9.20 | 6.25 | 1.53 | 1.37 | 2.53 | 1.17 |
| 20 | .63 | .73 | a .80 | .83 | .84 | .91 | 12.0 | 6.03 | 13.3 | 1.35 | 2.21 | 1.30 |
| 21 | * .63 | .76 | .86 | .82 | .86 | .91 | 14.8 | 5.81 | 11.5 | 1.30 | 1.94 | 1.22 |
| 22 | .59 | .70 | .88 | .82 | .89 | .93 | 17.6 | 5.57 | 9.87 | 1.26 | 1.90 | 1.16 |
| 23 | .60 | .73 | .88 | .83 | .91 | 1.03 | * 1.83 | 6.79 | 8.52 | 1.28 | 1.74 | 1.11 |
| 24 | .65 | .71 | .90 | .84 | .88 | 1.00 | 17.0 | 6.34 | 8.70 | 1.21 | 1.65 | 1.07 |
| 25 | .61 | .79 | .91 | .86 | .87 | .95 | 15.4 | 5.77 | 7.74 | 2.08 | 1.54 | 1.04 |
| 26 | .62 | .84 | .83 | .82 | .88 | .92 | 13.4 | 5.35 | 6.57 | 1.81 | 1.43 | 1.03 |
| 27 | .65 | .86 | .82 | .86 | .96 | 1.05 | 11.1 | 4.92 | 5.53 | 2.17 | 1.35 | 1.02 |
| 28 | .68 | .84 | .86 | .86 | .99 | 1.14 | 9.96 | 4.48 | 4.85 | 2.22 | 1.43 | 1.01 |
| 29 | .70 | .81 | .85 | .88 | — | 1.30 | 9.79 | 4.09 | 4.30 | 3.40 | 1.51 | 1.00 |
| 30 | .70 | .80 | .82 | .86 | ---------- | 1.54 | 10.2 | 3.87 | 4.12 | 2.45 | 1.45 | 1.00 |
| 31 | .69 | ---------- | .82 | .89 | ---------- | 2.07 | ---------- | 3.59 | ---------- | 5.67 | 1.37 | ---------- |
| Total | 18.94 | 23.59 | 25.09 | 25.74 | 23.98 | 31.07 | 221.58 | 223.78 | 170.51 | 69.91 | 103.07 | 36.34 |
| Mean | 6.11 | 7.86 | 8.09 | 8.30 | 8.56 | 1.00 | 7.39 | 7.22 | 5.68 | 2.26 | 3.32 | 1.21 |
| Ac-ft | 38 | 47 | 50 | 51 | 48 | 62 | 439 | 444 | 338 | 139 | 204 | 72 |

Calendar year 1964: Max 12.8 Min .40 Mean 1.61 Ac-ft 1,170
Water year 1964-65: Max 18.3 Min .54 Mean 2.67 Ac-ft 1,930

Peak discharge (base, 9.00 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 4-22 | 1830 | 1.78 | 21.7 | 6-16 | 1930 | 1.68 | 18.7 |
| 5- 2 | 2100 | 1.47 | 13.2 | 6-19 | 0230 | 1.67 | 18.4 |
| 5-13 | 0400 | 1.33 | 10.2 | | | | |

* Discharge measurement made on this day.
a No gage-height record.

7-2064. Clear Creek near Ute Park, N. Mex.

Location.--Lat 36°31'35", long 105°10'30", in Maxwell Grant, on right bank a quarter of a mile upstream from mouth, and 4 miles southwest of Ute Park, Colfax County.

Drainage area.--7.44 sq mi.

Records available.--September 1961 to September 1965.

Gage.--Water-stage recorder (digital) and V-notch sharp-crested weir. Altitude of gage is 7,860 ft (from topographic map).

Extremes.--Maximum discharge during year, 151 cfs June 18 (gage height, 3.05 ft); minimum, 0.18 cfs Nov. 7.
1961-65: Maximum discharge, that of June 18, 1965; minimum, 0.09 cfs Dec. 5, 1962.

Remarks.--Records good except those for periods of no gage-height record and those above 50 cfs, which are fair.

Rating table (gage-height, in feet, and discharge, in cubic feet per second)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 0.3 | 0.26 | 0.6 | 1.42 | 1.1 | 6.33 | 1.9 | 24.4 |
| .4 | .52 | .7 | 2.07 | 1.3 | 9.56 | 2.2 | 48.5 |
| .55 | .90 | .9 | 3.86 | 1.6 | 16.0 | 2.6 | 142 |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.32 | 0.32 | *0.37 | 0.35 | 0.35 | a 0.40 | 1.54 | 6.47 | 12.5 | 7.43 | 11.2 | 1.33 |
| 2 | .32 | .32 | .36 | .32 | *.33 | a.38 | 1.68 | 7.84 | 13.0 | 6.31 | 15.2 | 1.28 |
| 3 | .31 | .39 | .37 | .30 | .32 | *.38 | 1.74 | 7.84 | 13.7 | 5.73 | 16.2 | 1.22 |
| 4 | .31 | *.37 | .36 | *.33 | .33 | .38 | 1.79 | 7.68 | 13.9 | 5.21 | 14.5 | 1.15 |
| 5 | .34 | .38 | .35 | .33 | .35 | .38 | 1.66 | * 7.68 | 13.5 | 4.87 | 13.4 | 1.22 |
| 6 | .35 | .37 | .35 | .39 | .35 | .38 | 1.38 | 7.53 | 12.5 | 4.45 | * 12.3 | 1.18 |
| 7 | .34 | .35 | .32 | .54 | .35 | .38 | 1.32 | 7.53 | 11.2 | 4.02 | 10.4 | 1.12 |
| 8 | .33 | .36 | .32 | .41 | .34 | .38 | * 1.27 | 7.53 | 10.3 | 3.68 | 8.88 | * 1.75 |
| 9 | *.33 | .36 | .33 | .40 | .32 | .40 | 1.41 | 7.21 | * 9.80 | 3.37 | 7.57 | 1.21 |
| 10 | .33 | .37 | .35 | .35 | .32 | .40 | 1.33 | 6.76 | 9.90 | 3.13 | 6.51 | 1.09 |
| 11 | .33 | .34 | .35 | a.32 | a.30 | .38 | 1.19 | * 6.36 | 10.5 | 2.95 | 5.70 | 1.13 |
| 12 | .35 | .34 | .35 | a.33 | a.28 | .40 | 1.22 | 6.15 | 10.3 | 2.71 | 5.02 | 1.07 |
| 13 | .36 | .35 | .35 | a.34 | a.28 | .38 | 1.38 | 10.4 | 9.93 | 2.61 | 4.54 | .96 |
| 14 | .36 | .36 | .35 | .35 | a.29 | .38 | 1.47 | 12.6 | 9.20 | 2.87 | 4.28 | .88 |
| 15 | .36 | .36 | .35 | .35 | a.30 | .40 | 1.46 | 12.6 | 9.18 | * 2.57 | 3.95 | .84 |
| 16 | .34 | .37 | .35 | .35 | a.30 | .44 | 1.69 | 11.4 | 38.6 | 2.41 | 3.52 | .80 |
| 17 | .36 | .42 | .35 | .35 | a.30 | .45 | 2.21 | 11.0 | 121 | 2.26 | 3.25 | 1.10 |
| 18 | .48 | .38 | .35 | .36 | a.31 | * .43 | 2.80 | 12.3 | *121 | 2.11 | 3.20 | 1.41 |
| 19 | .41 | .40 | .36 | .37 | .32 | .43 | 3.17 | 14.6 | 83.8 | 1.94 | 3.12 | 1.01 |
| 20 | .39 | .35 | .35 | .35 | .34 | .43 | 3.87 | * 17.3 | 51.5 | 2.05 | 2.74 | 1.08 |
| 21 | *.36 | .34 | .35 | .35 | .38 | .43 | 4.58 | 18.7 | 34.0 | 1.86 | 2.52 | .97 |
| 22 | .32 | .31 | .36 | .34 | .39 | .45 | 5.27 | 19.2 | 25.5 | 1.73 | 2.32 | .93 |
| 23 | .32 | .35 | .41 | .33 | .40 | .52 | 5.91 | 24.0 | 21.8 | 1.67 | 2.17 | .90 |
| 24 | .32 | .35 | .42 | .34 | .40 | .55 | 5.96 | 47.3 | 19.0 | 1.61 | 1.97 | .86 |
| 25 | .32 | .37 | .38 | .35 | .39 | .50 | 5.58 | 41.5 | 16.2 | 2.30 | 1.77 | .84 |
| 26 | .32 | .37 | .34 | .32 | .38 | .48 | 4.99 | 27.3 | 13.8 | 1.74 | 1.54 | .82 |
| 27 | .32 | .38 | .33 | .32 | .41 | .58 | 4.31 | 21.7 | 11.8 | 1.72 | 1.45 | .81 |
| 28 | .34 | .35 | .39 | .32 | .44 | .77 | 4.29 | 17.3 | 10.2 | 2.31 | 1.64 | .80 |
| 29 | .34 | .35 | .35 | .33 | — | .94 | 4.39 | 14.4 | 8.72 | 2.69 | 1.51 | .78 |
| 30 | .33 | .36 | .33 | .34 | ------ | 1.04 | 5.13 | 12.9 | 8.61 | 2.01 | 1.45 | .80 |
| 31 | .33 | ------ | .35 | .34 | ------ | 1.35 | ------ | 12.2 | ------ | 4.12 | 1.37 | ------ |
| Total | 10.64 | 10.79 | 11.00 | 10.87 | 9.57 | 15.59 | 85.99 | 445.28 | 754.94 | 96.44 | 175.19 | 31.34 |
| Mean | .343 | .360 | .355 | .351 | .342 | .503 | 2.87 | 14.4 | 25.2 | 3.11 | 5.65 | 1.04 |
| Ac-ft | 21 | 21 | 22 | 22 | 19 | 31 | 171 | 883 | 1,500 | 191 | 347 | 62 |

Calendar year 1964: Max 15.2 Min .28 Mean 1.75 Ac-ft 1,270
Water year 1964-65: Max 121 Min .28 Mean 4.54 Ac-ft 3,290

Peak discharge (base, ~~not~~ determined)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 5-24 | 1700 | 2.29 | 60.3 | 8- 3 | 0600 | 1.63 | 16.7 |
| 6-18 | 0700 | 3.05 | 151 | | | | |

* Discharge measurement made on this day.
a No gage-height record.

7-2070. Cimarron Creek near Cimarron, N. Mex.

Location.--Lat 36°31'00", long 104°58'35", about sec.6, T.26 N., R.19 E (projected), in Maxwell Grant, on right bank 3.8 miles west of Cimarron.

Drainage area.--294 sq mi.

Records available.--May 1950 to September 1965. Prior to October 1952, published as Cimarron River near Cimarron.

Gage.--Water-stage recorder. Concrete control since Nov. 6, 1963. Datum of gage is 6,599.58 ft above mean sea level, datum of 1929.

Average discharge.--15 years, 20.6 cfs (14,910 acre-ft per year).

Extremes.--Maximum discharge during year 15,500 cfs June 17 (gage height, 12.42 ft, from floodmark), from rating curve extended above 800 cfs on basis of slope-area measurement at gage-height 4.88 and 12.42 ft; minimum daily, 1 cfs Feb. 12, result of freezeup.
1950-65: Maximum discharge, that of June 17, 1965; no flow Sept. 14-30, Oct. 1-10, 1956, Feb. 18, 1960.
Revisions: The maximum discharge for water year 1964 has been revised to 278 cfs July 15 (gage height, 2.96 ft) superseding figure published in Surface Water Records of New Mexico for 1964.

Remarks.--Records good except those for periods of ice effect, no gage-height record, or indefinite stage-discharge relation, which are poor. Flow regulated by Eagle Nest Reservoir (capacity, 79,120 acre-ft). Diversions above station for irrigation of about 3,500 acres, part of which is below station. Cimarroncito ditch (locally known as Philmont ditch) diverts from left bank 1½ miles above station, flumes under creek ¾ mile above and bypasses station for off-channel storage and irrigation below. This ditch carried no diversion during year.

Rating tables, except periods of ice effect or indefinite stage-discharge relation
(gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used June 17 to July 26)

| Oct. 1 to June 17 | | | | | | June 18 to Sept. 30 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.8 | 2.4 | 1.7 | 41 | 3.5 | 480 | 0.5 | 4.2 | 1.4 | 32 | 2.5 | 171 |
| .9 | 3.3 | 2.0 | 71 | 4.0 | 720 | .7 | 6.5 | 1.7 | 56 | 3.2 | 365 |
| 1.0 | 4.9 | 2.5 | 156 | 5.0 | 1,320 | .9 | 10 | 2.0 | 89 | 3.9 | 670 |
| 1.2 | 11 | 3.0 | 290 | | | 1.1 | 16 | | | | |
| 1.4 | 20 | | | | | | | | | | |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 19 | 4.1 | 3.3 | 3.0 | *3.3 | 2.5 | 4.7 | 27 | 33 | 30 | 88 | 14 |
| 2 | 17 | 3.3 | 3.2 | 2.3 | 2.3 | 2.0 | 6.0 | 31 | *29 | 27 | 55 | 15 |
| 3 | 12 | 3.3 | *3.3 | 2.0 | 2.5 | *2.0 | 6.2 | 32 | 28 | 21 | 50 | 13 |
| 4 | 9.5 | *3.2 | 2.9 | 2.5 | 2.7 | 2.5 | 6.8 | *32 | 29 | 19 | 45 | 8.1 |
| 5 | 16 | 4.9 | 2.5 | *3.0 | 2.8 | 3.0 | 7.1 | 31 | 29 | 16 | 40 | 7.3 |
| 6 | 19 | 5.7 | 2.4 | 3.2 | 2.9 | 3.5 | 7.3 | 27 | 29 | 16 | 35 | 7.1 |
| 7 | *20 | 6.2 | 2.0 | 3.3 | 2.9 | 3.2 | 14 | 25 | 35 | 14 | 30 | 6.5 |
| 8 | 22 | 16 | 2.4 | 2.7 | 2.5 | 3.2 | *32 | 71 | 35 | 12 | 27 | 7.6 |
| 9 | 22 | 21 | 2.7 | 2.0 | 2.3 | 3.3 | 36 | 172 | 38 | 11 | 24 | 11 |
| 10 | 15 | 23 | 3.0 | 2.1 | 2.0 | 2.9 | 39 | 184 | 45 | 11 | 22 | 12 |
| 11 | 13 | 24 | 3.0 | 2.5 | 1.5 | 3.0 | 38 | *143 | 64 | 10 | 20 | 8.9 |
| 12 | 12 | 23 | 2.8 | 3.0 | 1.0 | 3.0 | 39 | 51 | 61 | 9.8 | 18 | 7.1 |
| 13 | 11 | 11 | 2.5 | 3.2 | 1.5 | 3.1 | 40 | 51 | 60 | *14 | 17 | 6.2 |
| 14 | 11 | 7.1 | 3.5 | 3.5 | 2.2 | 3.1 | 41 | 40 | 64 | 19 | 16 | 5.7 |
| 15 | 8.9 | 5.2 | 5.0 | 3.5 | 2.5 | 3.1 | 41 | 40 | 97 | *21 | 16 | 5.4 |
| 16 | 7.6 | 4.9 | 7.0 | 3.5 | 2.2 | 3.0 | 38 | 40 | 412 | 22 | 19 | 5.1 |
| 17 | 7.1 | 4.1 | 4.0 | 3.5 | 2.5 | *2.5 | 19 | 46 | *1,240 | 23 | 17 | 5.5 |
| 18 | 6.5 | 3.6 | 2.5 | 3.3 | *2.7 | 2.3 | 15 | 47 | a632 | 22 | 16 | 6.8 |
| 19 | 6.8 | 3.0 | 3.0 | *3.5 | 3.0 | a2.1 | 25 | 50 | *a178 | 24 | 18 | 6.1 |
| 20 | 9.8 | 2.8 | 4.0 | 3.5 | 3.0 | a2.0 | 26 | 54 | a80 | 29 | 15 | *5.7 |
| 21 | 11 | 3.0 | 4.5 | 3.0 | 3.0 | a3.0 | 27 | 57 | a77 | 26 | 14 | 5.9 |
| 22 | 12 | 3.2 | 4.9 | 3.2 | 3.0 | a4.0 | *64 | 54 | 67 | 26 | 11 | 5.6 |
| 23 | 12 | 3.5 | 3.4 | 2.5 | 2.5 | 4.5 | 74 | *215 | 58 | 24 | 10 | 5.4 |
| 24 | 12 | 3.7 | 2.8 | 2.7 | 2.0 | 3.5 | 78 | 72 | 53 | 27 | *9.6 | 5.4 |
| 25 | 11 | 3.7 | 2.5 | 2.7 | 2.5 | 3.0 | 80 | 62 | 49 | 45 | 8.7 | 5.1 |
| 26 | 12 | 3.6 | 2.5 | 2.0 | 3.0 | 3.5 | 84 | 62 | 39 | 42 | 8.1 | 14 |
| 27 | 12 | 3.5 | 3.0 | 2.5 | 3.2 | 4.1 | 75 | 58 | 32 | 44 | 7.9 | 29 |
| 28 | 8.6 | 3.2 | 2.5 | 3.0 | 3.1 | 3.9 | 58 | 53 | 29 | 109 | 8.1 | 36 |
| 29 | 8.2 | 3.3 | 1.6 | 3.2 | — | 3.9 | 31 | 46 | *25 | *57 | 7.9 | 28 |
| 30 | 7.3 | 3.3 | 1.2 | 3.4 | | 3.9 | 27 | 35 | 35 | 27 | 9.8 | 24 |
| 31 | 6.2 | | 2.5 | 3.5 | | 3.9 | | 37 | | 96 | 13 | |
| Total | 377.5 | 213.4 | 96.4 | 90.8 | 70.6 | 96.5 | 1079.1 | 1945 | 3682 | 893.8 | 696.1 | 322.5 |
| Mean | 12.2 | 7.11 | 3.11 | 2.93 | 2.52 | 3.11 | 36.0 | 62.7 | 123 | 28.8 | 22.5 | 10.8 |
| Ac-ft | 749 | 423 | 180 | 180 | 140 | 191 | 2140 | 3860 | 7300 | 1770 | 1380 | 640 |

Calendar year 1964 : Max 128 Min 1.0 Mean 17.9 Ac-ft 13,040
Water year 1964-65 : Max 1,240 Min 1.0 Mean 26.2 Ac-ft 18,960

* Discharge measurement made on this day.
a No gage-height record.
Note.--Stage-discharge relation affected by ice Nov. 19-24, Nov. 28 to Dec. 1, Dec. 3-21, Dec. 26 to Jan. 6, Jan. 9 to Feb. 5, Feb. 8-26, Mar. 1-8, 12, 14, 17, 18, 24, 25.

## 7-2075. Ponil Creek near Cimarron, N. Mex.

Location.--Lat 36°34'35", long 104°56'55", about sec.8, T.27 N., R.19 E. (projected), on left bank 1½ miles downstream from confluence of North and South Ponil Creeks (corrected) and 5 miles northwest of Cimarron.

Drainage area.--171 sq mi.

Records available.--November 1915 to June 1919, August 1919 to July 1925, September 1925, September 1927 to July 1929, May 1950 to September 1965. Prior to May 1950 monthly discharge only, published in WSP 1311.

Gage.--Water-stage recorder. Datum of gage is 6,630 ft above mean sea level, datum of 1929. Prior to May 8, 1922, at site about an eighth of a mile downstream at different datum. May 8, 1922, to Aug. 8, 1929, at site about three-eighths of a mile upstream at different datum.

Average discharge.--26 years (1915-25, 1927-28, 1950-65), 12.8 cfs (9,270 acre-ft per year).

Extremes.--Maximum discharge during year, 5,630 cfs June 17 (gage height, 11.13 ft), from rating curve extended above 110 cfs on basis of slope-area measurement of peak flow; no flow for many days.
1915-29, 1950-65: Maximum discharge, that of June 17, 1965; no flow at times.
Flood in September 1948 reached a stage of about 7 ft, from floodmarks (discharge, about 1,900 cfs).

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of 200 to 300 acres above station. Diversions 1,000 ft below station for irrigation of about 300 acres (about 1,200 acres total irrigated from Ponil Creek).

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used June 16 to July 28)

| Oct. 1 to June 16 | | | | June 17 to Sept. 30 | | | |
|---|---|---|---|---|---|---|---|
| 0.6 | 0 | 1.6 | 26 | 1.4 | 1.7 | 2.3 | 49 |
| .7 | .2 | 2.0 | 57 | 1.5 | 3.4 | 2.6 | 83 |
| .8 | .8 | 2.5 | 118 | 166 | 6.0 | 3.0 | 147 |
| .9 | 2.0 | 3.0 | 204 | 1.7 | 9.4 | 3.5 | 256 |
| 1.0 | 3.6 | 3.5 | 300 | 1.8 | 14 | 4.0 | 395 |
| 1.3 | 12 | | | 2.0 | 24 | 5.2 | 850 |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 0 | 0.4 | b 0.4 | * 1.0 | b2.0 | 6.8 | 10C | 27 | 28 | 131 | 4.4 |
| 2 | | 0 | * .4 | b.2 | b.7 | * b1.9 | 8.8 | 128 | * 26 | 25 | 142 | 4.2 |
| 3 | | 0 | .6 | b.1 | b1.0 | b1.4 | 9.5 | 120 | 25 | 16 | 147 | 3.9 |
| 4 | | 0 | b.3 | b.1 | b1.2 | b1.0 | 11 | * 109 | 25 | 13 | 109 | 3.4 |
| 5 | | * 0 | b.2 | b.4 | b1.4 | b1.2 | 12 | 93 | 28 | 12 | 78 | 3.4 |
| 6 | | 0 | b.2 | * b.6 | 1.4 | b1.2 | 10 | 77 | 28 | 11 | 55 | 3.7 |
| 7 | (*) | 0 | b.2 | .8 | 1.3 | b1.4 | 11 | 66 | 23 | 9.8 | 42 | * 3.4 |
| 8 | | 0 | b.4 | .7 | b1.0 | b1.4 | * 9.5 | 62 | 22 | 9.4 | 35 | 4.7 |
| 9 | | 0 | .7 | b.2 | b.8 | b1.6 | 10 | 53 | 20 | 8.4 | 30 | 5.5 |
| 10 | | 0 | .9 | b.4 | b.6 | 1.8 | 11 | 50 | 20 | 11 | 26 | 3.9 |
| 11 | | 0 | .9 | b.6 | b.4 | b1.8 | 9.5 | 43 | 26 | 11 | 24 | 3.7 |
| 12 | | 0 | .9 | b.6 | b.1 | b1.8 | 9.5 | 41 | 24 | 11 | * 20 | 3.9 |
| 13 | | 0 | b.6 | b.6 | b.2 | 1.8 | 11 | 61 | 20 | * 14 | 18 | 3.1 |
| 14 | | 0 | b1.0 | b.6 | b1.0 | 2.0 | 11 | 69 | 18 | 8.7 | 18 | 2.7 |
| 15 | | 0 | b1.5 | b.8 | b1.1 | 1.8 | 10 | 77 | 19 | 9.4 | 24 | 2.2 |
| 16 | | .1 | 2.6 | b1.0 | b1.3 | 2.0 | 11 | 75 | 296 | * 8.4 | 23 | 2.0 |
| 17 | | .3 | b1.0 | b1.0 | b1.5 | * 1.7 | 14 | 68 | * 819 | 28 | 19 | 1.9 |
| 18 | | .6 | b.6 | b1.0 | * b1.6 | 2.0 | 18 | 69 | a 700 | 12 | 18 | 5.5 |
| 19 | | b.3 | b.8 | b1.0 | b1.6 | b1.6 | 23 | * 84 | a 180 | 8.4 | 17 | 5.2 |
| 20 | | b.2 | b 2.5 | * b.9 | b1.6 | b1.4 | 26 | 89 | a 60 | 7.7 | 16 | 4.2 |
| 21 | | b.2 | 1.7 | b.8 | b1.6 | b1.6 | 34 | 83 | * a 26 | 6.7 | 13 | 4.4 |
| 22 | | .3 | 1.8 | 1.3 | b1.4 | b1.8 | * 41 | 77 | a 25 | 5.5 | 13 | 4.2 |
| 23 | (*) | .4 | 1.2 | 1.0 | b1.0 | 2.0 | 47 | 169 | a 23 | 5.0 | 11 | 3.7 |
| 24 | | .3 | .7 | 1.3 | b.6 | b2.2 | 48 | 86 | a 20 | 17 | 9.8 | 3.7 |
| 25 | | .4 | .5 | .9 | b1.0 | b2.4 | 46 | 68 | a 18 | 106 | 8.0 | 3.4 |
| 26 | | .4 | b .2 | b .5 | b2.0 | 2.3 | 45 | 55 | a 16 | 80 | 6.7 | 2.9 |
| 27 | | .4 | .3 | b .6 | 2.3 | 2.4 | 36 | 45 | a 15 | 54 | 5.7 | 2.9 |
| 28 | | .4 | .4 | b1.0 | 2.2 | 2.6 | 31 | 38 | a 13 | 120 | 5.5 | 2.9 |
| 29 | | .3 | .3 | b1.4 | | 3.2 | 36 | 32 | * 12 | 61 | 5.7 | 2.6 |
| 30 | | .4 | .3 | 1.6 | ------- | 3.8 | 62 | 30 | 32 | 36 | 5.2 | 2.7 |
| 31 | | ------- | .4 | 1.6 | ------- | 4.5 | ------- | 30 | ------- | 47 | 5.0 | ------- |
| Total | | 5.0 | 24.5 | 24.0 | 32.9 | 61.6 | 668.6 | 2247 | 2606 | 800.4 | 1080.6 | 108.3 |
| Mean | | 0.17 | 0.79 | 0.77 | 1.18 | 1.99 | 21.6 | 72.5 | 86.9 | 25.8 | 34.9 | 3.61 |
| Ac-ft | | 9.9 | 49 | 48 | 65 | 122 | 1,330 | 4,460 | 5,170 | 1,590 | 2,140 | 215 |

Calendar year 1964: Max 25 Min 0 Mean 2.61 Ac-ft 1,900
Water year 1964-65: Max 819 Min 0 Mean 21.0 Ac-ft 15,200

Peak discharge (base, 200 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 5-23 | 1730 | 4.75 | 680 | 7-17 | 1700 | 3.58 | 276 |
| 6-16 | 1730 | 6.90 | 1,870 | 7-24 | 2300 | 3.38 | 216 |
| 6-17 | ‡2100 | †11.13 | 5,630 | 7-28 | 2200 | 6.60 | 1,670 |
| 6-30 | ‡2030 | †3.86 | 353 | 8- 2 | 2200 | 3.28 | 205 |
| 7- 2 | 1600 | 3.40 | 232 | | | | |

* Discharge measurement or observation of no flow made on this day.
† From floodmarks.
a No gage-height record.
b Stage-discharge relation affected by ice.
‡ About

7-2085. Rayado Creek at Sauble Ranch, near Cimarron, N. Mex.

Location.--Lat 36°22'20", long 104°58'10", in sec. 30, T.25 N., R.18 E. (projected), in Maxwell Grant, on right bank at Sauble Ranch, 10 miles southwest of Cimarron and 16 miles upstream from mouth.

Drainage area.--65 sq mi.

Records available.--June to October 1908 (discharge measurements only), January 1909 to January 1910, July and August 1910, May 1911 to May 1913, July 1913 to February 1915, October 1915 to September 1918, March 1919 to September 1920, June 1923 to September 1924, March to May 1927, August 1927 to September 1965: Monthly discharge only for some periods, published in WSP 1311. Records for April and May 1910, as published in WSP 287, are unreliable and should not be used. Published as "at," "near," or "above Abreu's Ranch near Cimarron" prior to October 1925 and as Rayado River at Sauble Ranch, near Cimarron, October 1925 to September 1952.

Gage.--Water-stage recorder. Altitude of gage is 6,720 ft (corrected, from topographic map). Prior to May 4, 1911, chain or staff gage at site about 2 miles downstream at different datum, May 4, 1911, to Sept. 8, 1925, water-stage recorder about 3 miles upstream at 2 sites within 100 ft at 3 differerent datums. Sept. 9, 1925, to July 16, 1934, water-stage recorder at site 430 ft upstream at different datum. July 17, 1934 to Sept. 30, 1954, at site 290 ft downstream at datums 1.83 to 2.31 ft lower. Oct. 1, 1954, to June 16, 1965, at site 270 ft downstream at datum 1.83 ft lower.

Average discharge.--46 years (1911-12, 1913-14, 1915-20, 1923-24, 1927-65), 14.6 cfs (10,570 acre-ft per year).

Extremes.--Maximum discharge during year, 9,000 cfs June 17 (gage height, 12.5 ft present datum, from floodmark), from rating curve extended above 70 cfs on basis of logarithmic plotting and slope-area measurement of peak flow; minimum, 0.9 cfs Nov. 12, result of freezeup.

1909-12, 1913-65: Maximum discharge, that of June 17, 1965; minimum daily, 0.4 cfs Nov. 16, 1956 (may have been lower during periods of freezeup).

The major flood of June 10, 1913, destroyed the gage (stage and discharge not determined). Another major flood probably occurred Sept. 29 or 30, 1904.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used July 7-29)

| Oct. 1 to June 16 | | | | | | June 17 to Sept. 30 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.6 | 1.6 | 2.2 | 18 | 3.5 | 212 | 1.3 | 6.5 | 1.8 | 47 | 2.7 | 225 |
| 1.8 | 4.5 | 2.5 | 40 | 4.0 | 370 | 1.4 | 10 | 2.1 | 90 | 3.0 | 315 |
| 2.0 | 9.6 | 3.0 | 106 | 4.5 | 590 | 1.6 | 25 | 2.4 | 150 | | |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.3 | 2.5 | 3.0 | 3.2 | 3.2 | 3.7 | 12 | 65 | *56 | 68 | 212 | 15 |
| 2 | 2.2 | 2.6 | 3.0 | b3.0 | b3.0 | b3.0 | 13 | 69 | 47 | *64 | 214 | 16 |
| 3 | 2.2 | *2.6 | 3.0 | b2.5 | b3.0 | b2.5 | 13 | 73 | 41 | 68 | 214 | 15 |
| 4 | 2.0 | 2.6 | b2.5 | b3.0 | b3.0 | b2.5 | 14 | 71 | 37 | 60 | a200 | 14 |
| 5 | 2.2 | 3.0 | b2.5 | 3.2 | 3.0 | b3.0 | 14 | 68 | 38 | 59 | a150 | 13 |
| 6 | 2.2 | 2.9 | b2.5 | 3.2 | 3.2 | b3.5 | 12 | 62 | 45 | 55 | a110 | 15 |
| 7 | 2.1 | 2.9 | b2.5 | 4.2 | 3.2 | b3.5 | 13 | 58 | 28 | 51 | a 90 | *16 |
| 8 | 2.0 | 2.9 | b3.0 | 4.3 | 3.2 | b3.5 | 13 | 56 | 24 | 46 | a 80 | 21 |
| 9 | 2.0 | 2.9 | b3.0 | b3.5 | b3.0 | b3.5 | 15 | 51 | 21 | 42 | 70 | 16 |
| 10 | 2.0 | 2.9 | b3.0 | b3.0 | b3.0 | b3.7 | 15 | 51 | 19 | 41 | 64 | 13 |
| 11 | 2.0 | 2.9 | b3.0 | b3.0 | b3.0 | 3.5 | 11 | 47 | 22 | 39 | 59 | 15 |
| 12 | 2.1 | 1.6 | b3.2 | b3.0 | b2.5 | 4.0 | 12 | 42 | 18 | 40 | 54 | 17 |
| 13 | 2.2 | 2.6 | b3.0 | b3.0 | b2.5 | b3.5 | 14 | 83 | 16 | 37 | 50 | 13 |
| 14 | 2.2 | 2.8 | b3.2 | b3.0 | b3.0 | b3.5 | 15 | 59 | 13 | 48 | 51 | 12 |
| 15 | 2.1 | 2.9 | b3.5 | b3.2 | b3.0 | b3.5 | 13 | 64 | 54 | 51 | 57 | 10 |
| 16 | 2.1 | 3.4 | b4.0 | b3.2 | b3.0 | 3.5 | 16 | 62 | a400 | *36 | 52 | 9.7 |
| 17 | 2.1 | 3.4 | b3.5 | b3.2 | b3.5 | *3.5 | 20 | 57 | *a1,300 | 42 | 61 | 9.7 |
| 18 | 2.9 | 3.7 | b2.5 | *b3.2 | *3.7 | b3.0 | 28 | 57 | a2,000 | 29 | 72 | 21 |
| 19 | 2.8 | 2.5 | b2.5 | 3.2 | 3.5 | b2.5 | 33 | 64 | a800 | 26 | 56 | 14 |
| 20 | *2.5 | b2.5 | b3.0 | 3.4 | 3.7 | b2.5 | 40 | 62 | a400 | 24 | 45 | 13 |
| 21 | 2.3 | 2.8 | 3.2 | b3.2 | 4.0 | b3.0 | *53 | 61 | a330 | 22 | 35 | 12 |
| 22 | 2.3 | b2.5 | 3.2 | b3.2 | 4.2 | 3.8 | 65 | 60 | *a234 | 21 | 34 | 10 |
| 23 | 2.5 | 3.2 | 3.7 | b3.2 | 4.0 | 4.2 | 74 | 474 | a200 | *21 | 29 | 10 |
| 24 | 2.5 | b3.2 | 4.0 | b3.2 | b3.5 | 4.7 | 70 | a 200 | a170 | 22 | *25 | 9.7 |
| 25 | 2.3 | 3.2 | 3.7 | 3.2 | *b4.5 | 4.0 | 66 | a 150 | a140 | 33 | 22 | 9.1 |
| 26 | 2.5 | 3.0 | b3.0 | b3.0 | 3.8 | b4.5 | 57 | a 130 | a120 | 24 | 20 | 8.6 |
| 27 | 2.5 | 3.0 | b3.0 | b3.0 | 3.7 | 4.7 | 50 | a 110 | a100 | 38 | 19 | 8.6 |
| 28 | 2.5 | 2.8 | *3.2 | *b3.8 | 3.7 | 5.8 | 48 | a 100 | a 90 | 47 | 18 | 8.6 |
| 29 | *2.5 | 3.0 | 2.9 | 3.5 | - | 6.2 | *57 | a 90 | a 80 | 76 | 20 | *8.2 |
| 30 | 2.5 | *3.0 | 2.9 | 3.0 | | *6.7 | 66 | a 80 | a 90 | *50 | *17 | 8.2 |
| 31 | 2.5 | | 4.2 | 3.2 | | 7.3 | | a 70 | | 112 | 16 | |
| Total | 71.1 | 85.8 | 96.4 | 100.0 | 93.6 | 120.3 | 942 | 2,746 | 6,933 | 1,392 | 2,216 | 381.4 |
| Mean | 2.29 | 2.86 | 3.11 | 3.23 | 3.34 | 3.88 | 31.4 | 88.6 | 231 | 44.9 | 715 | 12.7 |
| Ac-ft | 141 | 170 | 191 | 198 | 186 | 239 | 1,870 | 5,450 | 13,750 | 2,760 | 4,400 | 756 |

Calendar year 1964: Max 94 Min 1.6 Mean 8.28 Ac-ft 6,000
Water year 1964-65: Max 2,000 Min 1.6 Mean 41.6 Ac-ft 30,110

Peak discharge (base, 100 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 5-13 | 0600 | 3.05 | 115 | 7-29 | 0100 | 2.56 | 214 |
| 5-23 | †1900 | 6.20 | 1,900 | 8- 2 | †2100 | 2.75 | 253 |
| 6-17 | †2400 | 12.5 | 9,000 | 8-17 | 1230 | 3.10 | 372 |
| 7- 3 | 1600 | 2.80 | 253 | 8-18 | 1500 | 2.72 | 253 |

* Discharge measurement made on this day.
† About
a No gage-height record.
b Stage-discharge relation affected by ice.

## 7-2110. Cimarron Creek at Springer, N. Mex.

Location.--Lat 36°21'30", long 104°35'50", in southeast corner of Maxwell Grant, on left bank at Springer, Colfax County, 270 ft downstream from bridge on State Highway 199, 6 miles downstream from Rayado Creek, and 6 miles upstream from mouth.

Drainage area.--1,032 sq mi.

Records available.--August 1907 to December 1909, January 1921 to February 1922, October 1924 to January 1926, September 1926 to September 1965. Prior to October 1952, published as Cimarron River at Springer.

Gage.--Water-stage recorder (digital, and crest-stage indicator). Concrete control since Nov. 5, 1954. Altitude of gage is 5,770 ft (from nearby level line). July 13, 1907 to Dec. 31, 1909, staff gage and Dec. 20, 1919 to Feb. 8, 1930, chain gages at site 270 ft upstream at various datums to Nov. 19, 1924, and thereafter at datum 3.34 ft higher than present datum. Feb. 9, 1930 to July 12, 1934, water-stage recorder at site 270 ft upstream at datum 3.66 ft higher. July 13, 1934 to Apr. 13, 1942, water-stage recorder at site 30 ft downstream at different datum. May 8 to July 16, 1942, water-stage recorder at site 270 ft upstream at datum 3.33 ft lower.

Average discharge.--41 years (1920-21, 1924-25, 1926-65), 19.0 cfs (13,760 acre-ft per year).

Extremes.--Maximum discharge during year, 29,500 cfs June 18 (gage height, 19.96 ft, from floodmarks), from rating curve extended above 1,800 cfs on basis of contracted-opening measurement of peak flow; minimum recorded, 0.2 cfs Oct. 9.

1930-65: Maximum discharge, that of June 18, 1965; no flow at times in 1954, 1956-57.

Maximum stage known, about 22 ft Sept. 29, 1904 (backwater from debris on railroad bridge). Another major flood occurred June 11, 1913. Maximum discharges of these floods probably exceeded 10,000 cfs, but probably were less than 1965 flood.

Remarks.--Records good except those for periods of ice effect or doubtful or no gage-height record, which are poor. Flow partly regulated by Eagle Nest Reservoir (see 7-2055). Diversions for irrigation of about 23,000 acres above station and a few hundred acres between station and mouth.

Rating tables, except periods of ice effect (gage-height, in feet, and discharge, in cubic feet per second)

| Oct. 1 to June 17 | | | | | | June 18 to Sept. 30 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.2 | 0.2 | 3.7 | 17 | 5.5 | 456 | 3.6 | 9.7 | 4.6 | 285 | 8.0 | 3,600 |
| 3.3 | .6 | 3.9 | 40 | 6.0 | 675 | 3.7 | 17 | 5.0 | 530 | 9.0 | 5,050 |
| 3.4 | 1.7 | 4.2 | 90 | 6.5 | 950 | 3.8 | 27 | 5.5 | 900 | 10.0 | 6,700 |
| 3.5 | 4.5 | 4.5 | 157 | 7.0 | 1,260 | 4.0 | 60 | 6.0 | 1,320 | 1110 | 8,500 |
| 3.6 | 9.7 | 5.0 | 290 | 7.5 | 1,660 | 4.3 | 150 | 7.0 | 2,330 | 12.0 | 10,400 |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| DAY | OCT. | NOV. | DEC. | JAN. | FEB. | MAR. | APR. | MAY | JUNE | JULY | AUG. | SEPT. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.4 | 2.3 | 2.3 | 5.2 | 2.3 | 2.0 | 2.0 | 3.0 | 10 | 790 | 372 | 20 |
| 2 | .4 | 2.0 | 2.3 | 4.2 | 2.2 | 1.6 | 1.9 | 2.8 | 9 | 280 | d 360 | 19 |
| 3 | .4 | 1.8 | 2.3 | b 3.0 | 2.2 | 1.2 | 1.8 | 2.8 | 8 | 287 | d 340 | 18 |
| 4 | .4 | 1.9 | b 2.2 | 2.7 | 2.3 | 1.2 | 1.7 | 2.5 | 7 | 453 | d 280 | 16 |
| 5 | .4 | 2.1 | b 2.2 | 2.3 | 2.2 | 1.4 | 1.6 | 2.6 | 6 | 178 | d 440 | 16 |
| 6 | * .4 | 2.1 | b 2.1 | 2.3 | 2.2 | 1.4 | 1.6 | 2.3 | 7 | 136 | 275 | 21 |
| 7 | .4 | 2.1 | 2.1 | 2.2 | 2.1 | 1.6 | 1.6 | 2.3 | * 6 | * 115 | 208 | 19 |
| 8 | .4 | 2.1 | 2.1 | b 1.6 | 2.3 | 1.6 | 1.5 | 2.9 | 5 | 91 | 162 | 24 |
| 9 | .4 | 2.0 | 2.1 | b 1.2 | 2.3 | 1.6 | 1.6 | 2.8 | 5 | 75 | d 130 | 26 |
| 10 | .4 | 1.8 | 2.1 | b 2.0 | b 2.0 | 1.6 | 1.5 | 3.8 | 4 | 78 | d 100 | 20 |
| 11 | .7 | 1.7 | 2.1 | 2.4 | b 1.6 | 1.8 | 1.5 | * 4.4 | 4 | 85 | d 90 | 18 |
| 12 | .9 | 1.5 | 2.1 | 2.6 | b 1.2 | 1.8 | 1.5 | 5 | 4 | 65 | d 70 | 26 |
| 13 | .9 | 1.5 | 2.1 | 2.8 | b 1.4 | 1.8 | 1.7 | 6 | 4 | * 65 | d 50 | 22 |
| 14 | 1.4 | 1.5 | 2.8 | 2.6 | b 1.6 | 2.0 | 1.7 | 10 | 5 | 115 | d 43 | 16 |
| 15 | 4.2 | 1.5 | 2.3 | 2.5 | b 1.6 | 2.0 | 1.6 | 8 | 50 | 151 | d 42 | 15 |
| 16 | 3.8 | 1.9 | 2.0 | 2.5 | b 1.8 | * 2.0 | 1.7 | 6 | 800 | 72 | d 41 | 13 |
| 17 | 3.4 | * 1.8 | 1.8 | 2.6 | * 2.3 | 2.0 | 1.6 | 4 | *1,600 | 43 | d 55 | 13 |
| 18 | 3.8 | 1.8 | b 1.5 | * 2.6 | 2.5 | b 1.6 | 1.7 | 4 | *10,500 | 37 | d 50 | 15 |
| 19 | 5.0 | 1.6 | b 1.8 | 2.6 | 2.6 | b 1.2 | 1.7 | 4 | *1,850 | 34 | d 60 | 18 |
| 20 | 3.5 | 1.4 | 3.5 | 2.6 | 2.5 | b 1.2 | 1.7 | 4 | 1,120 | 43 | d 75 | 16 |
| 21 | 2.5 | 1.6 | * 5.1 | 3.0 | 2.5 | b 1.4 | * 1.9 | 5 | 820 | 28 | 52 | * 14 |
| 22 | 2.3 | 2.0 | 5.5 | 2.7 | 2.5 | b 1.6 | 1.7 | 20 | 600 | 24 | 47 | 14 |
| 23 | 1.8 | 2.1 | 5.8 | 2.2 | 2.0 | b 1.8 | 1.9 | 100 | 530 | 22 | 41 | 13 |
| 24 | 1.6 | 2.1 | 5.8 | 2.5 | 1.6 | 1.9 | 1.8 | 80 | 491 | 21 | 35 | 13 |
| 25 | 1.6 | 2.1 | 4.8 | 2.4 | 2.0 | 2.1 | 2.8 | 60 | 638 | 31 | * 31 | 13 |
| 26 | 1.4 | 2.1 | 4.0 | 1.9 | 2.3 | 2.1 | 5.2 | 40 | 546 | 37 | 27 | 16 |
| 27 | 1.8 | 2.2 | 4.5 | b 2.0 | 2.4 | 2.1 | 8.9 | 30 | 312 | 27 | 25 | 23 |
| 28 | 3.3 | 2.2 | 5.5 | 2.4 | 2.3 | 2.0 | 7.0 | 20 | 255 | 34 | 23 | 15 |
| 29 | 3.9 | 2.2 | 6.1 | 2.4 | ------ | 1.8 | 4.6 | 15 | 217 | * 782 | 24 | 12 |
| 30 | 3.7 | 2.2 | 5.2 | 2.4 | ------ | 1.7 | 3.2 | 13 | 557 | 158 | 24 | 11 |
| 31 | 2.8 | ------ | 4.8 | 2.5 | ------ | 1.7 | ------ | 11 | ------ | 170 | 23 | ------ |
| TOTAL | 58.3 | 57.2 | 100.9 | 78.9 | 58.8 | 52.8 | 72.2 | 477.2 | 20,970 | 4,527 | 3,595 | 515 |
| MEAN | 1.88 | 1.91 | 3.26 | 2.55 | 2.10 | 1.70 | 2.41 | 15.4 | 699 | 146 | 116 | 17.2 |
| AC-FT | 116 | 113 | 200 | 156 | 117 | 105 | 143 | 947 | 41,590 | 8,980 | 7,130 | 1,020 |

CALENDAR YEAR 1964 MAX 13 MIN .1 MEAN 2.60 AC-FT 1,880
WATER YEAR 1964-65 MAX 10,500 MIN .4 MEAN 83.7 AC-FT 60,620

Peak discharge (base, 500 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 6-18 | 0200 | †19.96 | 29,500 | 7- 4 | 0030 | 5.61 | 988 |
| 6-26 | 0100 | 5.50 | 900 | 7-29 | 0400 | 7.05 | 2,390 |
| 6-30 | 2230 | 8.20 | 3,880 | 8- 5 | 0600 | 5.21 | 677 |

* Discharge measurement made on this day.
† From floodmarks
b Stage-discharge relation affected by ice.
d Doubtful gage-height record.

Note.--No gage-height record Oct. 1-5, Nov. 18 to Dec. 2, Feb. 20 to Mar. 15, Mar. 17, May 12 to June 18, June 22.

## 7-2115. Canadian River near Taylor Springs, N. Mex.

Location.--Lat 36°17'45", long 104°29'35", in NW¼SE¼ sec. 21, T.24 N., R.23 E., on left bank at head of gorge, 2.1 miles downstream from Cimarron Creek, 2.1 miles south of Taylor Springs and 2.2 miles upstream from Chico Creek.

Drainage area.--2,850 sq mi.

Records available.--October 1939 to September 1958, water years 1959-64 (annual maximum), June 1964 to September 1965. Records for water year 1940 incomplete, yearly estimate published in WSP 1311.

Gage.--Water-stage recorder. Datum of gage is 5,636 ft above mean sea level, datum of 1929. Prior to June 10, 1964, water-stage recorder at site 1.7 miles downstream at different datum; operated as crest-stage station at that site and datum during water years 1959-64.

Average discharge.--20 years (1939-58, 1964-65), 115 cfs (83,260 acre-ft per year).

Extremes.--1964: Maximum discharge during year, 1,520 cfs Sept. 24 (gage height, 4.63 ft); minimum during period June to September, no flow at times.
1964-65: Maximum discharge during year, 162,000 cfs June 18 (gage height, 47.4 ft, from floodmarks), from rating curve extended above 7,000 cfs on basis of slope-area measurement of peak flow; minimum, 0.6 cfs Apr. 23.
1940-65: Maximim discharge, that of June 18, 1965; no flow at times.
Maximum flood known prior to 1965 occurred Sept. 29, 1904 (discharge published as 91,100 cfs in WSP 842, 847).

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 30,000 acres above station.

Rating table for period June 10, 1964 to Sept. 30, 1965, except periods of ice effect or interim operation at previous site (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used June 10 to Sept. 10, 1964, May 30 to June 21, Aug. 25 to Sept. 30, 1965)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 0.6 | 0 | 1.1 | 5.0 | 2.2 | 146 | 5.0 | 2,810 |
| .7 | .1 | 1.2 | 8.4 | 2.5 | 248 | 7.0 | 6,590 |
| .8 | .4 | 1.4 | 19 | 3.0 | 510 | 10.0 | 14,100 |
| .9 | 1.2 | 1.6 | 36 | 3.5 | 910 | 14.0 | 26,800 |
| 1.0 | 2.6 | 1.9 | 78 | 4.0 | 1,420 | 19.0 | 44,300 |

Discharge, in cubic feet per second, June to September 1964

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | a 5 | 1.0 | a 5.0 | * 0.1 |
| 2 | | | | | | | | | a 5 | .6 | a 2.0 | 0 |
| 3 | | | | | | | | | a 8 | .3 | a 1.0 | 0 |
| 4 | | | | | | | | | a 9 | .4 | * a .1 | 0 |
| 5 | | | | | | | | | a 7 | .4 | 314 | 0 |
| 6 | | | | | | | | | a 6 | .2 | 40 | .1 |
| 7 | | | | | | | | | a 4 | .1 | 223 | .1 |
| 8 | | | | | | | | | a 3.5 | * .1 | 154 | .1 |
| 9 | | | | | | | | | a 3 | .1 | 31 | .1 |
| 10 | | | | | | | | | 2.3 | .1 | 11 | 17 |
| 11 | | | | | | | | | 2.4 | .1 | 3.8 | 22 |
| 12 | | | | | | | | | 1.7 | .2 | 2.1 | 2.4 |
| 13 | | | | | | | | | 2.4 | .2 | 1.3 | 1.4 |
| 14 | | | | | | | | | 2.4 | .2 | a 1.0 | 1.4 |
| 15 | | | | | | | | | 3.1 | .2 | a 450 | 9.3 |
| 16 | | | | | | | | | 3.3 | .4 | a 100 | * 2.6 |
| 17 | | | | | | | | | 2.0 | .3 | 17 | 2.4 |
| 18 | | | | | | | | | * 1.1 | .7 | 6.4 | 1.8 |
| 19 | | | | | | | | | .9 | .7 | 4.5 | 3.0 |
| 20 | | | | | | | | | .8 | .6 | 1.8 | 2.0 |
| 21 | | | | | | | | | .7 | 61 | .4 | 1.6 |
| 22 | | | | | | | | | .7 | 13 | .3 | 1.8 |
| 23 | | | | | | | | | .8 | * 3.6 | .1 | 1.6 |
| 24 | | | | | | | | | .8 | a 2.5 | .1 | * 444 |
| 25 | | | | | | | | | .8 | a 1.5 | .1 | 61 |
| 26 | | | | | | | | | .7 | a .7 | .1 | 17 |
| 27 | | | | | | | | | .7 | a .4 | .1 | 5.7 |
| 28 | | | | | | | | | .5 | a .2 | .1 | 4.0 |
| 29 | | | | | | | | | .6 | a .1 | .1 | 3.1 |
| 30 | | | | | | | | | .9 | a .1 | .1 | 2.8 |
| 31 | | | | | | | | | | a 15 | .1 | |
| Total | | | | | | | | | 80.1 | 105.0 | 1,370.6 | 608.4 |
| Mean | | | | | | | | | 2.67 | 3.39 | 44.2 | 20.3 |
| Ac-ft | | | | | | | | | 159 | 208 | 2,720 | 1,210 |

| | | | | |
|---|---|---|---|---|
| Calendar year | : Max | Min | Mean | Ac-ft |
| Water year | : Max | Min | Mean | Ac-ft |

Peak discharge (base 3,000 cfs).--No peak above base.

* Discharge measurement made on this day.
a No gage-height record.

7-2115. Canadian River near Taylor Springs, N. Mex.--Continued

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.1 | 4.0 | a3.0 | b9.0 | 7.7 | b12 | *2.6 | 5.7 | 47 | 1,440 | 404 | 44 |
| 2 | 1.8 | 3.3 | a3.0 | b8.0 | b8.0 | b11 | 5.7 | 3.8 | 32 | 488 | 400 | 81 |
| 3 | *1.7 | 2.8 | a3.0 | b7.5 | b8.0 | b10 | 3.8 | *2.8 | 14 | 262 | 195 | 51 |
| 4 | 1.7 | 2.8 | a3.3 | b7.5 | 8.1 | b9.0 | 2.4 | 1.8 | 9.8 | 424 | 616 | 38 |
| 5 | 1.7 | 3.3 | a3.5 | b7.5 | 8.1 | b10 | 2.3 | 1.3 | 9.8 | 259 | 572 | 34 |
| 6 | 1.7 | 3.3 | a3.5 | 7.4 | 7.7 | b10 | 1.7 | 1.2 | 12 | 202 | 408 | 36 |
| 7 | 1.8 | 3.3 | a3.5 | b7.5 | 8.1 | b10 | 1.6 | 2.0 | *10 | 243 | 328 | 37 |
| 8 | 1.7 | 3.6 | a3.5 | b7.0 | 6.7 | b9.5 | 1.3 | 1.6 | 7.7 | 270 | 265 | 48 |
| 9 | 1.6 | 3.8 | a3.5 | b6.0 | b6.5 | 8.9 | 1.3 | 2.1 | 5.7 | 202 | 235 | 64 |
| 10 | 1.6 | 3.3 | a3.5 | b5.0 | b6.0 | 7.4 | 1.6 | 3.1 | 6.7 | 188 | 212 | 48 |
| 11 | 2.1 | 2.6 | a3.5 | b5.5 | b6.0 | 7.0 | 1.3 | 4.0 | 7.0 | 245 | 190 | 38 |
| 12 | 3.6 | 3.1 | a3.3 | b5.5 | b6.0 | 8.9 | 1.3 | 3.7 | a5.0 | *161 | 161 | 153 |
| 13 | 2.1 | 2.6 | a3.0 | b6.0 | b5.5 | 7.4 | 1.7 | 13 | 4.0 | 296 | 162 | 68 |
| 14 | 2.1 | 2.4 | a2.7 | b7.0 | b5.5 | 7.4 | 1.7 | 13 | 4.5 | 1,080 | 238 | 42 |
| 15 | 2.4 | 2.4 | a3.0 | b7.5 | b5.5 | 7.0 | 1.7 | 26 | 5.0 | 1,690 | 230 | 32 |
| 16 | 4.5 | *2.4 | a3.2 | b8.0 | b6.0 | *6.0 | 1.6 | 20 | a8,000 | 275 | 251 | 28 |
| 17 | 4.8 | a2.8 | a3.2 | b9.0 | *b7.5 | 4.5 | 1.4 | 14 | *a4,800 | 152 | 264 | 26 |
| 18 | 4.8 | a3.0 | a3.2 | *b10 | b7.5 | b4.0 | 1.2 | 11 | *a3,000 | a100 | 162 | 27 |
| 19 | 5.0 | a3.2 | a3.5 | b10 | b9.0 | b4.0 | 1.7 | *7.7 | a4,000 | a80 | 133 | 38 |
| 20 | *5.3 | a3.4 | a4.5 | b10 | 10 | b4.0 | 1.7 | 7.4 | a1,770 | a65 | 763 | 36 |
| 21 | 4.5 | a3.7 | *b6.0 | b10 | 10 | a4.5 | *1.3 | 10 | *a1,160 | a55 | 1,550 | 29 |
| 22 | 3.8 | a4.5 | b7.0 | b9.5 | b9.5 | a4.0 | .9 | 9.8 | 840 | *51 | 833 | *28 |
| 23 | 3.6 | a4.5 | b8.0 | b9.0 | b9.0 | a3.5 | .8 | 244 | 650 | 40 | *644 | 28 |
| 24 | 3.1 | a4.5 | b10 | b8.5 | b9.5 | a3.5 | .9 | 301 | 584 | 48 | 669 | 28 |
| 25 | 2.8 | a4.5 | b10 | b8.0 | b10 | 3.8 | 1.4 | 247 | 801 | 78 | 155 | 28 |
| 26 | 2.6 | a4.5 | b10 | b8.0 | b10 | 4.8 | 8.3 | 148 | 1,330 | 126 | 93 | 27 |
| 27 | 2.6 | a4.0 | 10 | b8.5 | 9.8 | 4.8 | 14 | 97 | 768 | 115 | 70 | 289 |
| 28 | 2.8 | a3.5 | b10 | b9.0 | b10 | 4.5 | 24 | 67 | 584 | 158 | 54 | 55 |
| 29 | 4.0 | a3.2 | b10 | *b9.0 | | 3.8 | 16 | 44 | 476 | 853 | 54 | 33 |
| 30 | 4.5 | a3.2 | b10 | b8.5 | | 3.8 | 9.8 | 26 | 452 | 351 | 54 | 26 |
| 31 | 4.5 | | b10 | b8.0 | | 3.3 | | 21 | | 317 | 52 | |
| Total | 92.9 | 101.5 | 167.4 | 246.9 | 221.2 | 202.3 | 117.0 | 1,360.0 | 69,395.2 | 10,314 | 10,417 | 1,540 |
| Mean | 3.00 | 3.38 | 5.40 | 7.96 | 7.90 | 6.53 | 3.90 | 43.9 | 2,313 | 333 | 336 | 51.3 |
| Ac-ft | 184 | 201 | 332 | 490 | 439 | 401 | 232 | 2,700 | 137,600 | 20,460 | 20,660 | 3,050 |

Calendar year 1964: Max Min Mean Ac-ft
Water year 1964-65: Max 43,000 Min 0.8 Mean 258 Ac-ft 186,700

Peak discharge (base, 3,000 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 6-16 | 0930 | 13.25 | 24,300 | 7-14 | 2350 | ‡8.80 | 4,640 |
| 6-18 | about 0600 | †47.4 | 162,000 | 8-21 | 0930 | 6.80 | 6,150 |
| 7- 1 | 0200 | ‡7.95 | | | | | |

* Discharge measurement made on this day.
† From Floodmarks.
‡ From gage 1.7 miles downstream at different datum.
a No gage-height record.
b Stage-discharge relation affected by ice.
Note.--Interim operation at previous site 1.7 miles downstream June 22 to Aug. 19.

## 7-2140. Canadian River near Roy, N. Mex.

Location.--Lat 35°55'10", long 104°21'10", in E½ sec. 35, T.20 N., R.24 E., on right bank 1,080 ft upstream from bridge on State Highway 120 and 9 miles west of Roy.

Drainage area.--4,066 sq mi, of which 107 sq mi is probably noncontributing.

Records available.--April 1936 to September 1965 (discontinued). Monthly discharge only for April 1936, published in WSP 1311.

Gage.--Water-stage recorder. Datum of gage is 4,892.55 ft above mean sea level (levels by Corps of Engineers). Prior to Oct. 9, 1942, Jan. 5, 1943 to Jan. 20, 1945, and Aug. 6, 1945 to Apr. 30, 1946, at site 1,080 ft downstream at datum 0.39 ft higher. Oct. 10, 1942 to Jan. 4, 1943, Jan. 21 to Aug. 5, 1945, and May 1, 1946 to Sept. 30, 1958, at present site at datum 1.00 ft higher.

Average discharge.--29 years, 132 cfs (95,560 acre-ft per year).

Extremes.--Maximum discharge during year, 172,000 cfs June 18 (gage height, 34.5 ft, from floodmark), from rating curve extended above 19,000 cfs on basis of slope-area measurement of peak flow; no flow Apr. 20-25
1936-65: Maximum discharge, that of June 18, 1965; no flow at times.
Prior to 1965, maximum flood known occurred Sept. 29 or 30, 1904, when peak near Taylor Springs was computed as 91,100 cfs (see WSP 842, 847).

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 30,000 acres above station.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

| Oct. 1 to June 14 | | | | June 15 to Sept. 30 | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 0.55 | 0 | 2.0 | 119 | -0.1 | 24 | 2.0 | 335 | 10.0 | 9,000 |
| .7 | .5 | 2.5 | 233 | 0.0 | 34 | 3.0 | 658 | 12.0 | 14,800 |
| .8 | 1.4 | 3.0 | 383 | .2 | 54 | 4.0 | 1,110 | 14.0 | 22,700 |
| .9 | 3.7 | 3.5 | 590 | .5 | 84 | 5.0 | 1,720 | 16.0 | 32,000 |
| 1.1 | 11 | 4.0 | 850 | 1.0 | 140 | 6.0 | 2,540 | 18.0 | 43,000 |
| 1.3 | 26 | 4.9 | 1,460 | 1.5 | 220 | 8.0 | 5,000 | 19.0 | 49,200 |
| 1.6 | 57 | | | | | | | | |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 9.0 | 1.0 | 3.4 | a 5.5 | 7.7 | b9.0 | 2.2 | 16 | a 60 | 1,460 | 569 | * 74 |
| 2 | 8.2 | .8 | 3.2 | a 5.5 | 7.7 | * b 11 | 2.4 | 12 | a 50 | * 1,470 | 643 | 70 |
| 3 | 7.7 | .7 | 3.4 | a 5.5 | 7.2 | b9.0 | 2.0 | 9.0 | a 40 | 520 | 537 | 68 |
| 4 | 6.8 | .7 | 4.0 | a 6.0 | * 6.8 | b8.0 | 1.6 | *5.2 | * a 30 | 500 | 1,770 | 91 |
| 5 | 6.2 | .7 | 4.3 | a 6.0 | 6.2 | b8.0 | 1.1 | 2.9 | a 20 | 480 | 690 | 68 |
| 6 | 5.9 | 1.8 | 4.3 | a 6.5 | 6.8 | b 9.0 | .9 | 2.0 | a 17 | a 300 | 583 | 54 |
| 7 | 5.2 | 1.4 | 4.3 | a 6.5 | 8.2 | b10 | .8 | 1.3 | a 15 | a 230 | 351 | 54 |
| 8 | 4.6 | 1.3 | * 4.3 | a 5.5 | 8.2 | b11 | 1.0 | .7 | a 12 | a 250 | 261 | 72 |
| 9 | 4.0 | 1.0 | 4.0 | a 5.0 | 8.2 | b12 | .9 | .5 | a 10 | a 280 | 201 | 68 |
| 10 | 3.7 | * 1.0 | a 4.0 | a 4.5 | b 7.5 | b12 | .7 | .5 | a 9 | a 210 | a180 | 72 |
| 11 | 3.7 | .8 | a 4.0 | a 5.0 | b 5.0 | 13 | .7 | .5 | a 8 | a 200 | a160 | 79 |
| 12 | 3.4 | .8 | a 4.0 | * b 5.5 | b 4.0 | 13 | .5 | 129 | a 7 | a 240 | * 142 | 68 |
| 13 | 2.9 | .6 | a 3.5 | b 6.0 | b 4.5 | 11 | .5 | 1,400 | a 110 | a 150 | 113 | 118 |
| 14 | * .7 | .6 | a 3.0 | b 6.5 | b 4.5 | 11 | .4 | 138 | a 120 | 690 | 152 | 124 |
| 15 | .7 | .6 | a 3.5 | b 6.5 | b 4.5 | 11 | .3 | 64 | * a 5,700 | 1,790 | 168 | 82 |
| 16 | .5 | .8 | a 4.0 | 6.8 | 4.9 | 10 | .2 | 46 | * a 8,800 | 700 | 214 | 64 |
| 17 | .4 | .9 | a 3.5 | 6.8 | 5.9 | 9.0 | .2 | 34 | * a 7,800 | a 300 | 197 | 54 |
| 18 | .4 | 1.1 | a 3.5 | 6.8 | 5.2 | b 7.0 | .2 | 31 | * a 8,000 | a 250 | 274 | 54 |
| 19 | .9 | 1.3 | a 3.5 | 6.8 | 5.6 | b6.0 | * .1 | 25 | * a6,500 | a 210 | 228 | 54 |
| 20 | 1.0 | 1.8 | a 4.0 | 6.8 | 6.5 | b 5.8 | 0 | 19 | * a3,100 | a 180 | 460 | 54 |
| 21 | .7 | 3.4 | a 4.5 | 7.2 | 9.5 | 5.6 | 0 | * 12 | a1,800 | a 160 | 964 | * 54 |
| 22 | .7 | 4.0 | a 5.0 | 13 | 9.5 | 4.6 | 0 | a 10 | a1,100 | a 140 | 1,220 | 48 |
| 23 | .6 | 3.7 | a 7.0 | 15 | 9.0 | 2.9 | 0 | a 8 | * a800 | a 120 | 1,100 | a 40 |
| 24 | .8 | 4.0 | a 6.5 | 14 | 7.2 | 4.0 | 0 | a 350 | a700 | a 100 | 811 | a 37 |
| 25 | 1.6 | 4.0 | a 6.0 | 13 | 6.8 | 4.6 | 0 | a 300 | a800 | a 150 | 400 | a 35 |
| 26 | 2.4 | 4.3 | a 5.5 | 13 | 6.2 | * 5.6 | .1 | a 250 | 916 | a 200 | a 250 | a 32 |
| 27 | 2.2 | 4.3 | a 5.5 | 12 | 5.6 | 4.6 | .6 | a 150 | 906 | a 130 | a 180 | a 31 |
| 28 | 1.8 | 4.0 | a 5.5 | 12 | 6.5 | 2.9 | 1.6 | a 90 | 449 | * 156 | a 140 | 400 |
| 29 | 1.6 | 3.7 | a 5.5 | 13 | | 2.4 | 20 | a 60 | a 350 | 504 | a 110 | 140 |
| 30 | 1.4 | 3.7 | a 5.5 | 10 | | 2.2 | 22 | a 40 | a 300 | 613 | a 90 | 81 |
| 31 | 1.3 | | a 5.5 | 7.7 | | 2.7 | | a 30 | | 516 | a80 | |
| Total | 91.0 | 58.8 | 137.7 | 249.9 | 185.4 | 237.9 | 61.0 | 3,236.6 | 88,529 | 13,199 | 13,238 | 2,340 |
| Mean | 2.94 | 1.96 | 4.44 | 8.06 | 6.62 | 7.67 | 2.03 | 104 | 2,951 | 426 | 427 | 78.0 |
| Ac-ft | 180 | 117 | 273 | 496 | 368 | 472 | 121 | 6,420 | 175,600 | 26,180 | 26,260 | 4,640 |

Calendar year 1964: Max 614 Min 0.4 Mean 11.7 Ac-ft 8,530
Water year 1964-65: Max 48,000 Min 0 Mean 333 Ac-ft 241,000

Peak discharge (base, 4,000 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 6-15 | about 0100 | †12.0 | 14,800 | 7- 1 | 2200 | 9.65 | 8,180 |
| 6-18 | 0800 observed | †34.5 | 172,000 | 8- 4 | 0030 | 9.75 | 8,420 |

* Discharge measurement made on this day.
† From floodmark.
a No gage-height record.
b Stage-discharge relation affected by ice.

## 7-2145. Rio Agua Negra near Holman, N. Mex.

Location.--Lat 36°07'00", long 105°22'35", on right bank 150 ft upstream from bridge, 2½ miles south of Chacon, 4½ miles downstream from confluence of Luna and Lujan Creeks, 5.0 miles north of Holman, and 8½ miles southwest of Guadalupita, Mora County.

Drainage area.--57 sq mi.

Records available.--January 1953 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 7,876 ft (by barometer).

Average discharge.--12 years, 13.7 cfs (9,920 acre-ft per year).

Extremes.--Maximum discharge during year, 1,620 cfs Aug. 16 (gage height, 4.55 ft), from rating curve extended as explained below; minimum, 0.6 cfs Jan. 26, result of freezeup.
1953-65: Maximum discharge, 4,700 cfs July 22, 1954 (gage height, 6.10 ft), from rating curve extended above 300 cfs on basis of slope-area measurement of peak flow; minimum, 0.1 cfs July 18, 1954, Sept. 21, 1956.
A major flood probably occurred Sept. 29, 1904 when the entire Mora River basin was in heavy flood.

Remarks.--Records good except those for periods of ice effect, which are poor. Diversions for irrigation of about 1,600 acres above station.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used July 3 to Sept. 30)

| | | | | | |
|---|---|---|---|---|---|
| 0.8 | 0.9 | 1.3 | 22 | 2.3 | 157 |
| .9 | 2.6 | 1.5 | 35 | 2.6 | 238 |
| 1.0 | 5.6 | 1.7 | 55 | 3.0 | 387 |
| 1.1 | 10 | 2.0 | 97 | | |

Discharge, in cubic feet per second, water year October to September

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.4 | 2.6 | b6.5 | b4.0 | b4.0 | b2.6 | 8.3 | 64 | 42 | 55 | 95 | 20 |
| 2 | 2.4 | 2.6 | 6.5 | b3.5 | b3.5 | b2.0 | 8.3 | 80 | 39 | 46 | 103 | 20 |
| 3 | 2.4 | 3.1 | b6.0 | b3.5 | b3.5 | b2.0 | 8.7 | 91 | 37 | 40 | 87 | 18 |
| 4 | 2.4 | 2.8 | b5.5 | b4.0 | b4.0 | b2.0 | 8.7 | 91 | 35 | 38 | 72 | 16 |
| 5 | 2.4 | 2.8 | b5.0 | 5.0 | b4.0 | *b2.5 | 9.1 | 87 | 35 | 34 | 56 | 17 |
| 6 | 2.6 | 2.8 | b4.5 | 4.6 | 4.6 | b3.0 | 7.4 | *81 | 33 | *32 | 46 | 18 |
| 7 | 2.4 | 2.8 | b4.0 | 5.3 | 4.3 | b3.0 | 8.7 | 77 | 29 | 30 | 41 | 16 |
| 8 | 2.4 | 2.6 | *b3.7 | *b4.0 | b3.5 | b3.5 | 8.3 | 74 | 25 | 28 | 37 | 24 |
| 9 | 2.2 | *2.8 | 3.7 | b3.0 | *b4.0 | 3.7 | 11 | 67 | 24 | 25 | 37 | 18 |
| 10 | 2.2 | 2.8 | 3.4 | b3.5 | b3.5 | 3.4 | 14 | 62 | 23 | 24 | 57 | 16 |
| 11 | 2.4 | b2.8 | 4.0 | b4.0 | b3.0 | 3.7 | 12 | 54 | 23 | 25 | 37 | 17 |
| 12 | 2.4 | b2.8 | 2.8 | b3.5 | b2.5 | 4.6 | *10 | 51 | 22 | 22 | 32 | 17 |
| 13 | *2.2 | b3.0 | b3.5 | b3.5 | b2.5 | 5.0 | 13 | 62 | 20 | *19 | 30 | 14 |
| 14 | 2.0 | b4.0 | 4.0 | b4.0 | b3.0 | 4.3 | 13 | 63 | *19 | 55 | 46 | 13 |
| 15 | 2.0 | b4.5 | 6.5 | b4.0 | b2.5 | 6.1 | 12 | 60 | 28 | 28 | 38 | 13 |
| 16 | 1.6 | 6.1 | 5.6 | b4.5 | b2.5 | 4.0 | 16 | 55 | 332 | 28 | 130 | 12 |
| 17 | 1.8 | 7.0 | b4.5 | b4.5 | b3.0 | b3.5 | 20 | 51 | 254 | 23 | 77 | 13 |
| 18 | 2.2 | b8.0 | b4.0 | b4.5 | b3.5 | b3.0 | 27 | 55 | 323 | 20 | 85 | 24 |
| 19 | 2.4 | b5.5 | b4.5 | b4.5 | b3.5 | b2.5 | 36 | 64 | 355 | 17 | 77 | 14 |
| 20 | 2.4 | b7.0 | b5.0 | b4.5 | b3.5 | b3.5 | 46 | 65 | 265 | *16 | *58 | 14 |
| 21 | 2.2 | b6.5 | 5.3 | *b4.5 | b3.5 | b4.0 | 54 | 65 | 188 | 17 | 46 | 13 |
| 22 | 2.2 | b5.5 | 6.1 | b4.0 | b3.5 | 4.6 | 71 | 64 | 142 | 17 | 40 | 12 |
| 23 | 2.0 | b7.0 | 5.6 | b3.5 | b3.0 | 4.6 | 84 | 90 | 110 | 17 | 35 | 12 |
| 24 | 2.0 | b7.0 | 4.6 | b3.5 | b2.5 | 4.6 | 91 | *94 | 106 | 16 | 31 | 12 |
| 25 | 2.4 | b7.4 | 4.6 | b3.5 | b2.5 | *5.0 | 87 | 84 | 110 | 96 | 28 | 11 |
| 26 | 2.4 | 7.4 | b4.0 | b3.0 | b2.6 | 5.6 | 77 | 72 | 81 | 33 | 26 | 11 |
| 27 | 2.6 | 9.6 | b4.5 | b3.5 | b2.7 | 5.3 | 65 | 63 | 68 | 29 | 24 | *11 |
| 28 | 2.6 | b10 | 4.6 | b4.0 | 3.1 | 6.1 | 56 | 54 | 58 | 30 | 25 | 11 |
| 29 | 2.6 | b9.0 | b4.0 | b4.5 | | 7.0 | 53 | 47 | 52 | 30 | 25 | 11 |
| 30 | 2.6 | b7.0 | b4.0 | b4.5 | ---------- | 7.8 | 54 | 50 | 69 | 37 | 23 | 11 |
| 31 | 2.8 | ---------- | b4.0 | b4.5 | ---------- | 8.3 | ---------- | 46 | ---------- | 72 | 20 | ---------- |
| Total | 71.6 | 155.8 | 144.5 | 124.9 | 91.8 | 130.8 | 989.5 | 2,083 | 2,947 | 1,002 | 1,564 | 449 |
| Mean | 2.31 | 5.19 | 4.66 | 4.03 | 3.28 | 4.22 | 33.0 | 67.2 | 98.2 | 32.3 | 50.4 | 15.0 |
| Ac-ft | 142 | 309 | 287 | 248 | 182 | 259 | 1,960 | 4,130 | 5,850 | 1,990 | 3,100 | 891 |

Calendar year 1964: Max 28 Min 0.5 Mean 5.82 Ac-ft 4,220
Water year 1964-65: Max 355 Min 1.6 Mean 26.7 Ac-ft 19,350

Peak discharge (base, 150 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 6-16 | 1600 | 4.50 | 1,550 | 8-10 | 1630 | 2.97 | 374 |
| 6-18 | 2330 | 3.77 | 838 | 8-14 | 1600 | 2.45 | 196 |
| 7-14 | 1100 | 3.40 | 580 | 8-16 | 1600 | 4.55 | 1,620 |
| 7-25 | 1400 | 3.90 | 940 | 8-17 | 1300 | 3.15 | 428 |
| 7-31 | 1900 | 2.62 | 188 | | | | |

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

## 7-2148. Rio la Casa near Cleveland, N. Mex.
(Formerly Rio de la Casa near Cleveland)

Location.--Lat 35°58'30", long 105°23'10", in Mora Grant, on left bank 1½ miles southwest of Cleveland, Mora County.

Drainage area.--23.0 sq mi.

Records available.--May 1956 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 7,625 ft (by barometer).

Average discharge.--9 years, 21.9 cfs (10,790 acre-ft per year).

Extremes.--Maximum discharge during year, 427 cfs July 28 (gage height, 3.83 ft); minimum, about 0.5 cfs Mar. 1 or 2, result of freezeup.
1956-65: Maximum discharge, 2,260 cfs Aug. 6, 1959 (gage height, 6.0 ft), from rating curve extended above 200 cfs on basis of slope-area measurement of peak flow; minimum daily, 0.2 cfs Sept. 21, 22, 1956.

Remarks.--Records good except those for periods of ice effect, which are poor. Diversions for irrigation of about 100 acres above station.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used July 14-29)

| | | | |
|---|---|---|---|
| 1.7 | 1.4 | 2.6 | 57 |
| 1.9 | 5.8 | 3.0 | 139 |
| 2.1 | 12 | 3.5 | 309 |
| 2.3 | 24 | | |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3.0 | 2.1 | 2.5 | 3.0 | 2.5 | 1.5 | 7.9 | 25 | 60 | 70 | 161 | 12 |
| 2 | 2.8 | 2.1 | 2.7 | 2.5 | 2.5 | .8 | 7.6 | 29 | 57 | 57 | 132 | 15 |
| 3 | 2.7 | 2.5 | 2.8 | 2.5 | 2.6 | .8 | 7.6 | 30 | 56 | 50 | 103 | 14 |
| 4 | 2.7 | 2.1 | 2.5 | 3.0 | 2.7 | 1.5 | 7.6 | 28 | 56 | 42 | 77 | 12 |
| 5 | 2.8 | 2.7 | 2.0 | 3.5 | 2.8 | 2.0 | 7.4 | 25 | 53 | 36 | 59 | 11 |
| 6 | 2.8 | 2.8 | 2.0 | 3.5 | 3.0 | 2.5 | 6.6 | *23 | 53 | 33 | 49 | 13 |
| 7 | 2.8 | 2.7 | 1.5 | 3.2 | 2.8 | 2.7 | 7.1 | *24 | 56 | 35 | 42 | 13 |
| 8 | 2.7 | 2.5 | * 2.0 | * 2.9 | 2.8 | * 2.8 | 7.1 | 27 | 57 | *35 | 37 | 25 |
| 9 | 2.5 | * 2.5 | 2.2 | 2.5 | *3.0 | 2.9 | 7.6 | 25 | 65 | 28 | 34 | 18 |
| 10 | 2.5 | 2.7 | 2.0 | 2.7 | 2.0 | 2.9 | 7.6 | 25 | 65 | 29 | 30 | 15 |
| 11 | 2.5 | 2.2 | 2.4 | 3.0 | 1.0 | 2.8 | 6.8 | 21 | 60 | 28 | 28 | 15 |
| 12 | 2.5 | 1.5 | 2.0 | 2.8 | 1.5 | 3.5 | 6.6 | 24 | 56 | 27 | 23 | 14 |
| 13 | * 2.3 | 2.2 | 2.0 | 2.7 | 1.5 | 4.0 | 6.8 | 31 | 63 | 28 | 23 | 12 |
| 14 | 2.5 | 2.3 | 2.2 | 3.0 | 2.0 | 3.7 | * 7.1 | 28 | *73 | 37 | 24 | 11 |
| 15 | 2.5 | 2.3 | 2.5 | 3.0 | 1.5 | 3.7 | 6.8 | 25 | 99 | 34 | 25 | 10 |
| 16 | 2.3 | 2.3 | 2.7 | 3.0 | 2.0 | 3.5 | 7.4 | 23 | 161 | 30 | 24 | 9.8 |
| 17 | 2.3 | 2.4 | 2.3 | 3.0 | 2.0 | 3.0 | 8.8 | 24 | 186 | 27 | 25 | 11 |
| 18 | 2.7 | 2.5 | 2.0 | 3.0 | 2.5 | 2.5 | 11 | 29 | 176 | 25 | 31 | 16 |
| 19 | 3.0 | 2.0 | 2.2 | 3.0 | 3.0 | 2.2 | 12 | 42 | 270 | *24 | 27 | 14 |
| 20 | 2.8 | 2.5 | 2.3 | 3.0 | 3.0 | 3.0 | 13 | 47 | 232 | 23 | * 23 | 16 |
| 21 | 2.7 | 2.5 | 2.3 | * 2.8 | 3.0 | 3.5 | 14 | 53 | 198 | 20 | 23 | 14 |
| 22 | 2.5 | 2.5 | 2.3 | 2.7 | 3.0 | 3.5 | 18 | 60 | 159 | 20 | 31 | 13 |
| 23 | 2.5 | 2.6 | 3.0 | 2.7 | 2.5 | * 3.5 | 21 | 77 | 129 | 18 | 24 | * 12 |
| 24 | 2.5 | 2.7 | 3.5 | 2.9 | 2.0 | 3.5 | 19 | *75 | 136 | 17 | 21 | 12 |
| 25 | 2.1 | 2.8 | 3.7 | 2.5 | 2.1 | 3.5 | 17 | 60 | 134 | 28 | 18 | 11 |
| 26 | 2.3 | 2.7 | 3.5 | 2.2 | 2.5 | 4.2 | 15 | 50 | 107 | 30 | 16 | 11 |
| 27 | 2.5 | 2.8 | 3.0 | 2.2 | 2.5 | 4.0 | 14 | 44 | 92 | 38 | 15 | 11 |
| 28 | 2.5 | 2.5 | 3.5 | 2.2 | 2.2 | 4.8 | 14 | 42 | 79 | 92 | 16 | 11 |
| 29 | 2.3 | 2.5 | 3.7 | 2.3 | | 5.5 | 16 | 41 | 71 | 143 | 16 | 11 |
| 30 | 2.3 | 2.4 | 3.5 | 2.5 | | 5.8 | 20 | 54 | 76 | 88 | 15 | 10 |
| 31 | 2.3 | | 3.5 | 2.7 | | 6.8 | | 67 | | 101 | 13 | |
| Total | 79.2 | 72.9 | 80.3 | 86.5 | 66.5 | 100.9 | 328.4 | 1,178 | 3,135 | 1,293 | 1,185 | 392.8 |
| Mean | 2.55 | 2.43 | 2.59 | 2.79 | 2.38 | 3.25 | 10.9 | 38.0 | 104 | 41.7 | 38.2 | 13.1 |
| Ac-ft | 157 | 145 | 159 | 172 | 132 | 200 | 651 | 2,340 | 6,220 | 2,560 | 2,350 | 779 |

Calendar year 1964: Max 65 Min 0.6 Mean 7.20 Ac-ft 5,220
Water year 1964-65: Max 270 Min 0.8 Mean 21.9 Ac-ft 15,860

Peak discharge (base, 60 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 5-30 | 1800 | 2.66 | 75 | 6-30 | 1700 | 2.95 | 105 |
| 6-16 | 1730 | 3.32 | 239 | 7-28 | 2230 | 3.83 | 427 |
| 6-19 | 0300 | 3.75 | 395 | 8- 1 | 0430 | 3.23 | 195 |
| 6-24 | 1030 | 3.15 | 164 | 8-18 | 1500 | 2.66 | 65 |

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 11-13, 16-24, Nov. 29 to Dec. 1, Dec. 4-15, 17-20, 26, Dec. 30 to Jan. 5, Jan. 7-29, Feb. 2-5, Feb. 8 to Mar. 10, Mar. 17-21.

7-2151. La Cueva Canal below La Cueva, N. Mex.

Location.--Lat 35°56'20", long 105°15'05", in Mora Grant, on right bank 500 ft downstream from head and half a mile west of La Cueva, Mora County.

Records available.--June 1956 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 7,015 ft (from topographic map).

Extremes.--1956-65: Maximum daily discharge, 32 cfs Aug. 21, 1957: no flow at times in each year.

Remarks.--Records good except those for December to February, which are poor. During 1965 a total of 28 discharge measurements were made on diversion and wasteway. Canal diverts water from left bank of Mora River for irrigation and off-channel storage below La Cueva. Published record represents flow below wasteway half a mile downstream from head of canal. Flow shown is total diversion less flow in wasteway.

Monthly discharge, in cubic feet per second, water year 1964 to September 1965

| Month | Maximum | Minimum | Mean | Runoff in acre-feet |
|---|---|---|---|---|
| October | 11 | 3.2 | 7.25 | 446 |
| November | 11 | 7.6 | 9.03 | 537 |
| December | 11 | 8.5 | 9.63 | 592 |
| Calendar year 1964 | 15 | 0 | 5.68 | 4,120 |
| January | 10 | 6.7 | 8.86 | 545 |
| February | 14 | 5.1 | 8.01 | 445 |
| March | 9.2 | .2 | 4.90 | 301 |
| April | 23 | .5 | 5.98 | 356 |
| May | 26 | 1.6 | 13.1 | 808 |
| June | 16 | .4 | 5.03 | 299 |
| July | 11 | .1 | 5.61 | 345 |
| August | 5.2 | .1 | 2.70 | 166 |
| September | 4.5 | 0 | 2.29 | 136 |
| Water year 1964-65 | 26 | 0 | 6.87 | 4,980 |

Note.--Composite (total diversion less wasteway flow).

## 7-2155. Mora River at La Cueva, N. Mex.

Location.--Lat 35°56'15", long 105°15'05", in Mora Grant, on right bank 300 ft downstream from bridge on State Highway 3, a quarter of a mile southeast of La Cueva, Mora County, half a mile downstream from La Cueva damsite.

Drainage area.--173 sq mi.

Records available.--August 1903 to April 1905 (gage heights and discharge measurements only), May 1905 to July 1911, April 1931 to September 1965. Monthly discharge only for some periods, published in WSP 1311. Figures of daily discharge for February to April 1905 have been found to be unreliable and should not be used.

Gage.--Water-stage recorder (digital, and crest-stage indicator). Datum of gage is 6,998.7 ft above mean sea level, datum of 1929. April 1931 to Apr. 18, 1962, at site 300 ft upstream at datum about 2 ft higher. Aug. 25, 1903, to Sept. 29, 1904, staff gage at different datum (destoryed by flood of Sept. 29, 1904). Feb. 22, 1905, to July 31, 1911, staff gages at different datums.

Average discharge.--38 years (1906-10, 1931-65), 28.5 cfs (20,630 acre-ft per year).

Extremes.--Maximum discharge during year, 989 cfs June 17 (gage height, 8.22 ft), from rating curve extended above 500 cfs on basis of slope-area measurement at gage height 8.33 ft; minimum, about 0.1 cfs Jan. 3, result of freezeup.

1931-65: Maximum discharge, 1,530 cfs Sept. 23, 1941, from rating curve extended above 400 cfs by logarithmic plotting; maximum gage height, 8.55 ft July 23, 1962, present site and datum; no flow at times.

Flood of Sept. 29, 1904, may have exceeded 20,000 cfs; another major flood occurred June 11, 1913, but is believed less than that of 1904.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions above station for irrigation of about 7,000 acres, part of which is below station. This record plus La Cueva Canal below La Cueva (see 7-2151) equals total flow in valley cross section.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used June 17-29)

| Oct. 1 to June 19 | | | | | | June 20 to Sept. 30 | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1.38 | 0.2 | 1.9 | 11 | 5.0 | 323 | 1.4 | 27 | 3.0 | 166 |
| 1.4 | .3 | 2.2 | 25 | 6.0 | 495 | 1.7 | 47 | 4.0 | 287 |
| 1.5 | 1.0 | 2.5 | 43 | 6.9 | 674 | 2.0 | 70 | 5.0 | 433 |
| 1.6 | 2.2 | 3.0 | 81 | | | 2.5 | 115 | 5.6 | 533 |
| 1.7 | 4.5 | 4.0 | 185 | | | | | | |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| DAY | OCT. | NOV. | DEC. | JAN. | FEB. | MAR. | APR. | MAY | JUNE | JULY | AUG. | SEPT. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7.8 | 1.2 | 0.7 | 0.5 | 0.7 | * 0.9 | 9.6 | 67 | 129 | 153 | 327 | 74 |
| 2 | 7.9 | 1.2 | 1.0 | .4 | b .8 | 1.5 | 9.6 | 93 | 124 | 127 | 297 | 80 |
| 3 | 7.7 | 1.0 | 1.0 | b .3 | b .8 | 1.3 | 7.5 | 113 | 110 | 114 | 250 | 74 |
| 4 | 6.0 | 1.0 | b .8 | b .3 | b .8 | b .7 | 7.2 | 115 | 95 | 105 | 206 | 63 |
| 5 | 6.5 | 1.0 | b .7 | b .4 | .7 | b .8 | 7.5 | 94 | 93 | 94 | 173 | 56 |
| 6 | 7.9 | .9 | .7 | .5 | .7 | b .8 | 7.5 | 63 | 86 | 82 | 145 | 67 |
| 7 | 8.0 | .9 | b 1.5 | .3 | .7 | .9 | 7.5 | 36 | 70 | 76 | 118 | 65 |
| 8 | 8.5 | 1.0 | * b 2.0 | .4 | .8 | .9 | 7.9 | 34 | 51 | 79 | 102 | 94 |
| 9 | 10 | .9 | b 2.0 | .7 | b 1.2 | .9 | 7.5 | 31 | 45 | 72 | * a 94 | 77 |
| 10 | 9.8 | .9 | b 1.5 | b .6 | b 2.0 | .9 | 7.2 | 29 | 56 | * 73 | a 100 | 65 |
| 11 | 9.0 | .9 | b 1.0 | b .6 | * b 2.0 | 1.1 | 8.2 | 24 | * 64 | 77 | a 90 | 71 |
| 12 | 4.9 | 1.0 | .4 | * .7 | b 1.0 | 1.1 | 7.9 | * 20 | 58 | 77 | a 70 | 75 |
| 13 | 4.9 | * 1.0 | b .3 | b .7 | b .7 | 1.1 | 7.2 | 40 | 63 | 59 | a 58 | 58 |
| 14 | * 6.0 | .6 | b .4 | b .8 | b 1.0 | 1.2 | 7.6 | 36 | 99 | 107 | a 60 | 52 |
| 15 | 5.3 | .6 | b .6 | b 1.0 | b 1.6 | 1.5 | 6.6 | 41 | 130 | 98 | a 80 | 48 |
| 16 | 5.9 | .7 | .9 | b 1.0 | b 1.0 | 8.2 | 7.5 | 44 | 308 | 89 | a 100 | 44 |
| 17 | 5.1 | .7 | .6 | b 1.0 | b 1.0 | 9.0 | 6.9 | 34 | 516 | 79 | a 150 | 43 |
| 18 | 4.6 | a .7 | b .3 | b 1.0 | b 1.0 | b 7.0 | 5.7 | 29 | * 548 | 74 | a 130 | 58 |
| 19 | 3.9 | b .6 | b .3 | b 1.0 | b 1.0 | b 6.0 | * 5.7 | 47 | 672 | 60 | a 140 | 52 |
| 20 | 3.4 | b .5 | b .3 | b 1.0 | b 1.0 | b 5.6 | 6.3 | 67 | 522 | 47 | a 120 | 50 |
| 21 | 2.3 | b .5 | b .2 | * b 1.0 | b 1.0 | b 6.0 | 6.9 | 75 | 391 | 37 | a 116 | 50 |
| 22 | 1.3 | b .5 | .2 | b .8 | .8 | * 6.9 | 8.6 | 95 | 313 | 36 | a 140 | 48 |
| 23 | 1.1 | b .5 | .2 | b .7 | .9 | 7.9 | 19 | 227 | 261 | 34 | a 100 | 46 |
| 24 | 1.1 | b .5 | .3 | b .7 | b .7 | 7.9 | 19 | * 219 | 256 | 31 | a 80 | a 43 |
| 25 | 1.1 | .5 | .3 | b .7 | b .8 | 8.9 | 16 | * a 190 | 251 | 65 | a 70 | 38 |
| 26 | 1.7 | .5 | .4 | b .6 | b .8 | 9.6 | 38 | a 160 | 215 | 90 | a 60 | 38 |
| 27 | 1.6 | .5 | .4 | b .6 | .9 | 10 | 68 | a 140 | 182 | 56 | * 54 | 33 |
| 28 | 1.6 | .7 | .3 | b .8 | .9 | 10 | 85 | a 130 | 157 | 81 | 78 | * 28 |
| 29 | 1.5 | .6 | .4 | b .8 | ------- | 10 | 63 | 118 | 138 | 248 | 69 | 31 |
| 30 | 1.3 | .7 | .9 | .7 | ------- | 10 | 58 | 130 | 131 | 182 | 68 | 33 |
| 31 | 1.2 | ------- | .6 | .7 | ------- | * 9.3 | ------- | 149 | ------- | 208 | 62 | ------- |
| TOTAL | 148.9 | 22.8 | 21.2 | 21.3 | 27.30 | 147.9 | 530.0 | 2,690 | 6,134 | 2,810 | 3,707 | 1,654 |
| MEAN | 4.80 | .76 | .68 | .69 | .98 | 4.77 | 17.7 | 86.8 | 204 | 90.6 | 120 | 55.1 |
| AC-FT | 295 | 45 | 42 | 42 | 54 | 293 | 1,050 | 5,340 | 12,170 | 5,570 | 7,350 | 3,280 |

CALENDAR YEAR 1964 MAX 55 MIN .2 MEAN 7.30 AC-FT 5,300
WATER YEAR 1964-65 MAX 672 MIN .2 MEAN 49.1 AC-FT 35,530

Peak discharge (base, 300 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 5-23 | 1830 | 5.35 | 364 | 7-29 | 0400 | 4.69 | 383 |
| 6-14 | 2300 | 6.51 | 596 | 8- 1 | 0415 | 4.72 | 389 |
| 6-17 | 0300 | 8.22 | 989 | 8-17 | 0115 | 4.29 | 327 |
| 7-14 | 2000 | 4.52 | 353 | 8-22 | 1720 | 4.35 | 335 |
| 7-25 | 2400 | 4.26 | 320 | | | | |

* Discharge measurement made on this day.
a No gage-height record.
b Stage-discharge relation affected by ice.

## 7-2165. Mora River near Golondrinas, N. Mex.

Location.--Lat 35°53'40", long 105°09'30", in Mora Grant, at downstream end of left abutment of highway bridge, 1.2 miles upstream from Coyote Creek, 2 miles east of Golondrinas, Mora County, and 4 miles downstream from Cebolla River.

Drainage area.--267 sq mi.

Records available.--March 1915 to May 1921, October 1921 to March 1922, May, August to September 1922, July 1923 to July 1924, December 1924 to September 1965. Monthly discharge only 1915-30, published in WSP 1311.

Gage.--Water-stage recorder. Datum of gage is 6,734.1 ft above mean sea level, datum of 1929. Mar. 10, 1915, to June 4, 1921, water-stage recorder at site 3½ miles upstream at different datum. July 6, 1921, to Jan. 5, 1929, staff gage or water-stage recorder at present site at datum 1.0 ft higher.

Average discharge.--48 years (1915-20, 1921-22, 1923-65), 35.4 cfs (25,630 acre-ft per year).

Extremes.--Maximum discharge during year, 2,240 cfs June 15 (gage height, 7.85 ft), from rating curve extended as explained below; minimum, 1.4 cfs Jan. 26.
1915-65: Maximum discharge, 14,000 cfs Aug. 22, 1952 (gage height, 14.4 ft), from rating curve extended above 700 cfs on basis of slope-area measurement of peak flow; no flow at times.
Floods of Sept. 29, 1904, and June 11, 1913, probably exceeded 25,000 cfs.

Remarks.--Records good except those for periods of ice effect or back water from debris, which are poor. Diversions for irrigation of about 12,000 acres above station.

Rating table, except periods of ice effect or backwater from debris (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used May 16-23, June 8-14, July 3-14, Aug. 9 to Sept. 30)

| | | | | | |
|---|---|---|---|---|---|
| 1.4 | 1.0 | 2.1 | 21 | 4.0 | 260 |
| 1.5 | 2.1 | 2.5 | 48 | 5.0 | 550 |
| 1.6 | 3.9 | 3.0 | 99 | 6.1 | 1,020 |
| 1.8 | 9.1 | | | | |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 6.2 | 2.3 | b 2.0 | 2.1 | 2.8 | 3.5 | c7.9 | 30 | 133 | 184 | 465 | 98 |
| 2 | 6.5 | 2.3 | 2.1 | b2.1 | b2.8 | b3.3 | c8.2 | 45 | 122 | 148 | 428 | 95 |
| 3 | 6.0 | 2.3 | 2.1 | b2.1 | b2.8 | b3.2 | c7.1 | 58 | 114 | 126 | 359 | 83 |
| 4 | 6.0 | 2.1 | b 2.1 | b2.1 | b2.8 | b3.0 | c6.0 | 64 | 90 | 116 | 288 | 73 |
| 5 | 5.3 | 2.1 | b 2.1 | b2.2 | * b2.8 | *b3.0 | c5.0 | 60 | 87 | 92 | 235 | 63 |
| 6 | 5.5 | 2.1 | b 2.2 | b2.2 | 2.8 | b3.3 | c4.6 | 42 | 86 | * 73 | 199 | 76 |
| 7 | 5.7 | 2.0 | * b 2.3 | * 2.3 | 3.1 | 3.5 | c4.4 | 24 | 71 | 79 | 163 | 76 |
| 8 | 6.0 | 2.0 | b 2.3 | b2.5 | 3.7 | 3.3 | c4.4 | 21 | 43 | 90 | 142 | 119 |
| 9 | 6.8 | 2.0 | b 2.2 | b2.4 | b3.6 | 3.3 | c4.6 | 20 | 37 | 70 | 126 | 84 |
| 10 | 7.1 | * 2.0 | b 2.1 | b2.2 | b3.5 | 3.1 | c4.6 | 20 | 39 | 74 | 124 | 75 |
| 11 | 6.0 | 2.0 | b 2.0 | b2.3 | b3.0 | 3.3 | c4.6 | 17 | 58 | 79 | 132 | 80 |
| 12 | * 6.8 | b 2.1 | b 2.0 | b2.4 | b2.5 | 3.9 | c4.8 | 13 | 48 | 79 | 87 | 96 |
| 13 | 4.6 | b1.7 | b 2.0 | b2.5 | b2.3 | 3.9 | c5.3 | 32 | 54 | 60 | 67 | 68 |
| 14 | 4.1 | 1.8 | b 2.2 | b2.5 | b2.5 | 3.5 | * c3.7 | 29 | * 66 | 86 | 69 | 57 |
| 15 | 4.1 | 2.0 | b 2.4 | b2.5 | b3.0 | 3.5 | 3.3 | 36 | 602 | 134 | 103 | 50 |
| 16 | 3.7 | 2.3 | b 2.4 | b2.6 | b2.7 | 3.5 | 3.1 | 45 | 431 | 103 | 164 | 47 |
| 17 | 3.7 | 2.6 | b 2.1 | b2.6 | b3.0 | 6.2 | 3.7 | * 39 | 649 | 87 | 240 | 46 |
| 18 | 3.7 | 2.9 | b1.8 | b2.6 | b3.2 | b5.2 | 3.1 | 25 | 734 | 87 | 166 | 62 |
| 19 | 3.5 | b 2.7 | b 1.8 | 2.6 | b3.4 | b5.2 | 3.1 | 38 | 981 | * 67 | 169 | 54 |
| 20 | 3.5 | b 2.5 | b 2.1 | b2.6 | b3.5 | b6.0 | 3.3 | 51 | 754 | 54 | 145 | 49 |
| 21 | 3.5 | 2.1 | b 2.2 | b2.5 | b3.5 | b7.0 | 3.1 | 60 | 574 | 36 | 130 | 48 |
| 22 | 3.3 | b 2.1 | b 2.3 | b2.5 | b3.0 | 8.5 | 3.1 | 68 | 458 | 30 | 207 | 46 |
| 23 | 3.3 | b 2.1 | b 2.5 | b2.7 | b3.0 | 6.8 | 3.7 | 147 | 365 | 28 | 187 | * 42 |
| 24 | 3.3 | b 2.1 | 2.6 | b2.8 | b3.2 | * c 7.6 | 12 | 226 | 335 | 27 | 108 | 39 |
| 25 | 3.1 | 2.1 | 2.6 | b3.0 | b3.3 | c 8.2 | 6.2 | 187 | 335 | 26 | 82 | 36 |
| 26 | 3.1 | 2.1 | b 2.5 | b2.5 | 3.5 | c 7.9 | 11 | 151 | 310 | 112 | * 73 | 36 |
| 27 | 3.1 | 2.1 | b 2.3 | b2.5 | 3.3 | c 7.9 | 44 | 134 | 235 | 66 | 64 | 35 |
| 28 | 2.9 | b 2.0 | 2.1 | b2.8 | 3.5 | c 8.5 | 52 | 128 | 206 | 49 | 142 | 27 |
| 29 | 2.8 | 2.0 | b 2.2 | b2.8 | - | c 8.2 | 46 | 118 | 168 | 318 | 116 | 29 |
| 30 | 2.4 | b 1.9 | b 2.5 | b2.6 | ------- | c 8.2 | 30 | 114 | 146 | 257 | 79 | 29 |
| 31 | 2.3 | ------- | b 2.. | 2.6 | ------- | c 7.9 | ------- | 164 | ------- | 295 | 65 | ------- |
| Total | 137.9 | 64.4 | 68.2 | 76.7 | 86.1 | 163.4 | 305.9 | 2,206 | 8,331 | 3,132 | 5,124 | 1,818 |
| Mean | 4.45 | 2.15 | 2.20 | 2.47 | 3.08 | 5.27 | 10.2 | 71.2 | 278 | 101 | 165 | 60.6 |
| Ac-ft | 274 | 128 | 135 | 152 | 171 | 324 | 607 | 4,380 | 16,500 | 6,210 | 10,200 | 3,610 |

Calendar year 1964: Max 34 Min 1.0 Mean 5.67 Ac-ft 4,120
Water year 1964-65: Max 981 Min 1.7 Mean 58.9 Ac-ft 42,690

Peak discharge (base, 400 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 6-15 | 0300 | 7.85 | 2,240 | 8-17 | 1800 | 5.30 | 610 |
| 6-17 | 0800 | 6.03 | 978 | 8-22 | 2230 | 5.15 | 570 |
| 6-19 | 0500 | 6.35 | 1,170 | 8-28 | 1900 | 5.00 | 515 |
| 8- 1 | 0700 | 5.00 | 550 | | | | |

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.
c Backwater from debris.

## 7-2171. Coyote Creek above Guadalupita, N. Mex.

Location.--Lat 36°10'30", long 105°13'35", in Mora Grant, on right bank 1½ miles north of Guadalupita, Mora County.

Drainage area.--71 sq mi.

Records available.--May 1956 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 7,700 ft (from topographic map).

Average discharge.--9 years, 10.7 cfs (7,750 acre-ft per year).

Extremes.--Maximum discharge during year, 1,820 cfs June 17 (gage height, 6.70 ft), from rating curve extended above 150 cfs on basis of slope-area measurement of peak flow; minimum, 1.0 cfs Oct. 12, 13.
1956-65: Maximum discharge, that of June 17, 1965; minimum, 0.04 cfs June 16, 1963.

Remarks.--Records good except those for periods of ice effect, which are poor. Diversions for irrigation of about 2,000 acres above station.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

| | | | | | |
|---|---|---|---|---|---|
| 1.4 | 1.0 | 1.9 | 19 | 3.5 | 215 |
| 1.5 | 2.8 | 2.2 | 39 | 4.0 | 335 |
| 1.6 | 5.8 | 2.6 | 76 | 4.8 | 620 |
| 1.7 | 9.4 | 3.0 | 126 | | |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.9 | 2.4 | 3.1 | 4.0 | 4.3 | b 4.0 | 32 | 23 | 17 | 62 | 159 | 17 |
| 2 | 1.9 | 2.4 | 3.1 | b 3.5 | 3.7 | b 3.0 | 32 | 21 | 16 | 59 | 120 | 17 |
| 3 | 1.9 | 3.4 | b 2.7 | b 3.0 | 3.7 | b 2.5 | 28 | 23 | 15 | 48 | 98 | 16 |
| 4 | 1.9 | 3.4 | b 2.4 | b 3.3 | 3.7 | b 3.0 | 24 | 28 | 13 | 39 | 83 | 15 |
| 5 | 1.9 | 3.7 | b 2.2 | 3.4 | 4.3 | b 3.5 | 22 | 32 | 12 | 33 | 66 | 14 |
| 6 | 1.9 | 3.4 | b 2.1 | b 3.6 | 4.6 | b 3.6 | 17 | * 32 | 12 | 28 | 52 | 16 |
| 7 | 1.5 | 3.1 | * b 2.0 | * b 3.7 | b 4.5 | b 3.6 | 15 | 32 | 11 | 26 | 41 | 15 |
| 8 | 1.4 | 3.1 | b 2.0 | b 3.4 | b 4.0 | * 3.7 | 14 | 30 | 11 | * 23 | 35 | 19 |
| 9 | 1.4 | 2.8 | b 2.2 | b 3.2 | b 3.5 | 4.0 | 13 | 26 | 10 | 19 | 31 | 19 |
| 10 | 1.4 | 2.8 | 2.4 | b 3.0 | b 3.5 | 4.0 | 14 | 27 | 9.4 | 17 | 30 | 17 |
| 11 | 1.2 | 2.8 | 2.6 | b 3.0 | * b 3.3 | 4.9 | 12 | 28 | * 9.4 | 16 | 32 | 19 |
| 12 | * 1.2 | 2.4 | 2.8 | b 3.0 | b 3.3 | 5.2 | * 11 | 28 | 8.7 | 15 | 32 | 19 |
| 13 | 1.2 | * 2.6 | b 2.2 | b 3.0 | b 3.3 | 5.2 | 12 | 39 | 8.3 | 27 | 29 | 17 |
| 14 | 1.5 | 2.3 | b 2.4 | b 3.5 | b 3.5 | 4.6 | 14 | 42 | 7.6 | 64 | 30 | 16 |
| 15 | 1.5 | 2.3 | 2.4 | b 4.0 | b 3.3 | 4.3 | 16 | 33 | 28 | 63 | 36 | 14 |
| 16 | 1.7 | b 2.2 | 2.3 | b 4.0 | b 3.3 | 4.3 | 15 | 33 | 179 | 45 | 50 | 13 |
| 17 | 1.9 | b 2.2 | b 1.7 | 4.0 | b 3.5 | 4.3 | 14 | 32 | * 556 | 36 | 59 | 12 |
| 18 | 2.4 | b 2.0 | b 1.5 | 4.0 | b 4.0 | b 4.0 | 12 | 27 | 599 | 28 | 64 | 19 |
| 19 | 2.8 | b 1.5 | 1.9 | 4.3 | b 4.5 | b 3.0 | 12 | 24 | 324 | 23 | 69 | 18 |
| 20 | 2.8 | b 2.0 | 1.7 | 4.0 | 4.6 | b 3.5 | 12 | 22 | 182 | * 20 | 59 | 16 |
| 21 | 2.6 | b 2.1 | 1.7 | b 3.7 | 4.6 | b 4.0 | 12 | 20 | 126 | 18 | 48 | 16 |
| 22 | 2.6 | b 2.2 | 1.9 | 3.7 | 4.6 | 4.3 | 12 | 18 | 100 | 15 | 41 | 15 |
| 23 | 2.3 | b 2.3 | 2.4 | b 3.5 | b 4.3 | * 4.6 | 12 | 31 | 82 | 13 | 34 | 14 |
| 24 | 2.1 | 2.4 | 5.2 | b 4.0 | b 4.0 | 4.9 | 14 | 85 | 76 | 12 | 30 | 13 |
| 25 | 2.1 | 2.4 | 4.9 | b 3.8 | b 4.0 | 5.2 | 17 | 53 | 86 | 37 | 24 | 12 |
| 26 | 2.1 | 2.4 | 4.9 | b 3.5 | 4.0 | 4.9 | 32 | 37 | 90 | 60 | 21 | 12 |
| 27 | 2.1 | 2.8 | 4.6 | * b 3.0 | 4.3 | 4.3 | 50 | 29 | 71 | 67 | * 20 | * 12 |
| 28 | 2.3 | 2.3 | 4.9 | b 3.0 | 5.5 | 4.9 | 42 | 24 | 56 | 61 | 19 | 12 |
| 29 | 2.1 | 2.8 | 3.1 | 2.8 | | 15 | 34 | 21 | 46 | 57 | 21 | 12 |
| 30 | 2.1 | 2.8 | 2.4 | 3.7 | | 27 | 28 | 20 | 45 | 52 | 19 | 11 |
| 31 | 2.4 | | 4.6 | 4.3 | | 30 | | 18 | | 96 | 18 | |
| Total | 60.1 | 77.3 | 86.3 | 109.9 | 111.7 | 187.3 | 594 | 938 | 2806.4 | 1179 | 1470 | 457 |
| Mean | 1.94 | 2.58 | 2.78 | 3.55 | 3.99 | 6.04 | 19.8 | 30.3 | 93.5 | 38.0 | 47.4 | 15.2 |
| Ac-ft | 119 | 153 | 171 | 218 | 222 | 372 | 1180 | 1860 | 5570 | 2340 | 2920 | 906 |

Calendar year 1964: Max 32 Min 0.1 Mean 3.59 Ac-ft 2,610
Water year 1964-65: Max 599 Min 1.2 Mean 22.1 Ac-ft 16,030

Peak discharge (base, 100 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 5-24 | 1000 | 2.85 | 106 | 7-14 | 1130 | 2.94 | 118 |
| 6-15 | 2230 | 3.68 | 251 | 8- 1 | 1300 | 3.25 | 166 |
| 6-17 | 2400 | 6.70 | 1,820 | | | | |

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

7-2180. Coyote Creek near Golondrinas, N. Mex.

Location.--Lat 35°54'40", long 105°98'50", in Mora Grant, on left bank a third of a mile downstream from Coyote Creek damiste, 2 miles upstream from mouth, and 2 miles northeast of Golondrinas, Mora County.

Drainage area.--215 sq mi.

Records available.--April 1928 to September 1965. Prior to October 1930 monthly discharge only, published in WSP 1311.

Gage.--Water-stage recorder. Altitude of gage is 6,820 ft (from topographic map). Prior to Apr. 26, 1938, at site 0.4 mile downstream at different datum (staff gage prior to Apr. 20, 1929). Apr. 26, 1938, to Sept. 25, 1946, at site 139 ft downstream at same datum.

Average discharge.--37 years, 12.1 cfs (8,760 acre-ft per year).

Extremes.--Maximum discharge during year, 2,500 cfs June 16 (gage height, 7.90 ft); minimum, 0.2 cfs Mar. 27, 28. Apr. 23. 1928-65: Maximum discharge, 4,050 cfs Aug. 17, 1961 (gage height, 9.60 ft), from rating curve extended above 245 cfs on basis of slope-area measurements at gage heights 5.54, 7.74, and 9.60 ft; maximum gage height, 10.1 ft Aug. 30, 1936 (site and datum then in use); no flow Aug. 4, 1945, Apr. 10, May 9, 10, 1956.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions (including off-channel storage) for irrigation of about 4,000 acres above station.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used May 16-23, June 16 to Aug. 25)

| | | | |
|---|---|---|---|
| 1.4 | 0.3 | 2.0 | 8.3 |
| 1.5 | .8 | 2.2 | 15 |
| 1.6 | 1.6 | 2.5 | 31 |
| 1.7 | 2.6 | 2.9 | 66 |
| 1.8 | 4.0 | 3.5 | 156 |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.4 | a 1.4 | 3.9 | 5.0 | 3.5 | 3.2 | 3.5 | 20 | 20 | 73 | 186 | 29 |
| 2 | 1.4 | a 1.4 | 4.4 | 4.0 | 3.0 | 3.0 | 7.3 | 17 | 14 | 60 | 128 | 25 |
| 3 | 1.4 | a 2.5 | 4.2 | 4.0 | 3.0 | 3.0 | 10 | 17 | 8.1 | 55 | 97 | 22 |
| 4 | 1.4 | a 3.0 | 3.9 | 4.5 | 3.0 | 3.5 | 12 | 17 | 5.5 | 43 | 73 | 21 |
| 5 | 1.4 | a 3.4 | 4.0 | 5.0 | * 2.9 | * 5.0 | 8.1 | 20 | 4.2 | 35 | 60 | 20 |
| 6 | 1.4 | a 3.0 | 4.5 | 6.5 | 2.9 | 5.0 | 5.7 | 22 | 12 | * 32 | 49 | 23 |
| 7 | 1.5 | a 2.7 | * 4.5 | * 6.5 | 2.9 | 5.0 | 3.8 | 22 | 8.6 | 58 | 42 | 23 |
| 8 | 1.4 | a 2.5 | 4.5 | 5.0 | 2.7 | 5.5 | 2.4 | 17 | 2.0 | 33 | 38 | 32 |
| 9 | 1.3 | a 2.4 | 5.0 | 4.5 | 2.5 | 2.6 | 1.2 | 16 | .8 | 29 | 39 | 27 |
| 10 | .6 | * 2.4 | 5.0 | 3.5 | 2.3 | 2.4 | .7 | 14 | .9 | 32 | 35 | 24 |
| 11 | .4 | 2.4 | 5.5 | 3.5 | 2.1 | 2.6 | .5 | 16 | 2.2 | 28 | 34 | 26 |
| 12 | * .5 | 2.6 | 5.5 | 3.5 | 2.0 | 6.9 | .5 | 18 | .5 | 27 | 34 | 32 |
| 13 | .5 | 2.6 | 5.0 | 3.5 | 2.0 | 7.3 | .5 | 26 | 1.8 | 29 | 33 | 24 |
| 14 | .6 | 3.2 | 5.0 | 4.0 | 2.2 | 5.7 | * 1.2 | 32 | * 18 | 76 | 34 | 21 |
| 15 | .6 | 3.4 | 5.5 | 4.5 | 2.4 | 5.9 | 2.0 | 27 | 138 | 62 | 43 | 20 |
| 16 | .5 | 3.4 | 7.0 | 4.5 | 2.5 | 4.4 | 2.0 | 29 | 627 | 41 | 47 | 19 |
| 17 | .5 | 3.4 | 5.0 | 4.5 | 2.7 | 1.8 | 2.0 | * 30 | 642 | 30 | 57 | 19 |
| 18 | 1.2 | 3.4 | 4.0 | 4.5 | 3.0 | 1.8 | 1.8 | 25 | 826 | 27 | 47 | 22 |
| 19 | 2.2 | 3.0 | 5.0 | 4.5 | 3.5 | 1.5 | 1.8 | 24 | 521 | * 26 | 53 | 22 |
| 20 | .8 | 3.5 | 5.0 | 4.5 | 3.5 | 2.0 | 1.8 | 22 | 242 | 27 | 45 | 21 |
| 21 | .8 | 3.5 | 6.0 | 4.5 | 3.5 | 2.3 | 1.0 | 18 | 143 | 26 | 39 | 20 |
| 22 | .8 | 4.0 | 7.1 | 4.5 | 3.5 | 2.5 | .5 | 15 | 104 | 24 | 44 | 20 |
| 23 | .8 | 4.5 | 7.3 | 4.5 | 3.0 | 2.2 | .4 | 115 | 84 | 22 | 37 | * 20 |
| 24 | .8 | 5.0 | 7.1 | 4.5 | 2.5 | * .6 | .3 | 78 | 74 | 20 | 32 | 19 |
| 25 | .8 | * 5.5 | 7.6 | 4.5 | 2.5 | .3 | .3 | 66 | 82 | 30 | 29 | 18 |
| 26 | .9 | 5.7 | 7.8 | 4.0 | 3.0 | .4 | 2.1 | 44 | 90 | 54 | * 25 | 18 |
| 27 | .9 | 3.5 | 7.6 | 3.5 | 3.0 | .2 | 20.0 | 34 | a 70 | 69 | 24 | 18 |
| 28 | a .9 | 2.6 | 7.0 | 3.5 | 3.4 | .3 | 33 | 29 | a 60 | 60 | 26 | 18 |
| 29 | a .9 | 3.9 | 6.0 | 4.0 | - | .3 | 27 | 25 | a 50 | 64 | 26 | 17 |
| 30 | a 1.0 | 3.6 | 6.0 | 4.0 | ------- | .3 | 22 | 25 | a 50 | 112 | 32 | 16 |
| 31 | a 1.2 | ------ | 6.0 | 4.0 | ------- | ------- | ------- | 27 | ------- | 52 | 24 | ------- |
| Total | 30.8 | 97.4 | 171.9 | 135.5 | 79.0 | 87.7 | 175.4 | 907 | 3,901.6 | 1,356 | 1,512 | 656 |
| Mean | 0.99 | 3.25 | 5.55 | 4.37 | 2.82 | 2.83 | 5.85 | 29.3 | 130 | 43.7 | 48.8 | 21.9 |
| Ac-ft | 61 | 193 | 341 | 269 | 157 | 174 | 348 | 1,800 | 7,740 | 2,690 | 3,000 | 1,300 |

Calendar year 1964: Max 57 Min 0.4 Mean 3.25 Ac-ft 2,360
Water year 1964-65: Max 826 Min 0.2 Mean 25.0 Ac-ft 18,070

Peak discharge (base, 180 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 5-23 | 1830 | 4.50 | 460 | 6-18 | 0800 | 6.20 | 1,470 |
| 6-15 | 0100 | 4.80 | 600 | 7-30 | 1900 | 5.15 | 825 |
| 6-16 | 0330 | 7.90 | 2,500 | | | | |

* Discharge measurement made on this day.
a No gage-height record.
Note.--Stage-discharge relation affected by ice Nov. 18-25, Dec. 5-21, Dec. 28 to Feb. 4, Feb. 8-27, Mar. 1-7, 18-22.

7-2186. Sapello Canal at Sapello, N. Mex.

Location.--Lat 35°46'10", long 105°15'00", in Las Vegas Grant, on right bank 20 ft downstream from highway crossing in Sapello, San Miguel County.

Records available.--June 1956 to September 1965.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 7,010 ft (from topographic map).

Extremes.--1956-65: Maximum daily discharge, 2.8 cfs June 1, 1957; no flow for long periods each year.

Remarks.--Records fair. Canal diverts water from right bank of Sapello River for irrigation of land downstream from Sapello River gage (see 7-2200).

Monthly discharge, in cubic feet per second, water year October 1964 to September 1965

| Month | Maximum | Minimum | Mean | Runoff in acre-feet |
|---|---|---|---|---|
| October | 0.6 | 0 | 0.25 | 16 |
| November | .8 | 0 | .07 | 4.4 |
| December | .5 | 0 | .28 | 17 |
| Calendar year 1964 | 1.8 | 0 | .41 | 296 |
| January | .5 | 0 | .12 | 7.3 |
| February | .3 | 0 | .07 | 4.0 |
| March | 1.4 | 0 | .33 | 20 |
| April | 1.6 | .1 | .93 | 55 |
| May | 1.7 | .1 | 1.11 | 68 |
| June | 1.8 | 0 | .77 | 46 |
| July | 1.4 | 0 | .72 | 44 |
| August | 1.2 | 0 | .70 | 43 |
| September | .6 | 0 | .22 | 13 |
| Water year 1964-65 | 1.8 | 0 | .47 | 337.7 |

## 7-2200. Sapello River at Sapello, N. Mex.

Location.--Lat 35°46'10", long 105°15'05", in Las Vegas Grant, on downstream end of bridge pier nearest left bank, on State Highway 3, in town of Sapello, San Miguel County, half a mile downstream from Manuelitas Creek.

Drainage area.--132 sq mi.

Records available.--May to October 1915, January 1916 to November 1918, February 1919 to May 1921, July to September 1921, July 1956 to September 1965. Monthly discharge only for some periods, published in WSP 1311. Gage heights and discharge measurements published under same name for August 1903 to March 1904 are for a site above Manuelitas Creek, and are not equivalent. Records for November to December 1915, December 1918, January 1919, and October 1921 to December 1928 have been found unreliable and should not be used.

Gage.--Water-stage recorder. Altitude of gage is 6,910 ft (by barometer). May 1915 to September 1921, staff gage at site 300 ft upstream at different datum.

Average discharge.--14 years (1915-20, 1956-65), 24.7 cfs (17,880 acre-ft per year).

Extremes.--Maximum discharge during year, 3,850 cfs July 7 (gage height, 6.38 ft), from rating curve extended above 350 cfs as explained below; minimum, 0.2 cfs at times in October, November.
1915-20, 1956-65: Maximum discharge determined, 6,160 cfs Aug. 4, 1957 (gage height, 7.40 ft), from rating curve extended above 1,500 cfs on basis of computation of peak flow over dam; no flow at times.

Remarks.--Records good except those for periods of ice effect, which are poor. Diversions above station for irrigation of about 4,200 acres. Station is bypassed by Sapello Canal (see 7-2186).

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

| | | | |
|---|---|---|---|
| 0.65 | 0.2 | 1.4 | 19 |
| .7 | .3 | 1.7 | 40 |
| .8 | .8 | 2.1 | 86 |
| .9 | 1.8 | 2.5 | 162 |
| 1.0 | 3.7 | 3.1 | 336 |
| 1.2 | 9.8 | | |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.4 | 0.2 | 1.5 | 0.7 | 1.7 | b 4.0 | 1.3 | 16 | 28 | 16 | 333 | 10 |
| 2 | .4 | .2 | 1.4 | .7 | 1.5 | b 3.3 | 1.7 | 17 | 24 | 15 | 322 | 14 |
| 3 | .4 | .2 | 1.4 | b .6 | 1.2 | b 3.1 | 1.4 | 20 | 23 | 17 | 204 | 12 |
| 4 | .4 | .6 | 1.4 | .9 | 1.2 | b 3.0 | 1.3 | 21 | 21 | 12 | 134 | 12 |
| 5 | .6 | 1.0 | b 1.4 | .9 | 1.2 | b 3.3 | 1.3 | 18 | 18 | 10 | 96 | 11 |
| 6 | .8 | 1.2 | b 1.3 | .9 | 1.2 | b 4.0 | 1.1 | 15 | 18 | 9.8 | 72 | 25 |
| 7 | .8 | 1.1 | b 1.4 | 1.0 | b 1.2 | 4.2 | 0.8 | 14 | 14 | *308 | 58 | 21 |
| 8 | .7 | 1.1 | b 1.4 | 1.1 | b 1.2 | 4.8 | .8 | 14 | 11 | 19 | 47 | 31 |
| 9 | .8 | 1.1 | * b 1.4 | b 1.0 | b 1.2 | * 5.9 | .8 | 14 | 7.4 | 10 | 41 | 18 |
| 10 | .8 | 1.0 | b 1.3 | b .8 | b 1.1 | 5.0 | .7 | 14 | * 6.7 | 14 | 38 | 14 |
| 11 | .8 | .8 | b 1.1 | b 1.3 | b 1.0 | 4.8 | .8 | 14 | 8.8 | 14 | 34 | 41 |
| 12 | .9 | .9 | .3 | * b 1.2 | * b 1.0 | 5.6 | .8 | 21 | 9.1 | 13 | 27 | 18 |
| 13 | * .9 | * 1.0 | b .3 | b 1.1 | b 1.0 | 5.0 | .9 | 34 | 9.8 | 12 | 26 | 12 |
| 14 | 1.0 | 1.2 | b .5 | b 1.4 | b 1.2 | 4.5 | .8 | * 29 | 47 | 19 | 67 | 10 |
| 15 | .9 | 1.3 | .7 | 1.7 | b 1.0 | 4.2 | 1.4 | 26 | 133 | 28 | 27 | 9.5 |
| 16 | .7 | 1.2 | .5 | 1.7 | b 1.2 | 4.8 | * 1.4 | 27 | 58 | 19 | 38 | 8.4 |
| 17 | .2 | .9 | .5 | 1.7 | b 1.6 | 4.2 | .8 | 23 | 79 | * 18 | 41 | 8.4 |
| 18 | .2 | 1.1 | b .5 | b 1.3 | 1.8 | b 3.5 | .9 | 21 | * 86 | 16 | 54 | 9.1 |
| 19 | .4 | 1.0 | b .5 | b.9 | 2.6 | b 3.0 | 1.0 | 26 | 173 | 12 | 37 | 8.8 |
| 20 | .3 | b1.0 | b .5 | .8 | 2.8 | b 3.5 | 1.2 | 24 | 60 | 8.8 | 34 | 8.4 |
| 21 | .3 | 1.1 | .6 | * 1.5 | 2.4 | 3.7 | 1.1 | 21 | 49 | 8.1 | 44 | 8.4 |
| 22 | .3 | b1.1 | .6 | 1.5 | 2.8 | 3.7 | .8 | 18 | 41 | 6.7 | 92 | 8.1 |
| 23 | .4 | 1.1 | .6 | b 1.2 | b 3.0 | 3.1 | .8 | 29 | 37 | 6.1 | 65 | 7.8 |
| 24 | .3 | 1.2 | .7 | 2.0 | b 2.8 | 2.8 | .9 | 36 | 38 | 6.1 | 34 | 7.8 |
| 25 | .2 | 1.2 | .7 | b 1.7 | b 3.0 | * 2.9 | 1.0 | 29 | 54 | 31 | 25 | 7.1 |
| 26 | .2 | 1.3 | .7 | b 1.2 | 3.5 | 3.5 | 2.2 | 27 | 38 | 20 | 21 | 6.7 |
| 27 | .2 | 1.3 | .7 | b 1.4 | 4.2 | 3.1 | 4.2 | 23 | 31 | 20 | * 19 | 6.4 |
| 28 | .2 | 1.3 | .8 | 1.8 | 4.8 | 1.7 | 12 | 20 | 28 | 59 | 31 | * 6.4 |
| 29 | .2 | 1.4 | b .7 | 2.0 | | 1.3 | 21 | 21 | 24 | 118 | 16 | 6.1 |
| 30 | .2 | 1.5 | b .7 | 1.8 | ---------- | 1.2 | 17 | 31 | 18 | 90 | 14 | 5.9 |
| 31 | .2 | ---------- | .7 | 2.0 | ---------- | 1.2 | ---------- | 46 | ---------- | 123 | 12 | ---------- |
| Total | 15.1 | 30.6 | 26.8 | 39.8 | 54.4 | 111.9 | 82.2 | 709 | 1192.8 | 1078.6 | 2103 | 372.3 |
| Mean | 0.49 | 1.02 | 0.86 | 1.28 | 1.94 | 3.61 | 2.74 | 22.9 | 39.8 | 34.8 | 67.8 | 12.4 |
| Ac-ft | 30 | 61 | 53 | 79 | 108 | 222 | 163 | 1,410 | 2,370 | 2,140 | 4,170 | 738 |

Calendar year 1964: Max 55 Min 0.1 Mean 2.20 Ac-ft 1,570
Water year 1964-65: Max 333 Min 0.2 Mean 15.9 Ac-ft 11,540

Peak discharge (base, 800 cfs),--June 18 (2400) 860 cfs (4.10 ft); July 7 (1430) 3,850 cfs (6.38 ft).

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

7-2201. Lake Isabel feeder canal near Sapello, N. Mex.

Location.--Lat 35°44'40", long 105°09'30", in Mora Grant, 1 mile northwest of the site of Los Alamos and 5 miles southeast of Sapello.

Records available.--September 1956 to September 1965.

Gage.--Water-stage recorder (digital). Altitude of gage is 6,700 ft (from topographic map).

Extremes.--1956-65: Maximum daily discharge, 322 cfs Aug. 2, 1965; no flow at times.

Remarks.--Records good. Canal diverts water from left bank of Sapello River to fill Lake Isabel which stores water for irrigation.

Monthly discharge, in cubic feet per second, water year October 1964 to September 1965

| Month | Maximum | Minimum | Mean | Runoff in acre-feet |
|---|---|---|---|---|
| October | 0 | 0 | 0 | 0 |
| November | 0 | 0 | 0 | 0 |
| December | 0 | 0 | 0 | 0 |
| Calendar year 1964. | 10 | 0 | 0.35 | 256 |
| January | 0 | 0 | 0 | 0 |
| February | .7 | 0 | .05 | 3.0 |
| March | 2.2 | 0 | .36 | 22 |
| April | 1.0 | 0 | .03 | 2.0 |
| May | 32 | 0 | 4.50 | 276 |
| June | 195 | 0 | 36.2 | 2,160 |
| July | 99 | 0 | 18.7 | 1,150 |
| August | 322 | 2.2 | 77.0 | 4,730 |
| September | 92 | .6 | 10.9 | 646 |
| Water year 1964-65. | 322 | 0 | 12.4 | 8,990 |

## 7-2210. Mora River near Shoemaker, N. Mex.

Location.--Lat 35°48', long 104°47', in S½ sec.11, T.18 N., R.20 E., (projected) in Mora Grant, on left bank 4½ miles east of Shoemaker, and 23 miles upstream from mouth.

Drainage area.--1,104 sq mi, of which 71 sq mi is probably noncontributing.

Records available.--October 1914 to July 1915, October 1915 to August 1918, May 1919 to July 1924, September to November 1924, March to July 1925, June 1927 to September 1965. Prior to October 1930, monthly discharge only, published in WSP 1311.

Gage.--Water-stage recorder. Altitude of gage is 6,170 ft (from topographic map). Prior to Oct. 10, 1934, at site 2,000 ft upstream at different datum.

Average discharge.--47 years (1914-18, 1919-24, 1927-65), 60.4 cfs (43,730 acre-ft per year).

Extremes.--Maximum discharge during year, 14,800 cfs June 15 (gage height, 12.65 ft), from rating curve extended as explained below; minimum, 0.2 cfs Oct. 7.
1914-65: Maximum discharge, 15,200 cfs June 3, 1948 (gage height, 12.79 ft), from rating curve extended above 2,800 cfs on basis of slope-area measurements at gage heights 10.09 and 12.79 ft; no flow at times.
Floods of Sept. 29, 1904, and June 11, 1913, probably exceeded 30,000 cfs.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 26,000 acres above station.

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.5 | 0.6 | 1.6 | b 5.2 | 1.5 | 2.3 | * 1.6 | 6.6 | 140 | a 250 | 634 | 100 |
| 2 | .4 | .6 | 1.6 | b 5.0 | 1.4 | * 2.0 | 1.5 | 4.3 | 112 | a 270 | 723 | 419 |
| 3 | .3 | .7 | 1.9 | b 4.5 | 1.4 | b 1.6 | 1.2 | * 2.7 | 102 | a 180 | 599 | 145 |
| 4 | .3 | .6 | 2.0 | b 4.0 | 1.2 | b 1.4 | 1.2 | 12 | 84 | a 160 | 464 | 126 |
| 5 | .3 | .7 | 1.9 | b 4.5 | * 1.4 | b 1.3 | 1.5 | 20 | 63 | a 140 | 442 | 99 |
| 6 | * .3 | .8 | 1.9 | * b 5.0 | 1.5 | b 1.4 | 1.4 | 30 | 59 | a 140 | 299 | 99 |
| 7 | .3 | .8 | 1.9 | 4.3 | 1.5 | 1.6 | 1.2 | 22 | * 57 | a 170 | 244 | 112 |
| 8 | .3 | .8 | 1.9 | 2.3 | 1.9 | 1.6 | 1.4 | 15 | 41 | a 180 | 225 | 112 |
| 9 | .3 | .8 | 1.9 | 2.5 | 1.9 | 1.6 | 1.5 | 9.4 | 22 | a 140 | 248 | 156 |
| 10 | .3 | .8 | * 1.9 | 2.0 | 1.9 | 1.5 | 1.2 | 8.3 | 19 | * 110 | 167 | 134 |
| 11 | .2 | .8 | 2.5 | 1.6 | 1.5 | 2.0 | 1.2 | 7.9 | 12 | 126 | 171 | 507 |
| 12 | .3 | .8 | b 3 | 1.6 | b 1.1 | 2.5 | 1.6 | 7.5 | 19 | 118 | 138 | 254 |
| 13 | .3 | .8 | b 3 | 1.5 | b 1.1 | 2.2 | 1.4 | 206 | 16 | 105 | 120 | 151 |
| 14 | .4 | .9 | b 3 | 1.4 | 1.2 | 1.9 | 1.4 | 65 | 713 | 135 | 118 | 118 |
| 15 | .4 | .9 | b 3.5 | 1.5 | 1.2 | 1.9 | 1.3 | 63 | 6,320 | 288 | 126 | 101 |
| 16 | .4 | * 1.1 | b 4 | 1.5 | 1.5 | 1.9 | 1.2 | 68 | * 1,700 | 171 | 158 | 90 |
| 17 | .4 | 1.2 | b 4 | 1.5 | 1.5 | 1.9 | 1.2 | 73 | 1,070 | 149 | 210 | 85 |
| 18 | .4 | 1.8 | b 3.5 | 1.4 | 1.5 | 2.0 | .9 | 63 | 1,630 | 126 | 278 | 87 |
| 19 | .4 | 1.8 | b 3.5 | 1.4 | 1.5 | 2.3 | 1.1 | 46 | 1,610 | 110 | 252 | 99 |
| 20 | .5 | 1.4 | b 3.5 | 1.1 | 1.5 | 2.5 | 1.2 | 102 | 1,190 | 82 | 249 | * 90 |
| 21 | .5 | 1.4 | b 3.5 | 1.2 | 1.5 | 2.2 | 1.2 | 67 | 840 | 61 | 209 | 85 |
| 22 | .5 | 1.4 | b 3.5 | 1.1 | 1.5 | 1.9 | 1.1 | 60 | 640 | 47 | 206 | 82 |
| 23 | .5 | 1.2 | b 4 | 1.1 | 1.2 | 1.8 | 1.1 | 112 | 523 | 40 | * 333 | 80 |
| 24 | .5 | 1.2 | b 4.5 | 1.1 | b 1.4 | 1.8 | 1.1 | 299 | 447 | 33 | 222 | 79 |
| 25 | .5 | 1.1 | 4.1 | 1.1 | b 1.4 | 1.9 | 1.2 | 261 | 507 | 58 | 162 | 73 |
| 26 | .5 | 1.2 | 3.6 | .8 | 1.6 | 2.2 | 2.2 | 201 | 447 | 83 | 134 | 67 |
| 27 | .6 | 1.2 | 3.6 | 1.2 | 1.5 | 2.0 | 2.5 | 151 | 374 | 138 | 120 | 67 |
| 28 | .6 | 1.2 | 3.6 | 1.2 | 1.6 | 1.8 | 2.3 | 138 | a 300 | 142 | 101 | 64 |
| 29 | .6 | 1.2 | 3.6 | 1.1 | | 1.8 | 3.2 | 119 | a 250 | 251 | 175 | 56 |
| 30 | .6 | 1.4 | 5.1 | 1.1 | | 2.0 | 8.3 | 121 | a 200 | 274 | 120 | 57 |
| 31 | .6 | | 5.4 | 1.2 | | 1.9 | | 173 | | 612 | 105 | |
| Total | 13.0 | 31.2 | 96.5 | 66.0 | 40.9 | 58.7 | 50.3 | 2533.7 | 19507 | 4889 | 7752 | 3794 |
| Mean | 0.42 | 1.04 | 3.11 | 2.13 | 1.46 | 1.89 | 1.68 | 81.7 | 650 | 158 | 250 | 126 |
| Ac-ft | 26 | 62 | 191 | 131 | 81 | 116 | 100 | 5030 | 38690 | 9700 | 15380 | 7530 |

Calendar year 1964: Max 145 Min 0 Mean 2.61 Ac-ft 1,890
Water year 1964-65: Max 6,320 Min 0.2 Mean 106 Ac-ft 77,040

Peak discharge (base, 800 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 6-15 | 0200 | 12.65 | 14,800 | 8- 2 | 2000 | 4.43 | 1,170 |
| 6-16 | 1200 | 6.86 | 3,350 | 9- 1 | 2400 | 4.70 | 1,360 |
| 6-18 | 1630 | 5.78 | 2,210 | 9-11 | 1300 | 4.60 | 1,290 |
| 7-31 | 0200 | 4.40 | 1,090 | | | | |

* Discharge measurement made on this day.
a No gage-height record.
b Stage-discharge relation affected by ice.

7-2215. Canadian River near Sanchez, N. Mex.

Location.--Lat 35°39'15", long 104°22'30", in S½ sec.34, T.17 N., R24 E., at downstream end of bridge pier on State Highway 65, 1 mile upstream from Lagartija Creek, 3 miles northeast of Sanchez, 10 miles downstream from Mora River and 24 miles southwest of Mosquero.

Drainage area.--6,015 sq mi, of which 303 sq mi is probably noncontributing.

Records available.--April 1912 to December 1914, October 1935 to September 1965. Monthly discharge only for some periods, published in WSP 1311.

Gage.--Water-stage recorder. Altitude of gage is 4,500 ft (from topographic map). Apr. 12, 1912, to Dec. 31, 1914, at two sites within 100 ft about 3 miles upstream at different datums. October 1935 to September 1963 at datum 2.00 ft higher.

Average discharge.--32 years (1912-14, 1935-65), 236 cfs (170,900 acre-ft per year).

Extremes.--Maximum discharge during year, 145,000 cfs June 18 (gage height, 31.5 ft, from floodmarks), from rating curve extended above 91,000 cfs on basis of slope-area measurement of peak flow; no flow Apr. 22-27.
1912-14, 1935-65: Maximum discharge, that of June 18, 1965; no flow at times.
The flood of Sept. 29 or 30, 1904 probably exceeded 100,000 cfs, but is believed to have been less than the peak of June 18, 1965.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 56,000 acres above station.

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 24 | 1.3 | 4.0 | b 12 | 9.3 | b 8.0 | 5.2 | 20 | 300 | 1,100 | 1,160 | * 192 |
| 2 | 18 | 1.3 | 4.0 | b 11 | 8.7 | * b 7.0 | 4.0 | 15 | 210 | 2,500 | 1,300 | 196 |
| 3 | 15 | 1.3 | 5.2 | 11 | * 8.1 | b 6.0 | 3.7 | * 13 | 180 | 1,000 | 1,340 | 405 |
| 4 | 13 | 1.3 | b 4.5 | 11 | 8.7 | b 7.0 | 3.4 | 11 | *140 | 700 | 2,170 | 219 |
| 5 | 11 | 1.3 | b 4.5 | 12 | 9.3 | b 8.0 | 2.8 | 8.1 | 100 | 600 | 1,220 | 225 |
| 6 | 8.1 | 1.3 | b 4.5 | 14 | 9.3 | b10 | 2.6 | 7.0 | 80 | 500 | 1,110 | 177 |
| 7 | 7.0 | 1.4 | b 4.5 | 13 | 8.7 | 11 | 2.6 | 5.2 | 60 | * 1,000 | 823 | 167 |
| 8 | 6.0 | 1.3 | * 4.4 | b 9.0 | 9.3 | 9.3 | 2.3 | 4.0 | 45 | 750 | 625 | 182 |
| 9 | 5.6 | 1.1 | b 4.5 | b 7.0 | 9.3 | 8.7 | 2.6 | 7.0 | 35 | 450 | 506 | 170 |
| 10 | 4.8 | 1.1 | b 5.0 | b 6.0 | 10 | 9.3 | 2.1 | 8.0 | 30 | 550 | 470 | 197 |
| 11 | 4.4 | 1.1 | b 5.0 | b 6.0 | b 7.0 | 12 | 2.1 | 7.0 | 25 | 450 | 369 | 577 |
| 12 | 4.4 | 1.1 | b 5.0 | * b 6.0 | b 6.0 | 16 | 1.9 | 1,000 | 21 | 300 | * 336 | 565 |
| 13 | 4.4 | 9 | b 4.0 | b 6.0 | b 5.0 | 15 | 1.3 | 1,700 | 100 | 240 | 299 | 354 |
| 14 | * 3.4 | 1.1 | b 3.5 | b 7.0 | b 5.0 | 11 | 1.1 | 300 | 80 | *369 | 248 | 286 |
| 15 | 3.1 | 1.1 | b 3.5 | b 8.0 | b 5.5 | 10 | .7 | 150 | 27,000 | 1,680 | 257 | 260 |
| 16 | 2.8 | 1.1 | b 4.5 | b 9.0 | b 6.0 | 9.3 | .6 | 100 | * 9,300 | 1,320 | 273 | 197 |
| 17 | 2.6 | 1.9 | b 4.5 | b 10 | b 7.0 | 9.3 | .6 | 80 | 13,200 | 590 | 463 | 165 |
| 18 | 2.6 | 2.6 | b 3.7 | b 11 | b 7.0 | b 8.0 | .6 | 65 | *44,000 | 457 | 411 | 149 |
| 19 | 2.6 | 2.6 | b 3.7 | 11 | b 7.0 | b 7.0 | * .3 | 60 | *13,900 | 340 | 567 | 151 |
| 20 | 2.6 | 2.8 | 7.5 | 11 | 7.5 | b 6.0 | .2 | * 90 | 4,400 | 279 | 478 | 144 |
| 21 | 2.1 | 2.8 | 8.7 | 11 | 7.5 | b 7.0 | .1 | 70 | * 2,800 | 228 | 1,180 | * 144 |
| 22 | 1.9 | 2.6 | 10 | 11 | 7.5 | b 8.0 | 0 | 55 | 2,000 | 184 | 2,110 | 138 |
| 23 | 1.6 | * 2.6 | 11 | 10 | 8.1 | 8.7 | 0 | 300 | 1,350 | 167 | 1,240 | 142 |
| 24 | 1.6 | 2.6 | 11 | 11 | 8.7 | 7.0 | 0 | 700 | * 1,150 | 151 | 1,350 | 136 |
| 25 | 1.6 | 2.3 | 11 | 15 | 9.3 | 5.6 | 0 | 500 | 1,500 | 251 | 978 | 136 |
| 26 | 1.4 | 2.8 | 11 | 13 | 11 | * 6.0 | 0 | 350 | 2,000 | 308 | 525 | 129 |
| 27 | 1.4 | 4.4 | 11 | 9.3 | 8.7 | 6.0 | 0 | 230 | 1,400 | * 192 | 380 | 121 |
| 28 | 1.4 | 4.0 | 14 | 9.3 | 8.1 | 5.6 | 1.0 | 200 | 1,000 | 360 | 299 | 117 |
| 29 | 1.4 | 4.4 | 14 | 9.3 | - | 5.2 | 15 | 170 | * 800 | 481 | 316 | 358 |
| 30 | 1.4 | 4.0 | 13 | 11 | - | 5.2 | 25 | 160 | 600 | 912 | 258 | 172 |
| 31 | 1.4 | | 13 | 11 | | 5.2 | | 200 | | 912 | 222 | |
| Total | 162.6 | 61.5 | 217.7 | 311.9 | 222.6 | 257.4 | 81.8 | 6,585.3 | 127,806 | 19,321 | 23,283 | 6,571 |
| Mean | 5.25 | 2.05 | 7.02 | 10.1 | 7.95 | 8.30 | 2.73 | 212 | 4,260 | 623 | 751 | 219 |
| Ac-ft | 323 | 122 | 432 | 619 | 442 | 511 | 162 | 13,060 | 253,500 | 38,320 | 46,180 | 13,030 |

Calendar year 1964: Max 1,420 Min 0 Mean 20.5 Ac-ft 14,900
Water year 1964-65: Max 44,000 Min 0 Mean 507 Ac-ft 366,700

Peak discharge (base, 5,000 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 5-13 | Unknown | 8.44 | 9,460 | 6-18 | about 1300 | † 31.5 | 145,000 |
| 6-15 | Unknown | †28.56 | 126,000 | 8- 4 | 0630 | ‡ 8.50 | 6,450 |

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.
† From floodmarks.
‡ From temporary gage ½ mile upstream, different datum.

Note.--No gage-height record Apr. 26 to May 2, May 10 to July 13. Interim operation at temporary site ½ mile upstream July 1 to Sept. 30.

## 7-2225. Conchas River at Variadero, N. Mex.

Location.--Lat 35°24'10", long 104°26'35", in NE¼NE¼ sec.36, T.14 N.,R.23 E., on left bank 1.5 miles northeast of Variadero and 15 miles west of Conchas Dam.

Drainage area.--523 sq mi, of which 130 sq mi is probably noncontributing.

Records available.--October 1936 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 4,430 ft (from topographic map). Prior to Mar. 30, 1942, at site 1½ miles upstream at different datum. Mar. 30, 1942, to May 18, 1950, at present site at datum 0.5 ft higher.

Average discharge.--29 years, 18.3 cfs (13,250 acre-ft per year).

Extremes.--Maximum discharge during year, 8,880 cfs June 17 (gage height, 10.40 ft, from floodmarks), from rating curve extended above 760 cfs as explained below; no flow at times.
1936-65: Maximum discharge, 44,000 cfs Sept. 1, 1942 (gage height, 19.96 ft, present datum), from rating curve extended above 760 cfs on basis of slope-area measurements at gage heights 10.5 and 19.96 ft (present datum); no flow at times.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Diversions for irrigation of about 300 acres above station.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used May 25 to June 14, Sept. 27-30)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 0.52 | 0.0 | 0.9 | 1.3 | 1.3 | 10 | 2.2 | 141 |
| .6 | .05 | 1.0 | 2.6 | 1.5 | 21 | 2.6 | 302 |
| .7 | .2 | 1.1 | 4.4 | 1.7 | 39 | 3.2 | 630 |
| .8 | .6 | 1.2 | 6.8 | 1.9 | 68 | 4.1 | 1,240 |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | a 0.9 | 0 | 0.1 | 0.1 | 0.1 | a 0.3 | 0.1 | 0 | 15 | 13 | 8.8 | * 0.7 |
| 2 | a .8 | 0 | .1 | .1 | .1 | * .2 | .1 | 0 | 4.2 | 6.8 | 7.1 | .7 |
| 3 | a .7 | 0 | .1 | .1 | * .1 | b .1 | 0 | * 0 | 2.4 | 4.4 | 5.4 | .6 |
| 4 | a .6 | 0 | .1 | .1 | .1 | .1 | 0 | 0 | * 1.6 | 3.3 | 4.9 | .4 |
| 5 | a .4 | .1 | .1 | .1 | .1 | .1 | 0 | 0 | .9 | 2.5 | 19 | .6 |
| 6 | a .3 | .1 | .1 | .1 | .1 | .1 | 0 | 0 | .9 | 2.0 | 18 | .7 |
| 7 | a .2 | .1 | .1 | .1 | .1 | .1 | 0 | 0 | .5 | 61 | 5.8 | 2.5 |
| 8 | a .1 | 0 | * .1 | .2 | .1 | .1 | 0 | 0 | .3 | 22 | 6.8 | 30 |
| 9 | a 0 | 0 | .1 | b .2 | .1 | .1 | 0 | 0 | .3 | 8.2 | 5.6 | 31 |
| 10 | a 0 | 0 | .1 | .2 | .1 | 0 | 0 | 0 | .5 | 3.7 | 5.1 | 19 |
| 11 | a 0 | 0 | .1 | .2 | .1 | 1.0 | 0 | 0 | 70 | 2.4 | 2.1 | 424 |
| 12 | a 0 | 0 | .1 | * .2 | b 0 | .7 | 0 | .1 | 18 | 1.7 | * 1.5 | 338 |
| 13 | a 0 | 0 | .1 | .2 | b 0 | .3 | 0 | .1 | 3.7 | 6.6 | 1.0 | 62 |
| 14 | * 0 | 0 | .1 | .1 | b 0 | .2 | 0 | 0 | 1.8 | *157 | .8 | 25 |
| 15 | 0 | 0 | .1 | .1 | b 0 | .2 | 0 | 0 | 79 | 12 | .7 | 11 |
| 16 | 0 | .1 | .1 | .1 | b 0 | .1 | 0 | 0 | 145 | 3.9 | .6 | 6.6 |
| 17 | 0 | .1 | .1 | .1 | 0 | .1 | 0 | 0 | 1,230 | 1.8 | 3.3 | 4.9 |
| 18 | 0 | .1 | 0 | .1 | 0 | .1 | 0 | 0 | 65 | 1.3 | 2.0 | 4.4 |
| 19 | 0 | .1 | 0 | .1 | 0 | .1 | * 0 | 26 | 613 | .7 | .8 | 11 |
| 20 | 0 | .1 | .2 | .1 | 0 | .1 | 0 | *166 | 78 | .5 | .6 | 4.2 |
| 21 | 0 | .1 | .2 | .1 | 0 | .1 | 0 | 12 | 28 | .3 | 1.6 | * 2.5 |
| 22 | 0 | .1 | .1 | .1 | 0 | .1 | 0 | 1.2 | 15 | .2 | 426 | 2.0 |
| 23 | 0 | * .1 | .1 | .1 | .1 | .1 | 0 | 332 | 10 | .2 | 68 | 1.6 |
| 24 | 0 | .1 | .1 | .1 | a .1 | .1 | 0 | 376 | 6.8 | .2 | 27 | 1.3 |
| 25 | 0 | .1 | .1 | .1 | a .1 | .1 | 0 | 38 | 320 | 158 | 12 | 1.1 |
| 26 | 0 | .1 | .1 | .1 | a .2 | * .1 | 2.7 | 7.5 | 159 | 38 | 6.1 | .9 |
| 27 | 0 | .1 | .1 | .1 | a .3 | .1 | .6 | 2.8 | 33 | *13 | 3.5 | .7 |
| 28 | 0 | .1 | .1 | .1 | a .4 | .1 | .2 | 1.6 | 17 | 115 | 2.5 | .6 |
| 29 | 0 | .1 | .1 | .1 | — | .1 | .1 | 1.1 | 85 | 183 | 1.6 | .4 |
| 30 | 0 | .1 | .1 | .1 | ---------- | .1 | .1 | 1.6 | 31 | 29 | 1.2 | .3 |
| 31 | 0 | ---------- | .1 | .1 | ---------- | .1 | ---------- | 55 | ---------- | 12 | .9 | ---------- |
| Total | 4.0 | 1.8 | 3.1 | 3.7 | 2.3 | 5.2 | 3.9 | 1,021.0 | 3,034.9 | 863.7 | 650.3 | 988.7 |
| Mean | 0.13 | 0.06 | 0.10 | 0.12 | 0.08 | 0.17 | 0.13 | 32.9 | 101 | 27.9 | 21.0 | 33.0 |
| Ac-ft | 7.9 | 3.6 | 6.1 | 7.3 | 4.6 | 10 | 7.7 | 2,030 | 6,020 | 1,710 | 1,290 | 1,960 |

Calendar year 1964: Max 430 Min 0 Mean 3.47 Ac-ft 2,520
Water year 1964-65: Max 1,230 Min 0 Mean 18.0 Ac-ft 13,060

Peak discharge (base, 1,500 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 5-23 | 2245 | 5.76 | 2,820 | 6-19 | 0715 | 5.22 | 2,220 |
| 6-17 | about 0100 | 10.40 | 8,880 | 6-25 | 1945 | 4.70 | 1,710 |

* Discharge measurement made on this day (some less than 0.05 cfs).
a No gage-height record.
b Stage-discharge relation affected by ice.

7-2230. Bell Ranch Canal near Conchas Dam, N. Mex.

Location.--Lat 35°24'00", long 104°11'05", in Pablo Montoya Grant, on left bank 1,270 ft downstream from Conchas Dam and 1¾ miles north of Conchas Dam Post Office, San Miguel County.
Records available.--October 1942 to September 1965.
Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 4,150 ft (from headgate elevations).
Extremes.--1942-65: Maximum daily discharge, 21 cfs July 10-13, Sept. 7-10, 1948, June 27, Aug. 7, 1951; no flow at times each year.
Remarks.--Records good. Canal diverts from Conchas Reservoir for irrigation of about 700 acres on Bell Ranch.

Monthly discharge in cubic feet per second, water year October 1964 to September 1965

| Month | Maximum | Minimum | Mean | Runoff in acre-feet |
|---|---|---|---|---|
| October | 5.2 | 0 | 4.27 | 262 |
| November | 3.0 | 0 | 1.52 | 91 |
| December | 0 | 0 | 0 | 0 |
| Calendar year 1964 | 12 | 0 | 2.90 | 2,110 |
| January | 0 | 0 | 0 | 0 |
| February | 0 | 0 | 0 | 0 |
| March | 6.0 | 0 | 0.47 | 29 |
| April | 8.1 | 3.1 | 7.50 | 446 |
| May | 5.8 | 0 | 3.50 | 215 |
| June | 6.4 | 0 | 1.79 | 106 |
| July | 15 | 0 | 5.46 | 336 |
| August | 11 | 0 | 5.04 | 310 |
| September | 9.3 | 0 | 2.75 | 163 |
| Water year 1964-65 | 15 | 0 | 2.71 | 1,960 |

7-2233. Conchas Canal below Conchas Dam, N. Mex.

Location.--Lat 35°21'45", long 104°10'15", in S½ sec. 3, T.13 N., R.26 E., on left bank at upstream end of tunnel transition section, about 1 mile downstream from headgates in Conchas Dam and 22 miles north of Newkirk.
Records available.--September 1945 to June 1949, April 1954 to June 1955, September 1961 to September 1965.
Gage.--Water-stage recorder and concrete control. Datum of gage is 4,156.9 ft above mean sea level (from Bureau of Reclamation elevation of concrete structure). Prior to Nov. 19, 1948, at site three-quarters of a mile upstream at different datum.
Extremes.--1945-49, 1954-55, 1961-65: Maximum daily discharge, 751 cfs Aug. 31, 1961; no flow during most of each winter period.
Remarks.--Records good above 100 cfs and poor below. No diversion or wasteway between canal headworks and gage. Records of chemical analyses and water temperatures for the water year 1965 are published in part 2 of this report

Monthly discharge, in cubic feet per second, water year October 1964 to September 1965

| Month | Maximum | Minimum | Mean | Runoff in acre-feet |
|---|---|---|---|---|
| October | 0 | 0 | 0 | 0 |
| November | 0 | 0 | 0 | 0 |
| December | 0 | 0 | 0 | 0 |
| Calendar year 1964 | 478 | 0 | 106 | 77,150 |
| January | 0 | 0 | 0 | 0 |
| February | 0 | 0 | 0 | 0 |
| March | 0 | 0 | 0 | 0 |
| April | 0 | 0 | 0 | 0 |
| May | 0 | 0 | 0 | 0 |
| June | 434 | 0 | 116 | 6,880 |
| July | 718 | 153 | 489 | 30,090 |
| August | 521 | 138 | 334 | 20,550 |
| September | 371 | 159 | 272 | 16,210 |
| Water year 1964-65 | 718 | 0 | 102 | 73,730 |

7-2235. Conchas Reservoir near Conchas Dam, N. Mex.

Location.--Lat 35°24'10", long 104°11'25", in Pablo Montoya Grant, stilling well within concrete portion of Conchas Dam on Canadian River, 1¾ miles northwest of Conchas Dam Post Office and about 24 miles north of Newkirk.

Drainage area.--7,409 sq mi, of which 433 sq mi is probably noncontributing.

Records available.--December 1938 to September 1965.

Gage.--Water-stage recorder. Datum of gage is at mean sea level, datum of 1929.

Extremes.--Maximum contents during year, 360,800 acre-ft Aug. 6 (elevation, 4,201.83 ft); minimum, 87,840 acre-ft May 10 (elevation, 4,157.61 ft).
1938-65: Maximum contents, 479,600 acre-ft Apr. 24, 1942 (elevation, 4,208.41 ft); minimum after initial filling, that of May 10, 1965; minimum elevation, 4,155.80 ft Sept. 24, 1954.

Remarks.--Reservoir is formed by dam consisting of concrete main section and earthfill wings, completed Sept. 15, 1939; storage began Dec. 29, 1938. Capacity, 352,600 acre-ft between elevations 4,060.0 and 4,201.0 ft (crest of 300-foot ungated service spillway); dead storage, 79,600 acre-ft at elevation 4,155 ft. Reservoir usually not drawn below elevation, 4,157.35 ft (sill of irrigation outlet), capacity, 86,990 acre-ft, except for minor sluicing and operation of small powerplant; during 1954-55, 1964 there was some pumping into Conchas Canal. Capacity of 198,200 acre-ft between elevations 4,201.0 (crest of 300-foot ungated service spillway) and 4,218.0 ft (crest of 3,000-foot ungated emergency spillway) acts as detention storage in the control of floods. Figures given herein represent total contents. Reservoir is used for irrigation, flood control, and recreation. Diversion above station for irrigation of about 57,000 acres. Direct diversions through Conchas Dam to Conchas Canal and Bell Ranch Canal (see 7-2230, 7-2233) irrigate about 36,000 acres near Tucumcari and on Bell Ranch.

Cooperation.--Records furnished by Corps of Engineers.

Month-end elevation and contents, water year October 1964 to September 1965

| Date | Elevation (feet) | Contents (acre-feet) | Change in contents (acre-feet) |
|---|---|---|---|
| Sept. 30 | 4,159.44 | 93,980 | - |
| Oct. 31 | 4,158.95 | 92,300 | -1,680 |
| Nov. 30 | 4,158.56 | 90,990 | -1,310 |
| Dec. 31 | 4,158.38 | 90,380 | -610 |
| Calendar year 1964 | - | - | * -84,520 |
| Jan. 31 | 4,158.39 | 90,420 | +40 |
| Feb. 28 | 4,158.33 | 90,220 | -200 |
| Mar. 31 | 4,158.30 | 90,120 | -100 |
| Apr. 30 | 4,157.88 | 88,720 | -1,400 |
| May 31 | 4,162.97 | 106,800 | +18,080 |
| June 30 | 4,201.01 | 352,600 | +245,800 |
| July 31 | 4,201.12 | 353,700 | +1,100 |
| Aug. 31 | 4,201.02 | 352,700 | -1,000 |
| Sept. 30 | 4,200.73 | 349,900 | -2,800 |
| Water year 1964-65 | - | - | +255,920 |

* Contents on Dec. 31, 1963, by new capacity table 174,900 acre-ft.

7-2245. Canadian River below Conchas Dam, N. Mex.

Location.--Lat 35°24'30", long 104°10'10", in sec.27, T.14 N., R.26 E. (projected), in Pablo Montoya Grant, on right bank 2.4 miles north of Conchas Dam Post Office (1960 location) and 2.8 miles downstream from Conchas Dam.

Drainage area.--7,417 sq mi, of which 433 sq mi is probably noncontributing.

Records available.--May 1936 to December 1938, January 1942 to September 1965.

Gage.--Water-stage recorder. Datum of gage is 4,021.90 ft above mean sea level, datum of 1929. Prior to Dec. 13, 1941, at site 0.7 mile downstream at datum 6.2 ft higher.

Average discharge.--24 years (1941-65), 93 cfs (67,330 acre-ft per year).

Extremes.--Maximum discharge during year, 9,800 cfs Aug. 4 (gage height, 16.15 ft); minimum daily discharge, 1 cfs Apr. 24, May 26 to June 10.
1936-65. Maximum discharge, 73,000 cfs June 3, 1937 (may have been affected by construction work on Conchas Dam); maximum gage height, 20.34 ft May 30, 1938, present datum (backwater from temporary construction dam); no flow at times.

Remarks.--Records fair except those for periods of no gage-height record, which are poor. Flow regulated by Conchas Reservoir (see preceding page). Diversions above station for irrigation of about 90,000 acres, 36,000 of which are below station. Bell Ranch Canal (see No.7-2230)diverts directly from Conchas Dam and flumes from right to left bank just above River gage for irrigation of about 700 acres on Bell Ranch. Conchas Canal (see No.7-2233)diverts directly from Conchas Dam and bypasses gage for irrigation of about 35,000 acres around Tucumcari.

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 5 | 3 | a 2 | 2 | 3 | 4 | 1 | 15 | 63 | a 6 |
| 2 | 2 | 4 | 5 | 3 | a 2 | 2 | 3 | 4 | 1 | 48 | 241 | a 4 |
| 3 | 2 | 4 | * 5 | 3 | a 2 | 2 | 3 | * 4 | 1 | 308 | 491 | a 3 |
| 4 | 2 | 4 | 5 | 3 | a 2 | 2 | 3 | 4 | 1 | a280 | *2,340 | a 2 |
| 5 | 2 | 4 | 5 | 2 | 2 | 2 | 3 | 3 | 1 | a1,300 | 874 | a 2 |
| 6 | 2 | 4 | 5 | * 2 | 2 | 2 | 3 | 3 | 1 | *a1,000 | 932 | a 2 |
| 7 | 2 | 4 | 5 | 2 | 2 | 2 | 3 | 3 | 1 | 184 | 932 | a 2 |
| 8 | 2 | 4 | 5 | 2 | 2 | 2 | 3 | 3 | 1 | 184 | 829 | a 2 |
| 9 | 2 | 4 | 5 | 2 | 2 | 2 | 3 | 3 | 1 | 122 | 720 | a 2 |
| 10 | 2 | 4 | 5 | 2 | 2 | 2 | 3 | 4 | 1 | 81 | 1,560 | a 2 |
| 11 | 2 | 4 | 4 | 2 | 2 | 3 | 3 | 3 | 2 | 59 | 252 | a100 |
| 12 | 2 | 4 | 4 | 2 | * 2 | 3 | 3 | 3 | 2 | 14 | 193 | 233 |
| 13 | 2 | 4 | 4 | 2 | 2 | 3 | 3 | 3 | 2 | .4 | 147 | 259 |
| 14 | 2 | 4 | 4 | 2 | 2 | 3 | 4 | 3 | 2 | 56 | 114 | 217 |
| 15 | 2 | 5 | 4 | 2 | 2 | 2 | 4 | 2 | 2 | 64 | 81 | 152 |
| 16 | 2 | 5 | 4 | 2 | 2 | 2 | 4 | 2 | 2 | 294 | a 30 | 125 |
| 17 | 2 | 7 | 4 | 2 | 2 | 2 | 4 | 2 | 2 | 409 | a 10 | *61 |
| 18 | 2 | 6 | 4 | 3 | 2 | 2 | 3 | 2 | 2 | 285 | a 4 | a80 |
| 19 | * 2 | 6 | 4 | 3 | 2 | 2 | 3 | 3 | 10 | * 121 | a 2 | 64 |
| 20 | 2 | 6 | 4 | 2 | 2 | 2 | 3 | 3 | 4 | 51 | a 2 | 75 |
| 21 | 3 | 6 | 4 | 2 | 2 | 2 | 3 | 3 | 3 | 4 | a 3 | a 30 |
| 22 | 3 | 6 | 4 | 2 | 2 | 2 | 2 | 3 | 3 | a 3 | 112 | a15 |
| 23 | 3 | 6 | 4 | 2 | a3 | * 2 | 2 | 4 | 3 | a 5 | 374 | a10 |
| 24 | 3 | 6 | 4 | 2 | a3 | 2 | 1 | 3 | 3 | a 3 | 1,390 | a 7 |
| 25 | 3 | 6 | 4 | 2 | a 2 | 3 | 2 | 3 | 77 | a 2 | 294 | a 25 |
| 26 | 3 | 6 | 3 | 2 | a 2 | 3 | 3 | *1 | 10 | a 2 | 294 | a 10 |
| 27 | 3 | 6 | 3 | 2 | a 2 | 3 | 4 | 1 | 5 | a 2 | 227 | a 7 |
| 28 | 3 | 6 | 3 | 2 | 2 | 3 | 3 | 1 | 4 | a 3 | 165 | a 6 |
| 29 | 3 | 6 | 3 | 2 | — | 3 | 4 | 1 | 3 | a 2 | 141 | a 5 |
| 30 | 3 | 6 | 3 | 2 | ---------- | 4 | 4 | 1 | 10 | a 3 | 90 | a 20 |
| 31 | 3 | ---------- | 3 | 2 | ---------- | 3 | ---------- | 1 | ---------- | a10 | * a 10 | ---------- |
| Total | 73 | 150 | 128 | 68 | 58 | 74 | 92 | 83 | 161 | 4,918 | 12,917 | 1,528 |
| Mean | 2.4 | 5.0 | 4.1 | 2.2 | 2.1 | 2.4 | 3.1 | 2.7 | 5.4 | 159 | 417 | 50.9 |
| Ac-ft | 145 | 298 | 254 | 135 | 115 | 147 | 182 | 165 | 319 | 9,750 | 25,620 | 3,030 |

Calendar year 1964 : Max 9 Min 2 Mean 5.0 Ac-ft 3,630
Water year 1964-65 : Max 2,340 Min 1 Mean 55.5 Ac-ft 40,160

* Discharge measurement made on this day.
a No gage-height record.

## 7-2265. Ute Creek near Logan, N. Mex.

Location (revised).--Lat 35°26'55", long 103°31'40", in SW¼SE¼ sec.10, T.14 N., R.32 E., on right bank upstream from flowline of Ute Reservoir, 3½ miles upstream from State Road 155, 4 miles north of Harding-Quay County line, 9 miles northwest of Logan and 10 miles upstream from mouth.

Drainage area.--2,060 sq mi, of which 617 sq mi is probably noncontributing.

Records available.--August 1904 to June 1906 and April 1909 to May 1914 (gage heights and discharge measurements only), January 1942 to September 1965. Records of discharge for August 1904 to June 1906, April 1909 to December 1911, published in WSP 307, have been found to be unreliable and should not be used.

Gage.--Water-stage recorder. Altitude of gage is 3,840 ft (from topographic map). Prior to Aug. 1, 1911, staff gage at site 5½ miles downstream at different datum. Aug. 1, 1911 to May 23, 1914, water-stage recorder at site 5¾ miles downstream at different datum. January 1942 to December 1955, water-stage recorder at site 4 miles downstream at datum of 3,758.50 ft above mean sea level; at that site at datum 1.00 ft lower December 1955 to September 1964.

Average discharge.--23 years, 29.4 cfs (21,280 acre-ft per year).

Extremes.--Maximum discharge during year, 11,700 cfs June 19 (gage height, 6.80 ft), from rating curve extended above 1,800 cfs by logarithmic plotting and computed discharge at former site; no flow for long periods.

1942-65: Maximum discharge, 24,500 cfs May 28, 1946, July 12, 1951 (gage height, 9.4 ft, site then in use, 1964 datum), from rating curve extended above 7,700 cfs on basis of slope-area measurements at gage heights 6.2 and 8.2 ft; no flow at times.

Flood of May 1, 1914, reached a stage of 22.95 ft, site and datum then in use. Another major flood reached a stage of 17.0 ft (1964 datum) sometime in 1941, from information furnished by Bureau of Reclamation (discharge, about 70,000 cfs).

Remarks.--Records poor. Diversions for irrigation of a few hundred acres above station. Records of chemical analyses and water temperatures for water year 1965 are published in part 2 of this report.

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 0 | | | | (*) | | 0 | d 0 | a15 | 47 | 12 |
| 2 | 6 | 0 | | | | | | 0 | 0 | a 8 | 57 | 1 |
| 3 | 3 | 0 | | | | | | 0 | 0 | a60 | * 26 | *0 |
| 4 | a1 | 0 | | | | | | 0 | 0 | a10 | 49 | 0 |
| 5 | *0 | 0 | | | | | | 0 | 0 | a 5 | 29 | 0 |
| 6 | 0 | 0 | | | | | | 0 | 0 | a3 | 11 | 0 |
| 7 | 0 | 0 | (*) | | | | | 0 | 0 | a2 | 14 | 0 |
| 8 | 0 | 0 | | | | | | 0 | 0 | a1 | 25 | 0 |
| 9 | 0 | 0 | | | | | | 0 | 0 | a0 | 10 | 0 |
| 10 | 0 | 0 | | | | | | 0 | 10 | a0 | 4 | 14 |
| 11 | 0 | 0 | | | | | | 0 | 33 | a0 | a 1 | 165 |
| 12 | 0 | *0 | | | | | | 0 | 10 | a0 | a 0 | 110 |
| 13 | 0 | 0 | | | | | | 9 | 5 | * a0 | 0 | 20 |
| 14 | 0 | 0 | | | | | | *172 | 2 | 35 | 0 | 3 |
| 15 | 0 | 1 | | | | | | 72 | 1,200 | 113 | 0 | 0 |
| 16 | 0 | 16 | | | | | | 34 | 113 | 65 | 19 | * 0 |
| 17 | 0 | 1 | | | (*) | | | d8 | 7 | 57 | 20 | 1 |
| 18 | 0 | 0 | | | | | | d4 | * 189 | 25 | 120 | 101 |
| 19 | 0 | 0 | | | | | | d3 | 2,350 | 14 | 223 | 562 |
| 20 | *0 | 0 | | | | | (*) | d2 | 341 | a5 | * 888 | 185 |
| 21 | 0 | 0 | | | | | | d2 | 10 | a3 | 288 | 35 |
| 22 | 0 | 0 | | | | | | d3 | a 5 | a2 | 69 | 10 |
| 23 | 0 | 0 | | | | | | d5 | a 3 | a1 | 154 | *6 |
| 24 | 0 | 0 | | | | (*) | | * 547 | a 1 | a1 | * 221 | 5 |
| 25 | 0 | 0 | | | | | | * 299 | 1,100 | 192 | 335 | 4 |
| 26 | 0 | 0 | | | | | | 36 | 111 | 9 | 113 | 2 |
| 27 | 0 | 0 | | | | | | 12 | a15 | a1 | 45 | 1 |
| 28 | 0 | 0 | | (*) | | | | *7 | a 5 | * 237 | 19 | 1 |
| 29 | 0 | 0 | | | | | | 5 | 152 | 60 | 8 | 0 |
| 30 | 0 | 0 | | | | | | 1 | 74 | 11 | 2 | 0 |
| 31 | 0 | ------ | (*) | | ------ | | ------ | d 0 | ------ | 3 | 34 | ------ |
| | 0 | | | | | | | | | | | |
| Total | 10 | 18 | 0 | 0 | 0 | 0 | 0 | 1,221 | 5,736 | 938 | 2,831 | 1,238 |
| Mean | 0.3 | 0.6 | 0 | 0 | 0 | 0 | 0 | 39.4 | 191 | 30.3 | 91.3 | 41.3 |
| Ac-ft | 20 | 36 | 0 | 0 | 0 | 0 | 0 | 2,420 | 11,380 | 1,860 | 5,620 | 2,460 |

Calendar year 1964: Max 1,400 Min 0 Mean 17.5 Ac-ft 12,670
Water year 1964-65: Max 2,350 Min 0 Mean 32.9 Ac-ft 23,800

Peak discharge (base, 4,500 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 6-15 | 1100 | 5.70 | 7,450 | 6-25 | 0600 | 4.88 | 4,990 |
| 6-19 | 1430 | 6.80 | 11,700 | | | | |

* Discharge measurement or observation of no flow made on this day.
a No gage-height record.
d Doubtful gage-height record.

7-2268. Ute Reservoir near Logan, N. Mex.

Location.--Lat 35°20'35", long 103°26'40", in NW¼ sec.21, T.13 N., R.33 E., on face of Ute Dam on Canadian River 2½ miles southwest of Logan and 3½ miles downstream from Ute Creek.

Drainage area.--11,140 sq mi, of which 1,110 sq mi is probably noncontributing.

Records available.--May 1963 to September 1965.

Gage.--Inclined cable gage. Datum of gage is at mean sea level (levels by Interstate Stream Commission).

Extremes.--Maximum contents during year, 111,700 acre-ft Sept. 19 (elevation, 3,760.5 ft); minimum, 29,090 acre-ft May 12 (elevation, 3,731.0 ft).
1963-65: Maximum contents, that of Sept. 19, 1965; minimum, 22,230 acre-ft Aug. 7, 1964 (elevation, 3,726.2 ft).

Remarks.--Reservoir is formed by earthfill dam 121 ft high above streambed, 2,050 ft long; an earth-dike section on north (left) bank of Canadian River is 2,860 ft long and has a maximum height of 27 ft; a concrete spillway section 840 ft long is constructed between main embankment and the dike. Construction completed in May 1963; storage began Dec. 13, 1962. Capacity, 109,600 acre-ft at elevation 3,760.0 ft (crest of 840-ft ungated service spillway). Top of dam is at elevation 3,801.0 ft. Maximum design capacity of 307,000 acre-ft at elevation 3,791.0 ft (31 ft above crest of 840-ft spillway) allows 197,400 acre-ft of capacity for protection of the structure. Dead storage, 20,710 acre-ft at elevation 3,725.0 ft (crest of outlet tower); inactive pool of 49,870 acre-ft below elevation 3,741.6 ft is maintained for fish and wildlife. Figures given herein represent total contents and are based on once-daily gage readings usually made at 0700 Mountain Standard Time (gage located in Central time zone). Reservoir is planned to furnish water for municipal and industrial uses and for recreational purposes; some incidental flood control. Diversions above station for irrigation of about 90,000 acres. Records of chemical analyses and water temperatures for water year 1965 are published in part 2 of this report.

Cooperation.--Records furnished by New Mexico Interstate Stream Commission.

Month-end elevations and contents, water year October 1964 to September 1965

| Date | Elevation (feet) | Contents (acre-feet) | Change in contents (acre-feet) |
|---|---|---|---|
| Sept. 30 | 3,733.0 | 32,380 | - |
| Oct. 31 | 3,732.3 | 31,200 | -1,180 |
| Nov. 30 | 3,732.0 | 30,700 | -500 |
| Dec. 31 | 3,732.0 | 30,700 | 0 |
| Calendar year 1964 | - | - | +6,600 |
| Jan. 31 | 3,731.8 | 30,370 | -330 |
| Feb. 28 | 3,731.6 | 30,050 | -320 |
| Mar. 31 | 3,731.9 | 30,530 | +480 |
| Apr. 30 | 3,731.2 | 29,410 | -1,120 |
| May 31 | 3,733.7 | 33,600 | +4,190 |
| June 30 | 3,748.6 | 68,790 | +35,190 |
| July 31 | 3,753.0 | 83,050 | +14,260 |
| Aug. 31 | 3,759.9 | 109,200 | +26,150 |
| Sept. 30 | 3,759.0 | 105,500 | -3,700 |
| Water year 1964-65 | - | - | +73,120 |

## 7-2270. Canadian River at Logan, N. Mex.

Location.--Lat 35°21'20", long 103°25'20", in NE¼ sec.15, T.13 N., R.33 E., on left bank 1,100 ft upstream from bridge on U. S. Highway 54, half a mile south of Logan, 1½ miles upstream from Chicago, Rock Island & Pacific Railroad Co. bridge, 2 miles downstream from Ute Dam, 4¼ miles upstream from Revuelto Creek (formerly Tucumcari Creek), and 5½ miles downstream from Ute Creek.

Drainage area.--11,141 sq mi, of which 1,110 sq mi is probably noncontributing.

Records available.--June 1904 to November 1905 (gage heights and discharge measurements only), December 1908 to September 1909, February 1910, April to July 1910, August 1910 to September 1911 (gage heights and discharge measurements only), October 1911 to May 1914, January to May 1924, September 1924 to July 1925, January 1927 to April 1934, August 1934 to September 1965. Monthly discharge only for some periods, published in WSP 1311. Records for December 1909, January 1910, and May to July 1934, published in WSP 267, 287, and 762 have been found to be unreliable and should not be used.

Gage.--Water-stage recorder at present site since Aug. 5, 1910; at different datums prior to Oct. 21, 1928, and at datum 1.54 ft lower Oct. 21, 1928, to Sept. 30, 1934. Altitude of present gage is 3,670 ft (from river-profile study). Prior to Aug. 5, 1910, staff gages 1½ miles downstream at different datums (datum of gage, 3,651 ft above mean sea level Dec. 22, 1908 to Aug. 4, 1910).

Average discharge.--15 years (1908-9, 1911-13, 1926-38), 392 cfs (283,800 acre-ft per year), prior to completion of Conchas Dam; 24 years (1938-62), 257 cfs (186,100 acre-ft per year), prior to completion of Ute Dam.

Extremes.--Maximum discharge during year, 1,690 cfs Sept. 19 (gage height, 6.55 ft); minimum, 0.2 cfs May 9.
1930-65: Maximum discharge, 219,000 cfs Sept. 22, 1941 (gage height, 29.3 ft, from floodmarks), from rating curve extended above 75,000 cfs by logarithmic plotting; no flow at times prior to completion of Ute Dam.
Maximum discharge known, 278,000 cfs Sept. 30, 1904 (gage height, about 36.5 ft, site and datum used in 1909), from rating curve extended above 14,000 cfs, from Ninth Biennial Report of State engineer.

Remarks.--Records fair except those for periods of ice effect, which are poor. Flow regulated by Conchas Reservoir, 45 miles upstream (see 7-2235) and Ute Reservoir, 2 miles upstream (see 7-2268). Diversions for irrigation of about 90,000 acres above station.

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.9 | 2.0 | 1.8 | 2.2 | 1.8 | 2.2 | 2.7 | 1.0 | 0.8 | 2.7 | 2.4 | 3.0 |
| 2 | .8 | 1.8 | 2.2 | 2.0 | 2.2 | 2.0 | 3.0 | .9 | .8 | 2.4 | 2.0 | 20 |
| 3 | .9 | 1.8 | 2.7 | 2.2 | 2.0 | * 2.4 | 2.7 | .9 | .8 | 2.4 | * 1.4 | * 22 |
| 4 | .8 | 2.2 | 2.0 | 2.2 | 2.0 | 2.4 | 2.7 | .9 | .8 | 2.2 | 2.4 | 7.6 |
| 5 | * .9 | 2.4 | 2.0 | 2.2 | 2.0 | 2.0 | 2.4 | .5 | .6 | 2.0 | 1.6 | 6.0 |
| 6 | 1.2 | 2.2 | 2.0 | 2.2 | 2.0 | 2.0 | 2.0 | .5 | .6 | 2.0 | 1.4 | 6.8 |
| 7 | 1.4 | 2.0 | * 2.0 | 2.2 | 2.0 | 2.4 | 2.0 | .5 | .6 | 2.2 | 1.4 | 4.4 |
| 8 | 1.4 | 1.6 | 2.0 | 2.0 | 2.7 | 2.4 | 1.6 | .4 | .6 | 1.8 | 1.6 | 2.7 |
| 9 | 1.4 | 1.6 | 2.0 | 2.0 | 2.2 | 3.0 | 1.6 | .4 | .6 | 2.0 | 1.6 | 3.7 |
| 10 | 1.4 | 1.4 | 2.0 | 2.0 | 2.2 | 3.0 | 1.2 | .8 | 1.4 | 2.2 | 1.6 | 1.8 |
| 11 | 1.6 | 1.4 | 2.0 | 2.0 | b 2.1 | 4.4 | 1.0 | .4 | .6 | 1.8 | 1.6 | 1.6 |
| 12 | 1.4 | * 1.4 | 2.0 | 2.0 | b 2.0 | 3.7 | 1.4 | .4 | .5 | 1.8 | 1.8 | 110 |
| 13 | 1.2 | 1.4 | 2.0 | 2.2 | b 1.8 | 3.2 | 1.8 | 2.4 | .5 | * 2.2 | 1.8 | 232 |
| 14 | 1.2 | 1.4 | 2.7 | 2.4 | b 1.8 | 3.2 | 1.0 | .9 | .6 | 2.7 | 1.8 | 192 |
| 15 | 1.2 | 2.0 | 3.0 | 2.4 | 1.6 | 3.4 | 1.0 | .6 | .5 | 1.8 | 1.8 | 182 |
| 16 | 1.0 | 4.8 | 1.8 | 2.4 | b 1.6 | 1.8 | 1.0 | .5 | .4 | 1.6 | 3.2 | *176 |
| 17 | 1.0 | 2.7 | b 1.8 | 2.4 | * 1.6 | 1.2 | 1.0 | .4 | .5 | 1.6 | 3.2 | 139 |
| 18 | 1.0 | 2.7 | b 1.8 | 2.7 | 1.6 | b 1.2 | 1.2 | .4 | .4 | 1.6 | 4.0 | 150 |
| 19 | 1.0 | 2.4 | b 1.8 | 3.0 | 1.6 | b 1.2 | 1.4 | .5 | .4 | 1.6 | 4.0 | 1,010 |
| 20 | 1.2 | 2.0 | b 2.0 | 3.0 | 1.8 | b 1.2 | * 1.6 | .4 | .4 | 1.6 | 3.0 | 820 |
| 21 | 1.4 | 2.0 | 2.0 | 3.0 | 2.0 | 1.4 | 1.6 | .4 | .5 | 1.4 | 2.7 | 260 |
| 22 | 1.4 | 2.0 | 2.0 | 2.7 | 2.0 | 1.0 | 1.6 | 3.6 | .4 | 1.4 | 2.4 | 153 |
| 23 | 1.4 | 1.8 | 1.8 | 2.4 | 1.8 | 1.2 | 1.2 | 2.0 | .4 | 1.4 | 2.4 | * 248 |
| 24 | 1.4 | 1.8 | 1.6 | 2.4 | b 1.8 | * 1.6 | 1.4 | 4.8 | 2.6 | 1.4 | * 2.4 | 344 |
| 25 | 1.4 | 1.8 | 1.6 | 1.8 | b 1.8 | 1.8 | 1.6 | * 1.0 | 71 | 3.4 | 2.7 | 326 |
| 26 | 1.4 | 1.8 | 1.6 | 2.0 | 1.8 | 1.4 | 2.7 | 1.0 | 4.0 | 1.6 | 2.7 | 326 |
| 27 | 1.4 | 1.6 | 1.6 | 2.2 | 1.8 | 1.4 | 2.0 | .9 | 2.7 | 1.0 | 2.7 | 321 |
| 28 | * .44 | 1.6 | 1.6 | * 2.0 | - | 1.4 | 1.6 | .9 | 2.0 | 88 | 3.0 | 326 |
| 29 | 2.4 | 1.8 | 1.8 | 2.0 | | 1.6 | 1.2 | 1.0 | 31 | 3.2 | 3.0 | 315 |
| 30 | 2.0 | | * 2.0 | 1.8 | | 1.8 | 1.0 | 1.0 | 3.2 | 2.2 | 3.0 | 332 |
| 31 | 2.0 | | | 1.8 | | 2.4 | | .8 | | 2.7 | 3.0 | |
| Total | 83.1 | 59.0 | 60.8 | 69.8 | 53.4 | 65.3 | 50.2 | 31.0 | 130.2 | 68.7 | 73.6 | 6,041.6 |
| Mean | 2.68 | 1.97 | 1.96 | 2.25 | 1.91 | 2.11 | 1.67 | 1.00 | 4.34 | 2.22 | 2.37 | 201 |
| Ac-ft | 165 | 117 | 121 | 138 | 106 | 130 | 100 | 61 | 258 | 136 | 146 | 11,980 |

Calendar year 1964: Max 44 Min 0.3 Mean 1.76 Ac-ft 1,280
Water year 1964-65: Max 1,010 Min 0.4 Mean 18.6 Ac-ft 13,460

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

7-2271. Revuelto Creek near Logan, N. Mex.

Location.--Lat 35°20'30", long 103°23'40" (revised), in SW¼NW¼ sec.24, T.13 N., R.33 E., on right bank a quarter of a mile upstream from bridge on State Highway 39, 2 miles upstream from mouth, and 2 miles southeast of Logan.

Drainage area.--786 sq mi.

Records available.--August 1959 to September 1965. Unpublished records collected by Bureau of Reclamation for the period October 1941 to July 1947 are for a site 500 ft downstream at different datum. They are not equivalent because of major irrigation development; major peaks should be comparable.

Gage.--Water-stage recorder. Datum of gage is 3,672 ft above mean sea level, datum of 1929.

Average discharge.--6 years, 66.1 cfs (47,850 acre-ft per year).

Extremes.--Maximum discharge during year, 4,190 cfs July 28 (gage height, 5.57 ft); maximum gage height, 5.68 ft May 24; no flow at times.

1959-65: Maximum discharge, 26,700 cfs July 9, 1960 (gage height, 14.3 ft), from rating curve extended above 13,000 cfs on basis of slope-area measurement of peak flow; no flow at times.

1941-47: Maximum discharge determined, about 13,400 cfs Sept. 18, 1946 (gage height, 9.04 ft, site and datum then in use), computed by Bureau of Reclamation.

A peak of 26,100 cfs (time and date unknown; gage height, 12.9 ft) was measured by slope-area method in May 1957.

Remarks.--Records poor. Low flows supplemented by surface and ground water return from irrigation in vicinity of Tucumcari. Records of chemical analyses and water temperatures for water year 1965 are published in Part 2 of this report.

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 0 | 0 | | | 0 | 0 | 0 | 0 | *0 | 68 | 466 |
| 2 | | 0 | 1 | | | 0 | *0 | 0 | 0 | a1 | 38 | 58 |
| 3 | | 0 | 1 | | | *0 | 0 | 0 | 0 | a2 | *15 | *42 |
| 4 | | 1 | 1 | | | 0 | 0 | 0 | 0 | a3 | 70 | 37 |
| 5 | (*) | 1 | 1 | | | 0 | 0 | 0 | 0 | a4 | 49 | 31 |
| 6 | | *0 | 1 | | | 0 | 0 | 0 | 0 | a20 | 29 | 37 |
| 7 | | 0 | *1 | | | 0 | 0 | 0 | *0 | a8 | 37 | 31 |
| 8 | | 0 | 1 | | | 0 | 0 | 0 | 0 | a6 | 19 | 25 |
| 9 | | 0 | 0 | | | 0 | 0 | 0 | 0 | a5 | 15 | 22 |
| 10 | | 0 | 0 | | | 0 | 0 | 1 | 36 | a30 | *7 | *16 |
| 11 | | 0 | 0 | | | 0 | 0 | 1 | 32 | a10 | 25 | 15 |
| 12 | | *0 | 0 | | | 17 | 0 | 1 | 5 | a8 | 25 | 28 |
| 13 | | 0 | 0 | (*) | | 24 | 0 | *965 | a1 | *9 | 11 | 26 |
| 14 | | 0 | 0 | | | 4 | 0 | *390 | 0 | 10 | 19 | 22 |
| 15 | | 0 | 0 | | | 1 | 0 | 25 | 0 | 15 | 19 | 22 |
| 16 | | 211 | 0 | | | 0 | 0 | 8 | 177 | 14 | a10 | 24 |
| 17 | | 74 | a0 | | (*) | 0 | 0 | 1 | 23 | 13 | a15 | 20 |
| 18 | | 39 | a0 | | | 0 | 0 | 0 | *4 | 17 | a30 | 70 |
| 19 | | 23 | a0 | | | a0 | 0 | 0 | 1 | 11 | a70 | 45 |
| 20 | | 9 | a0 | | | a0 | *0 | a0 | 0 | 19 | a80 | 32 |
| 21 | | 4 | a0 | | | a0 | 0 | a0 | 0 | 28 | a60 | 29 |
| 22 | | 2 | a0 | | | a0 | 0 | 7 | 24 | 25 | a40 | 31 |
| 23 | | 2 | a0 | | | a0 | 0 | 37 | 7 | *32 | a35 | *34 |
| 24 | | 2 | a0 | | | *a0 | 0 | *1,440 | 14 | 29 | *32 | 32 |
| 25 | | 1 | a0 | | | 0 | 0 | *206 | 935 | 25 | 29 | 28 |
| 26 | | 1 | a0 | | | 0 | 1 | 44 | 160 | 47 | 27 | 23 |
| 27 | | *0 | a0 | | | 0 | 18 | *14 | 37 | 96 | 22 | 20 |
| 28 | | 0 | a0 | | | 0 | 4 | 6 | 12 | 1,470 | 152 | 22 |
| 29 | | 0 | a0 | (*) | | 0 | *0 | 2 | 4 | 1,350 | 280 | 11 |
| 30 | | | *0 | | ---------- | 0 | 0 | 2 | 1 | 151 | 46 | 5 |
| 31 | | ---------- | | | ---------- | 0 | ---------- | 0 | ---------- | 88 | 53 | ---------- |
| Total | 0 | 370 | 7 | 0 | 0 | 46 | 23 | 3,150 | 1,473 | 3,546 | 1,427 | 1,304 |
| Mean | 0 | 12.3 | 0.2 | 0 | 0 | 1.5 | 0.8 | 102 | 49.1 | 114 | 46.0 | 43.5 |
| Ac-ft | 0 | 734 | 14 | 0 | 0 | 91 | 46 | 6,250 | 2,920.0 | 7,030 | 2,830 | 2,590 |

Calendar year 1964: Max 80 Min 0 Mean 4.8 Ac-ft 3,470
Water year 1964-65: Max 1,470 Min 0 Mean 31.1 Ac-ft 22,500

Peak discharge (base, 3,500 cfs).--June 25 (0400) 4,050 cfs (5.50 ft); July 28 (2130) 4,190 cfs (5.57 ft).

* Discharge measurement or observation of no flow made on this day.
a No gage-height record.
Note.--Station located in Central Standard Time zone; records are computed to Mountain Standard Time.

## 8-2525. Costilla Creek above Costilla Dam, N. Mex.

Location.--Lat 36°53'50", long 105°15'20", in Sangre de Cristo Grant, on left bank 2 miles upstream from Costilla Dam and 17 miles southeast of Costilla, Taos County.

Drainage area.--25.1 sq mi.

Records available.--April 1937 to September 1965 (no winter records). Published as "above reservoir, near Costilla" 1937-51. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Concrete control since Sept. 17, 1965. Altitude of gage is 9,410 ft (revised), (from topographic map). Prior to July 9, 1940, at wooden control 660 ft downstream at datum 10.65 ft lower. July 9, 1940, to July 22, 1954, at concrete control 600 ft downstream at datum 8.87 ft lower. July 23, 1954, to June 16, 1959, 200 ft upstream at datum 1.41 ft higher. June 17, 1959, to Sept. 16, 1965, present site at datum 1.12 ft lower.

Extremes.--Maximum discharge during year, 102 cfs June 19 (gage height, 3.81 ft); minimum determined, 0.1 cfs Nov. 11, result of freezeup.

1937-65: Maximum discharge, 3,870 cfs July 22, 1954 (gage height, 7.0 ft, from floodmarks, at present site and datum), on basis of slope-area measurement of peak flow; no flow Apr. 29, 1963.

The flood in 1954 is highest known since about 1909, from information by local range rider.

Remarks.--Records good except those for periods of ice effect or doubtful or no gage-height record, which are poor. A total of about 1,300 acres irrigated above this station and Casias Creek near Costilla, N. Mex., proportion between streams varying with current conditions.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

| Oct. 1 to Sept. 16 | | | | Sept. 17 - 30 | |
|---|---|---|---|---|---|
| 2.4 | 0.4 | 2.9 | 7.2 | 1.8 | 3.0 |
| 2.5 | 1.4 | 3.1 | 14 | 1.9 | 5.2 |
| 2.6 | 2.8 | 3.3 | 28 | 2.0 | 8.4 |
| 2.7 | 4.2 | 3.6 | 64 | 2.1 | 13 |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.6 | b1.5 | a1.5 | | | | - | 22 | 28 | 19 | 28 | 4.7 |
| 2 | 1.3 | b1.5 | a2 | | | | - | 22 | *26 | 16 | 23 | 5.3 |
| 3 | 1.1 | b1.5 | - | | | | - | 22 | 24 | 14 | 20 | 4.7 |
| 4 | 1.1 | b1.5 | - | | | | - | 22 | 22 | 13 | 16 | 4.6 |
| 5 | 1.2 | b1 | - | | | | - | *19 | 22 | 12 | 15 | 4.8 |
| 6 | *1.3 | b1 | - | | | | - | 18 | d16 | 12 | d12 | 5.1 |
| 7 | a1.2 | b1 | - | | | | - | d18 | d15 | 11 | d12 | 5.3 |
| 8 | a1.2 | b1 | - | | | | - | d15 | d15 | 11 | d12 | 9.7 |
| 9 | a1.2 | b1.5 | - | | | | - | d14 | d16 | 9.7 | d13 | 5.1 |
| 10 | a1.4 | b1.5 | - | | | | - | d14 | d16 | 9.1 | d13 | 4.4 |
| 11 | a1.4 | b1.5 | - | | | | - | d18 | d18 | 10 | *d12 | 4.8 |
| 12 | a1 | b1 | - | | | | - | d15 | d18 | *9.7 | 12 | 5.6 |
| 13 | a1 | b1.5 | - | | | | - | d22 | d20 | 11 | 11 | 4.8 |
| 14 | a1 | b1.5 | - | | | | - | d18 | d21 | 12 | 13 | *a4.5 |
| 15 | a1 | 1.9 | - | | | | - | d18 | *d26 | 15 | 14 | a4.5 |
| 16 | a1 | 2.3 | - | | | | - | d21 | 28 | 11 | 13 | a6 |
| 17 | a1.5 | 2.1 | - | | | | - | d19 | 45 | 10 | 12 | 12 |
| 18 | a2 | b1.5 | - | | | | - | d24 | 51 | 9.4 | 17 | 13 |
| 19 | a1.5 | a1 | - | | | | - | *36 | 64 | 8.6 | 18 | 8.1 |
| 20 | a1 | a1 | - | | | | *19 | 32 | 45 | 8.0 | 12 | 13 |
| 21 | a1 | a1 | - | | | | 16 | 32 | 37 | 7.2 | 12 | 8.1 |
| 22 | a1 | a1 | - | | | | 17 | 30 | 31 | 6.8 | 12 | 6.5 |
| 23 | a1 | a1.5 | - | | | | 15 | 40 | 26 | 7.0 | 11 | 5.5 |
| 24 | a1 | a1.5 | - | | | | 14 | 40 | 26 | 9.1 | *10 | 4.5 |
| 25 | a.8 | a1.5 | - | | | | 11 | 32 | 26 | 12.0 | 8.3 | 4.1 |
| 26 | a.8 | a1.5 | - | | | | 8.6 | 26 | 21 | 20 | 6.0 | 3.7 |
| 27 | a1 | a2 | - | | | | 7.7 | 26 | 16 | 20 | 5.9 | 4.3 |
| 28 | a1.5 | a1.5 | - | | | | 9.4 | 23 | 14 | 15 | 5.7 | 3.9 |
| 29 | *1.9 | a1.5 | - | | - | | 14 | 23 | 13 | *15 | 5.9 | 6.5 |
| 30 | 1.6 | a1.5 | - | | ---------- | | 20 | 27 | 14 | 16 | 5.9 | 6.2 |
| 31 | b1.5 | ---------- | - | | ---------- | | ---------- | 29 | ---------- | 20 | 5.0 | ---------- |
| Total | 38.1 | 42.8 | - | - | - | - | - | 737 | 760 | 379.6 | 385.7 | 183.3 |
| Mean | 1.23 | 1.43 | - | - | - | - | - | 23.8 | 25.3 | 12.2 | 12.4 | 6.11 |
| Ac-ft | 76 | 85 | - | - | - | - | - | 1,460 | 1,510 | 753 | 765 | 364 |

Peak discharge (base, 40 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 5-23 | 1800 | 3.51 | 57 | 7-26 | 2000 | 3.64 | 70 |
| 6-19 | 0145 | 3.81 | 102 | 8-18 | 1945 | 3.48 | 45 |

* Discharge measurement made on this day.
a No gage-height record.
b Stage-discharge relation affected by ice.
d Doubtful gage-height record.

## 8-2530. Casias Creek near Costilla, N. Mex.

Location.--Lat 36°53'50", long 105°15'35", in Sangre de Cristo Grant, on left bank 200 ft downstream from road crossing, 2 miles upstream from Costilla Dam, and 17 miles southeast of Costilla, Taos County.

Drainage area.--16.6 sq mi.

Records available.--April 1937 to September 1965 (no winter records). Nov. 1-7, 1947, and Nov. 1-8, 13-16, 1948, discharge records have been found to be unreliable and should not be used. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder and concrete control. Datum of gage is 9,404 ft (revised) above mean sea level, datum of 1929. Prior to July 18, 1940, water-stage recorder and wooden control 100 ft downstream at datum 1.56 ft lower

Extremes.--Maximum discharge during year, 78 cfs June 18 (gage height, 1.47 ft); minimum determined, about 1 cfs Nov. 20, result of freezeup.
1937-65: Maximum discharge, 122 cfs June 11, 1957; maximum gage height recorded, 1.90 ft June 14, 1938 (backwater from Costilla Lake); minimum recorded, 0.8 cfs June 29, 1963.

Remarks.--Records good except those for periods of ice effect or doubtful or no gage-height record, which are poor. A total of about 1,300 acres irrigated above this station and Costilla Creek above Costilla Dam, proportion between streams varying with current conditions.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

| Oct. 1 to Dec. 2 | | Apr. 20 to Sept. 30 | | | |
|---|---|---|---|---|---|
| 0.4 | 1.0 | 0.6 | 5.3 | 1.2 | 43 |
| .5 | 2.0 | .8 | 13 | 1.4 | 67 |
| .6 | 3.6 | 1.0 | 26 | | |
| .7 | 5.9 | | | | |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3.8 | b 2.3 | a 2 | | | | - | 13 | 33 | 40 | 26 | 13 |
| 2 | 3.6 | 2.3 | a 2.3 | | | | - | 12 | *35 | 37 | 20 | 13 |
| 3 | 3.6 | b 2.4 | - | | | | - | 13 | 36 | 34 | 17 | 13 |
| 4 | 3.6 | b 2.3 | - | | | | - | 13 | 36 | 33 | 16 | 12 |
| 5 | 3.6 | b 2.0 | - | | | | - | *14 | 37 | 33 | 15 | 13 |
| 6 | * 3.6 | b 2.0 | - | | | | - | 14 | 34 | 32 | 13 | 13 |
| 7 | 3.1 | b 2.0 | - | | | | - | 15 | 32 | 30 | 12 | 13 |
| 8 | 3.1 | b 2.0 | - | | | | - | 15 | 32 | 29 | 11 | 18 |
| 9 | 3.1 | b 2.2 | - | | | | - | 15 | 32 | 28 | 11 | 11 |
| 10 | 3.1 | 2.3 | - | | | | - | 15 | 32 | 27 | 11 | 10 |
| 11 | 3.1 | b 2.2 | - | | | | - | 16 | 33 | 27 | *10 | 11 |
| 12 | 3.1 | b 2.1 | - | | | | - | 15 | 32 | *25 | 9.1 | 11 |
| 13 | 3.1 | b 2.1 | - | | | | - | 18 | 32 | 22 | 8.7 | 10 |
| 14 | 3.0 | b 2.2 | - | | | | - | 16 | 36 | 22 | 10 | *9.1 |
| 15 | 3.0 | 2.3 | - | | | | - | 16 | *40 | 25 | 13 | 8.3 |
| 16 | 3.0 | 2.5 | - | | | | - | 18 | 48 | 20 | 12 | 8.0 |
| 17 | 3.0 | 2.6 | - | | | | - | 14 | 53 | 19 | 10 | 11 |
| 18 | 3.3 | b 2.5 | - | | | | - | 18 | 59 | 18 | 10 | a 15 |
| 19 | 3.1 | b 2.0 | - | | | | - | * 22 | 64 | 16 | 11 | a 12 |
| 20 | 3.0 | b 1.5 | - | | | | *10 | 23 | 57 | 15 | 9.5 | d 15 |
| 21 | 3.0 | a 1.5 | - | | | | 8.3 | 27 | 53 | 13 | 9.1 | d 12 |
| 22 | b 3.0 | a 1.5 | - | | | | 8.7 | 30 | 50 | 12 | 9.1 | d 10 |
| 23 | b 3.0 | a 2 | - | | | | 8.7 | 37 | 44 | 11 | 8.7 | d 8 |
| 24 | b 2.5 | a 2 | - | | | | 8.3 | 36 | 45 | 13 | *8.0 | d 6.5 |
| 25 | b 2.5 | a 2 | - | | | | 9.1 | 33 | 44 | 17 | 9.3 | d 5.5 |
| 26 | b 2.5 | a 2 | - | | | | 8.7 | 31 | 39 | 15 | 15 | d 5 |
| 27 | 2.3 | a 2.3 | - | | | | 8.3 | 31 | 36 | 17 | 14 | d 5.5 |
| 28 | b 2.3 | a 2 | - | | | | b 8.5 | 26 | 33 | 13 | 14 | d 5 |
| 29 | * 2.3 | a 2 | - | | - | | b 10 | 25 | 32 | *14 | 14 | d 9 |
| 30 | 2.3 | a 2 | - | | ---------- | | b 15 | 30 | 35 | 17 | 13 | d 9 |
| 31 | 2.3 | ---------- | | | ---------- | | ---------- | 31 | ---------- | 20 | 13 | ---------- |
| Total | 92.9 | 63.1 | - | - | - | - | - | 652 | 1,204 | 694 | 382.5 | 314.9 |
| Mean | 3.00 | 2.10 | - | - | - | - | - | 21.0 | 40.1 | 22.4 | 12.3 | 10.5 |
| Ac-ft | 184 | 125 | - | - | - | - | - | 129 | 2,390 | 1,380 | 759 | 625 |

| | | | | |
|---|---|---|---|---|
| Calendar year | : Max | Min | Mean | Ac-ft |
| Water year | : Max | Min | Mean | Ac-ft |

Peak discharge (base, 50 cfs).--June 18 (2300) 78 cfs (1.47 ft).

* Discharge measurement made on this day.
a No gage-height record.
b Stage-discharge relation affected by ice.
d Doubtful gage-height record.

## 8-2535. Santistevan Creek near Costilla, N. Mex.

Location.--Lat 36°53'05", long 105°16'50", in Sangre de Cristo Grant, on left bank 200 ft upstream from road crossing, 0.9 mile upstream from Costilla Dam, and 16 miles southeast of Costilla, Taos County.

Drainage area.--2.15 sq mi.

Records available.--April 1937 to September 1965 (no winter records). Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder and Parshall flume. Datum of gage is 9,487 ft above mean sea level, datum of 1929. Prior to June 27, 1940, water-stage recorder and wooden control at same site at datum 0.99 ft lower.

Extremes.--Maximum discharge during year, 11 cfs June 18 (gage height, 1.09 ft); minimum determined, about 0.1 cfs Nov. 20-22, result of freezeup.

1937-65: Maximum discharge recorded, 18 cfs Aug. 11, 1941, July 12, 1957; maximum gage height recorded, 1.73 ft Aug. 11, 1941; minimum discharge recorded, 0.1 cfs Apr. 29, Nov. 1, 1963, Nov. 20-22, 1964.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor. No diversion above or below station.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

| | | | |
|---|---|---|---|
| 0.05 | 0.1 | 0.7 | 5.7 |
| .2 | .8 | 1.0 | 9.8 |
| .4 | 2.4 | | |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.7 | 0.5 | 0.4 | | | | - | 1.6 | 4.7 | 6.7 | 3.6 | 1.6 |
| 2 | .7 | .5 | .6 | | | | - | 1.7 | *5.0 | 6.4 | 3.2 | 1.8 |
| 3 | .7 | .5 | - | | | | - | 1.9 | 5.1 | 6.2 | 3.0 | 1.7 |
| 4 | .7 | .5 | - | | | | - | 2.0 | 5.2 | 6.1 | 3.0 | 1.6 |
| 5 | .7 | .5 | - | | | | - | *2.0 | 5.2 | 6.1 | 2.8 | 1.7 |
| 6 | *.7 | .5 | - | | | | - | 1.9 | 5.0 | 6.0 | 2.8 | 1.6 |
| 7 | .7 | .5 | - | | | | - | 2.0 | 5.0 | 5.7 | 2.7 | 1.7 |
| 8 | .7 | .5 | - | | | | - | 1.9 | 5.0 | 5.7 | 2.8 | 2.0 |
| 9 | .7 | .5 | - | | | | - | 1.9 | 5.1 | 5.5 | 2.9 | 1.6 |
| 10 | .7 | .4 | - | | | | - | 1.8 | 5.3 | 5.3 | 2.8 | 1.6 |
| 11 | .7 | .4 | - | | | | - | 1.9 | 5.5 | 5.3 | *2.7 | 1.7 |
| 12 | .7 | .3 | - | | | | - | 1.9 | 5.2 | 5.2 | 2.5 | 1.5 |
| 13 | .8 | .3 | - | | | | - | 2.0 | 5.2 | *5.2 | 2.4 | 1.4 |
| 14 | .8 | .5 | - | | | | - | 1.9 | 5.5 | 5.2 | 2.5 | *1.4 |
| 15 | .7 | .5 | - | | | | - | 1.9 | *6.5 | 5.2 | 2.8 | 1.3 |
| 16 | .7 | .5 | - | | | | - | 2.1 | 7.3 | 4.7 | 2.7 | 1.3 |
| 17 | .7 | .6 | - | | | | - | 2.2 | 7.6 | 4.6 | 2.5 | 1.7 |
| 18 | .7 | .4 | - | | | | - | 2.5 | 9.0 | 4.4 | 2.4 | 1.5 |
| 19 | .7 | .2 | - | | | | - | *3.1 | 9.2 | 4.2 | 2.4 | 1.5 |
| 20 | .7 | .1 | - | | | | *1.1 | 3.5 | 9.0 | 4.1 | 2.3 | 1.5 |
| 21 | .7 | .1 | - | | | | 1.3 | 3.7 | 9.0 | 3.8 | 2.2 | 1.4 |
| 22 | .7 | .1 | - | | | | 1.6 | 3.8 | 9.0 | 3.6 | 2.2 | 1.4 |
| 23 | .7 | .2 | - | | | | 1.8 | 4.6 | 8.8 | 3.5 | 2.2 | 1.3 |
| 24 | .5 | .4 | - | | | | 1.9 | 4.6 | 8.8 | 3.4 | *2.0 | 1.3 |
| 25 | .5 | .4 | - | | | | 1.5 | 4.4 | 9.0 | 3.5 | 1.9 | 1.2 |
| 26 | .5 | .4 | - | | | | 1.4 | 4.3 | 8.5 | 3.2 | 1.9 | 1.2 |
| 27 | .7 | .5 | - | | | | 1.3 | 4.2 | 8.0 | 3.5 | 1.9 | 1.2 |
| 28 | .7 | .4 | - | | | | 1.4 | 4.1 | 7.4 | 3.0 | 1.8 | 1.2 |
| 29 | *.7 | .4 | - | | - | | 1.7 | 4.1 | 6.7 | *3.0 | 1.8 | 1.3 |
| 30 | .6 | .4 | - | | ------- | | 1.6 | 4.3 | 7.0 | 2.9 | 1.8 | 1.2 |
| 31 | .6 | ------ | - | | ------- | | ------ | 4.5 | ------ | 3.3 | 1.7 | ------ |
| Total | 21.1 | 10.3 | - | - | - | - | - | 88.3 | 202.8 | 144.5 | 76.2 | 44.4 |
| Mean | 0.68 | 0.34 | - | - | - | - | - | 2.85 | 6.76 | 4.66 | 2.46 | 1.48 |
| Ac-ft | 42 | 20 | - | - | - | - | - | 175 | 402 | 287 | 151 | 88 |

Calendar year : Max Min Mean Ac-ft
Water year : Max Min Mean Ac-ft

Peak discharge (base, 6 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 6-10 | 1915 | 0.76 | 6.5 | 6-30 | 2130 | 0.90 | 8.4 |
| 6-18 | 2000 | 1.09 | 11 | 7-15 | 1200 | .72 | 6.4 |

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 21, 22, 24-26, Nov. 1-13, 18, 19. No gage-height record Nov. 20 to Dec. 2.

8-2539. Costilla Lake near Costilla, N. Mex.

Location.--Lat 36°52'35", long 105°16'45", on face of Costilla Dam on Costilla Creek in Sangre de Cristo Grant, 16 miles southeast of Costilla, Taos County.

Drainage area.--55 sq mi, approximately.

Records available.--May 1922 to September 1965 (see WSP 1732).

Gage.--Inclined staff gage, painted on base of railroad rail on right side of control tower of Dam. Datum of gage is 107 ft above mean sea level, datum of 1929, leveling of 1964.

Extremes.--Maximum contents observed during year, 10,680 acre-ft July 11, 12 (gage height, 9,499.4 ft); minimum, 137 acre-ft Oct. 1-6 (gage height, 9,423.4 ft).
1922-65: Maximum contents, 15,100 acre-ft June 30, 1940 (gage height, 9,511.4 ft); no contents October 1925 to February 1926, September 1956.

Remarks.--Lake is formed by earth-fill dam faced with broken stone. Storage began in 1920. Capacity, 15,700 acre-ft between gage heights 9,405.0 (bottom of lower intake) and 9,513.0 ft (crest of ungated spillway cut in natural rock). By order of New Mexico State Engineer (first issued in 1942) storage was limited 14,540 acre-ft maximum, and 10,880 for not to exceed 45 days (revised to 60 days in 1949). Diversions for irrigation of about 1,300 acres above Lake. Contents computed from intermittent gage readings and capacity table (based on original survey) furnished by New Mexico State Engineer.

Month-end gage heights and contents, water year October 1964 to September 1965

| Date | Gage height (feet) | Contents (acre-feet) | Change in contents (acre-feet) |
|---|---|---|---|
| Sept. 30 | 9,423.40 | 137 | - |
| Oct. 31 | - | a 466 | + 329 |
| Nov. 30 | - | a 770 | + 304 |
| Dec. 31 | - | a 974 | + 204 |
| Calendar year 1964 | - | - | - 276 |
| Jan. 31 | - | a 1,150 | + 176 |
| Feb. 28 | - | a 1,430 | + 280 |
| Mar. 31 | - | a 1,990 | + 560 |
| Apr. 30 | - | a 3,460 | + 1,470 |
| May 31 | 9,484.4 | 6,310 | + 2,850 |
| June 30 | 9,497.7 | 10,120 | + 3,810 |
| July 31 | - | a 9,860 | - 260 |
| Aug. 31 | 9,490.0 | 7,790 | - 2,070 |
| Sept. 30 | 9,489.2 | 7,570 | - 220 |
| Water year 1964-65 | - | - | + 7,433 |

a No gage-height record; contents estimated or interpolated.

8-2540. Costilla Creek below Costilla Dam, N. Mex.

Location.--Lat 36°52'25" (revised), long 105°16'45", in Sangre de Cristo Grant, on left bank 125 ft downstream from outlet of Costilla Lake and 16 miles southeast of Costilla, Taos County.

Drainage area.--54.6 sq mi.

Records available.--April 1937 to September 1965 (no winter records 1937-44, 1948-49). Prior to October 1951, published as "below reservoir near Costilla." Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 9,320 ft (revised, from topographic map).

Average discharge.--19 years (1944-47, 1949-65), 16.3 cfs (11,800 acre-ft per year).

Extremes.--Maximum discharge during year, 113 cfs Aug. 16 (gage height, 1.81 ft); no flow at times.
1937-65: Maximum discharge, 286 cfs May 9, 10, 1942 (gage height, 2.65 ft); no flow at times.

Remarks.--Records good. Flow regulated by Costilla Lake (capacity, 15,700 acre-ft, original survey). Diversions for irrigation of about 1,300 acres above Lake.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

| | | | | | |
|---|---|---|---|---|---|
| 0.0 | 0.0 | 0.4 | 2.4 | 0.9 | 20 |
| .1 | .1 | .5 | 4.4 | 1.1 | 33 |
| .2 | .5 | .6 | 7.1 | 1.5 | 71 |
| .3 | 1.2 | .7 | 11 | 1.9 | 122 |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 8.2 | | | | | | 0 | 0.1 | 0.1 | 53 | 40 | 72 |
| 2 | 7.8 | | | | | | 0 | .1 | *.1 | 14 | 57 | 72 |
| 3 | 7.8 | | | | | | 0 | .1 | .1 | .4 | 57 | 36 |
| 4 | 7.8 | | | | | | 0 | .1 | .1 | 11 | 57 | 17 |
| 5 | 7.8 | | | | | | 0 | *.1 | .1 | 36 | 57 | 24 |
| 6 | ** 3.4 | | | | | | 0 | .1 | .1 | 36 | 43 | 39 |
| 7 | 0 | | | | | | 0 | .1 | 12 | 36 | 36 | 39 |
| 8 | 0 | | | | | | 0 | .1 | 27 | 36 | 44 | 39 |
| 9 | 0 | | | | | | 0 | .1 | 27 | 22 | 59 | 39 |
| 10 | 0 | | | | | | 0 | .1 | 12 | 21 | 62 | 27 |
| 11 | 0 | | | | | | 0 | .1 | 12 | 31 | *68 | 21 |
| 12 | 0 | | | | | | 0 | .1 | 12 | *50 | 68 | 21 |
| 13 | 0 | | | | | | 0 | .1 | 12 | 50 | 49 | 21 |
| 14 | 0 | | | | | | 0 | .1 | 12 | 50 | 39 | *21 |
| 15 | 0 | | | | | | 0.1 | .1 | *12 | 50 | 64 | 21 |
| 16 | 0 | | | | | | .1 | .1 | 13 | 32 | 110 | 20 |
| 17 | 0 | | | | | | .1 | .1 | 13 | 24 | 101 | 17 |
| 18 | 0 | | | | | | .1 | .1 | 13 | 35 | 96 | 6.8 |
| 19 | 0 | | | | | | .1 | *.1 | 13 | 58 | 95 | 6.8 |
| 20 | 0 | | | | | | *.1 | .1 | 13 | 58 | 55 | 2.5 |
| 21 | 0 | | | | | | .1 | .1 | 13 | 64 | 37 | 2 |
| 22 | 0 | | | | | | 0 | .1 | 13 | 76 | 55 | 2 |
| 23 | 0 | | | | | | 0 | .1 | 14 | 63 | 90 | 2 |
| 24 | 0 | | | | | | 0 | .1 | 14 | 56 | *88 | 2 |
| 25 | 0 | | | | | | .1 | .1 | 8.6 | 63 | 88 | 2 |
| 26 | 0 | | | | | | .1 | .1 | .3 | 76 | 88 | 2 |
| 27 | 0 | | | | | | .1 | .1 | .2 | 76 | 43 | 2 |
| 28 | 0 | | | | | | .1 | .1 | 7.4 | 76 | 21 | 2 |
| 29 | 0 | | | | - | | .1 | .1 | 26 | *76 | 38 | 2 |
| 30 | 0 | | | | ---------- | | .1 | .1 | 49 | 45 | 72 | 2 |
| 31 | 0 | ---------- | | | ---------- | | ---------- | .1 | ---------- | 32 | 72 | ---------- |
| Total | 42.8 | 0 | 0 | 0 | 0 | 0 | 1.3 | 3.1 | 349.1 | 1406.4 | 1949 | 564.1 |
| Mean | 1.38 | 0 | 0 | 0 | 0 | 0 | 0.04 | 0.10 | 11.6 | 45.4 | 62.9 | 18.8 |
| Ac-ft | 85 | 0 | 0 | 0 | 0 | 0 | 2.6 | 6.1 | 692 | 2,790 | 3,870 | 1,120 |

Calendar year 1964: Max 93 Min 0 Mean 8.72 Ac-ft 6,320
Water year 1964-65: Max 110 Min 0 Mean 11.8 Ac-ft 8,570

* Discharge measurement made on this day.
** Field estimate made on this day.
Note.--No gage-height record Oct. 30 to Dec. 1, Jan. 8 to Apr. 19.

8-2545. Costilla Creek near Amalia, N. Mex.

Location.--Lat 36°52'33", long 105°23'22" (revised), in Sangre de Cristo Grant, on right bank 40 ft downstream from third bridge upstream from Amalia, 1.5 miles downstream from Latir Creek, 6½ miles southeast of Amalia, and 12 miles southeast of Costilla.

Drainage area.--152 sq mi.

Records available.-May 1949 to September 1959. April 1961 to September 1965 (no winter records).

Gage.--Water-stage recorder. Concrete control since Sept. 27, 1965. Datum of gage is 8,512 ft (revised) above mean sea level, datum of 1929. May 1949 to May 2, 1956, at site 40 ft upstream at datum 0.81 ft lower. May 3, 1956 to Sept. 27, 1965, at site 10 ft downstream at datum 1.81 ft lower.

Extremes.--Maximum discharge during year, 172 cfs May 23 (gage height, 3.67 ft); minimum recorded, 10 cfs Oct. 3. 1949-59, 1960-65: Maximum discharge recorded, 689 cfs Apr. 25, 1958; maximum gage height recorded, 3.85 ft May 13, 1958; minimum discharge recorded, 1.4 cfs June 23, 1963.

Remarks.--Records fair except those for periods of indefinite stage-discharge relation, which are poor. Flow regulated by Costilla Lake (capacity, 15,700 acre-ft, original survey). Diversions for irrigation of about 1,300 acres above Costilla Lake.

Rating tables, except periods of indefinite stage-discharge relation (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Sept. 28-30)

| Oct. 1-6 | | Apr. 19 to Sept. 30 | | | |
|---|---|---|---|---|---|
| 2.7 | 8.5 | 2.7 | 14 | 3.2 | 71 |
| 2.8 | 14 | 2.8 | 21 | 3.4 | 110 |
| | | 3.0 | 42 | 3.6 | 158 |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 12 | | | | | | - | 85 | 65 | 100 | e50 | 78 |
| 2 | 12 | | | | | | - | 102 | *60 | 59 | e75 | 80 |
| 3 | 11 | | | | | | - | 106 | 60 | e30 | e80 | 56 |
| 4 | 11 | | | | | | - | 108 | 59 | e30 | e80 | 26 |
| 5 | 11 | | | | | | - | *100 | 68 | 65 | e80 | 26 |
| 6 | *12 | | | | | | - | 91 | 59 | 62 | e65 | 50 |
| 7 | - | | | | | | - | 91 | 60 | 60 | e50 | 50 |
| 8 | - | | | | | | - | 87 | 85 | 60 | e60 | 60 |
| 9 | - | | | | | | - | 75 | 97 | e35 | e70 | 53 |
| 10 | - | | | | | | - | 73 | 75 | e33 | e75 | 44 |
| 11 | - | | | | | | - | 69 | 89 | e40 | *80 | 33 |
| 12 | - | | | | | | - | 63 | 71 | 68 | 80 | 32 |
| 13 | - | | | | | | - | 97 | 66 | *66 | 66 | 30 |
| 14 | - | | | | | | - | 80 | 65 | 68 | 49 | *29 |
| 15 | - | | | | | | - | 95 | *69 | 69 | 61 | 30 |
| 16 | - | | | | | | - | 91 | 76 | 53 | 122 | 30 |
| 17 | - | | | | | | - | 89 | 82 | 41 | 115 | 40 |
| 18 | - | | | | | | - | 102 | 80 | 43 | 104 | 35 |
| 19 | - | | | | | | *55 | *128 | 91 | 66 | 106 | 26 |
| 20 | - | | | | | | 65 | 131 | 78 | 66 | 85 | 29 |
| 21 | - | | | | | | 71 | 133 | 69 | 69 | e54 | 20 |
| 22 | - | | | | | | 78 | 133 | 66 | 82 | 57 | 18 |
| 23 | - | | | | | | 82 | 148 | 60 | 75 | 95 | 17 |
| 24 | - | | | | | | 82 | 146 | 66 | 65 | *95 | 16 |
| 25 | - | | | | | | 80 | 119 | 62 | 78 | 95 | 14 |
| 26 | - | | | | | | 69 | 100 | 47 | 89 | 93 | 14 |
| 27 | - | | | | | | 57 | 85 | 30 | 95 | 66 | 13 |
| 28 | - | | | | | | 54 | 69 | 22 | 95 | 33 | 13 |
| 29 | - | | | | - | | 62 | 62 | 52 | *93 | 38 | 14 |
| 30 | - | | | | ---------- | | 73 | 62 | 76 | 73 | 78 | 14 |
| 31 | - | ---------- | | | ---------- | | ---------- | 65 | ---------- | e45 | 78 | ---------- |
| Total | - | - | - | - | - | - | - | 2,985 | 2,005 | 1,973 | 2,335 | 990 |
| Mean | - | - | - | - | - | - | - | 96.3 | 66.8 | 63.6 | 75.3 | 33.0 |
| Ac-ft | - | - | - | - | - | - | - | 5,920 | 3,980 | 3,910 | 4,630 | 1,960 |

| | | | | |
|---|---|---|---|---|
| Calendar year | Max | Min | Mean | Ac-ft |
| Water year | Max | Min | Mean | Ac-ft |

* Discharge measurement made on this day.
e Stage-discharge relation indefinite.

## 8-2555. Costilla Creek near Costilla, N. Mex.

Location.--Lat 36°58'00", long 105°30'25", in Sangre de Cristo Grant, on right bank 70 ft downstream from bridge on State Road 196, half a mile upstream from diversion dam and 1.6 miles southeast of Costilla, Taos County.

Drainage area.--195 sq mi.

Records available.--March 1936 to September 1965 (no winter records 1936-41). Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Concrete control since Oct. 13, 1952. Altitude of gage is 7,900 ft (from topographic map). Prior to June 18, 1944, at site 200 ft downstream at different datum, June 18, 1944, to Sept. 30, 1964, at site 0.3 mile upstream at different datum.

Average discharge.--24 years (1941-65), 43.8 cfs (31,710 acre-ft per year).

Extremes.--Maximum discharge during year, 273 cfs July 24 (gage height, 3.60 ft); minimum determined, 0.6 cfs Mar. 13, result of freezeup.

1936-65: Maximum discharge, 1,150 cfs May 11, 1942 (gage height, 5.37 ft, site and datum then in use); minimum determined, that of Mar. 13, 1965.

The greatest flood known occurred in 1886, from information by local residents.

Remarks.--Records good except those for periods of ice effect, which are poor. Regulation by Costilla Lake 20 miles upstream (capacity, 15,700 acre-ft, original survey). Diversions for irrigation of about 2,000 acres above station.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

| Oct. 1 to May 28 | | | | May 29 to Sept. 30 | | | |
|---|---|---|---|---|---|---|---|
| 1.3 | 2.2 | 2.2 | 37 | 1.7 | 13 | 2.6 | 86 |
| 1.5 | 5.3 | 2.5 | 65 | 1.9 | 23 | 3.0 | 149 |
| 1.7 | 11 | 2.8 | 108 | 2.2 | 44 | | |
| 1.9 | 19 | 3.2 | 188 | | | | |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 12 | 3.5 | 4 | 5 | 7.0 | 3.5 | 38 | 88 | 89 | 116 | 74 | 85 |
| 2 | 10 | 3.5 | 4.5 | 3 | 6.5 | 3.0 | 36 | 99 | 89 | 90 | 95 | 87 |
| 3 | 9.3 | 4.0 | 4.5 | 3 | 6.5 | 2.5 | 22 | 102 | *86 | 60 | 95 | 72 |
| 4 | 9.0 | 4.0 | 4 | 5 | 6.5 | 2.5 | 27 | *105 | 85 | 52 | 90 | 37 |
| 5 | *9.0 | 4.2 | 2.3 | 6 | 7 | 3 | 29 | 96 | 96 | 71 | 86 | 33 |
| 6 | 9.0 | 4.4 | 2.3 | 7 | 7 | 3 | *25 | 93 | 89 | 74 | 75 | 54 |
| 7 | *7.3 | 3.7 | 2.3 | 9 | 7 | 3.5 | 25 | 90 | 82 | 68 | 57 | 57 |
| 8 | 5.6 | 3.5 | 2.5 | 9 | 7 | *4 | 21 | 87 | 99 | 64 | 56 | *72 |
| 9 | 4.9 | 4.2 | 2.5 | 8 | *6 | 4.0 | 24 | 82 | 110 | 61 | 76 | 61 |
| 10 | 4.4 | 4.6 | 2.5 | 7 | 5 | 4.2 | 20 | 78 | 98 | 55 | 75 | 54 |
| 11 | 4.0 | 4.6 | 3 | | 4 | 4.0 | 15 | 82 | 105 | 56 | 84 | 42 |
| 12 | 4.0 | 3.0 | 3 | *6.5 | 3 | 4 | 20 | 77 | 94 | 76 | *85 | 41 |
| 13 | 3.9 | 3.4 | 2.5 | 6 | 2.5 | 4 | 26 | 122 | 90 | *75 | 76 | 39 |
| 14 | 3.9 | 4.2 | 2 | 6.5 | 3 | 4.5 | 22 | 108 | 91 | 75 | 57 | 36 |
| 15 | 3.7 | 5.1 | 2.5 | 6.5 | 3.5 | 5 | 19 | 120 | *89 | 75 | 59 | 35 |
| 16 | 3.7 | 5.1 | 3.5 | 6.5 | 3.5 | 5 | 25 | 115 | 98 | 70 | 122 | 33 |
| 17 | 3.5 | 5.1 | 3.5 | 6.5 | 3 | 5 | 32 | 108 | 105 | 52 | 129 | 45 |
| 18 | 3.2 | *5.1 | 2.5 | 6.5 | 3.5 | 5 | 43 | 116 | 112 | 50 | 119 | 45 |
| 19 | 3.5 | 3.5 | 3.5 | 6.5 | 3.5 | 4 | *48 | 146 | 149 | 66 | 119 | 35 |
| 20 | 4.0 | 2.5 | 3 | 6.5 | 4 | 3.5 | 60 | *159 | 122 | 70 | 100 | 39 |
| 21 | 4.0 | 3.5 | *3.5 | 6.5 | 4 | 4.5 | 70 | 166 | 105 | 72 | 55 | 30 |
| 22 | 3.7 | 4 | 4 | 6.5 | 4.5 | 8 | 80 | 170 | 94 | 82 | 54 | *25 |
| 23 | 3.4 | 4.5 | 5 | 6.5 | 3.5 | *11 | 90 | 179 | 87 | 82 | 102 | 22 |
| 24 | 3.5 | 4.5 | 6 | 6.5 | 3 | 11 | *92 | 183 | 82 | 92 | 102 | 21 |
| 25 | 3.4 | 4.5 | 6 | *6 | *3.5 | 10 | 90 | 154 | 81 | 95 | *99 | 19 |
| 26 | *3.2 | 4.5 | 6 | 4 | 3.5 | 7.8 | 78 | 131 | 74 | 104 | 98 | 18 |
| 27 | 3.2 | 4.5 | 6 | 4 | 4 | 15 | 65 | 116 | 60 | *114 | 81 | 18 |
| 28 | 3.4 | 4 | 6 | 5 | 4.4 | 18 | 56 | 102 | 52 | 112 | 42 | 18 |
| 29 | 3.4 | 4 | 5 | 6 | - | 22 | 61 | 90 | 58 | 102 | 42 | 17 |
| 30 | 3.5 | 4 | 4 | 7 | ---------- | 21 | 74 | 87 | 74 | 92 | 82 | 18 |
| 31 | 3.5 | ---------- | 5 | 7.6 | ---------- | 29 | ---------- | 90 | ---------- | 68 | 85 | ---------- |
| Total | 156.1 | 123.2 | 116.9 | 192.1 | 129.4 | 234.5 | 1333 | 3541 | 2745 | 2391 | 2571 | 1208 |
| Mean | 5.04 | 4.11 | 3.77 | 6.20 | 4.62 | 7.56 | 44.4 | 114 | 91.5 | 77.1 | 82.9 | 40.3 |
| Ac-ft | 310 | 244 | 232 | 381 | 257 | 465 | 2,640 | 7,020 | 5,440 | 4,740 | 5,100 | 2,400 |

Calendar year 1964: Max 89 Min 2 Mean 16.5 Ac-ft 11,970
Water year 1964-65: Max 183 Min 2 Mean 40.4 Ac-ft 29,230

Peak discharge (base, 250 cfs).--July 24 (1545) 273 cfs (3.60 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 19 to Jan. 30, Feb. 2-28, Mar. 3-8, 12-22.

8-2605. Costilla Creek below diversion dam, at Costilla, N. Mex.

Location.--Lat 36°58'03", long 105°31'00", in Sangre de Cristo Grant, on right bank 650 ft downstream from diversion dam and 1.1 miles southeast of Costilla, Taos County.

Drainage area.--197 sq mi.

Records available.--April 1952 to September 1965 (no winter records).

Gage.--Water-stage recorder (digital,and crest-stage indicator) and concrete control. Datum of gage is 7,861 ft above mean sea level, datum of 1929.

Extremes.--Maximum discharge recorded during year, 220 cfs July 24 (gage height, 2.57 ft); minimum determined, 0.1 cfs several days. 1952-65: Maximum discharge recorded, 525 cfs July 22, 1954; maximum gage height, 5.05 ft July 24, 1957; no flow Oct. 14, 1963.

Remarks.--Records good. Flow partly regulated by Costilla Lake about 21 miles upstream (capacity, 15,700 acre-ft, original survey). Diversions above station for irrigation of about 5,000 acres, 3,000 of which are below station.

Rating tables (gage height, in feet, and discharge, in cubic feet per second)

| Oct. 1 to Dec. 31 | | Jan. 1 to Sept. 30 | | | |
|---|---|---|---|---|---|
| 0.7 | 1.3 | 0.5 | 0 | 1.0 | 9.8 |
| .8 | 3.0 | .6 | .3 | 1.2 | 21 |
| | | .7 | 1.3 | 1.5 | 46 |
| | | .8 | 3.1 | 2.0 | 111 |
| | | .9 | 5.8 | | |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | - | 27 | 2.8 | 18 | 26 | 0.1 |
| 2 | 1.6 | | | | | | - | 35 | 5.1 | 30 | 7.7 | .1 |
| 3 | 1.5 | | | | | | - | 39 | *6.6 | 23 | 1.2 | .1 |
| 4 | 1.5 | | | | | | - | *38 | 7.9 | 2.0 | .6 | .1 |
| 5 | 1.5 | | | | | | - | 34 | 19 | 2.0 | 1.3 | .1 |
| 6 | 1.6 | | | | | | - | 35 | 15 | 2.0 | 2.6 | .1 |
| 7 | *1.6 | | | | | | - | 26 | 7.6 | 1.8 | 4.7 | .1 |
| 8 | - | | | | | | - | 22 | 12 | 1.6 | 3.7 | *3.1 |
| 9 | - | | | | | | - | 15 | 18 | 1.5 | 3.1 | .1 |
| 10 | - | | | | | | - | 12 | 6.3 | 1.2 | .2 | 14 |
| 11 | - | | | | | | - | 14 | 10 | 1.2 | .2 | 16 |
| 12 | - | | | | | | - | 12 | 3.0 | 1.3 | *.3 | 2.6 |
| 13 | - | | | | | | .3 | 51 | 2.2 | 1.7 | 17 | 1.9 |
| 14 | - | | | | | | .3 | 30 | *2.7 | *1.8 | 14 | 1.6 |
| 15 | - | | | | | | .3 | 39 | 2.1 | 2.1 | 1.1 | 1.6 |
| | | | | | | | | | | | | 1.4 |
| 16 | - | | | | | | 1.3 | 28 | 5.3 | 2.4 | 11 | 1.4 |
| 17 | - | | | | | | 4.9 | 12 | 11 | 2.4 | 8.9 | 6.4 |
| 18 | - | | | | | | 8.7 | 20 | 19 | 21 | 3.8 | 4.8 |
| 19 | - | | | | | | 10 | 50 | 50 | 4.1 | 5.4 | 1.2 |
| 20 | - | | | | | | 11 | *59 | 29 | 1.7 | 4.3 | 3.2 |
| 21 | - | | | | | | *20 | 67 | 15 | 1.9 | .6 | 1.0 |
| 22 | - | | | | | | 31 | 81 | 5.7 | 2.0 | .5 | *.8 |
| 23 | - | | | | | | 39 | 101 | 2.5 | 3.0 | 6.2 | .8 |
| 24 | - | | | | | | 41 | 103 | 2.6 | 30 | 1.2 | .8 |
| 25 | - | | | | | | 38 | 81 | 2.2 | 37 | *.3 | .8 |
| 26 | - | | | | | | 19 | 39 | 1.4 | 21 | .2 | .8 |
| 27 | - | | | | | | 3.3 | 10 | 3.7 | *23 | .7 | .8 |
| 28 | - | | | | | | 3.6 | 3.8 | 5.9 | 21 | .1 | .8 |
| 29 | - | | | | | | 7.4 | 3.9 | 3.6 | 12 | .1 | .7 |
| 30 | - | | | | ---------- | | 15 | 2.1 | 2.8 | 6.4 | 2.7 | .7 |
| 31 | - | ---------- | | | ---------- | | ---------- | 5.2 | ---------- | 18 | .1 | ---------- |
| Total | - | - | - | - | - | - | - | 1095.0 | 280.0 | 298.1 | 129.8 | 66.6 |
| Mean | - | - | - | - | - | - | - | 35.3 | 9.33 | 9.62 | 4.19 | 2.22 |
| Ac-ft | - | - | - | - | - | - | - | 2,170 | 555 | 591 | 257 | 132 |

Calendar year : Max Min Mean Ac-ft
Water year : Max Min Mean Ac-ft

Peak discharge (base, 300 cfs).--No peak above base.

* Discharge measurement made on this day.

## 8-2610. Costilla Creek at Garcia, Colo.

Location.--Lat 36°59'20", long 105°31'54", in Sangre de Cristo Grant, on left bank 200 ft downstream from old highway bridge, a quarter of a mile upstream from New Mexico-Colorado State line, and 0.6 mile south of Garcia.

Drainage area.--200 sq mi, approximately.

Records available.--June 1944 to September 1965 (no winter records).

Gage.--Water-stage recorder. Altitude of gage is 7,758 ft (from topographic map). Prior to Apr. 20, 1950, at site 1,000 ft downstream at datum about 2.6 ft lower.

Extremes.--Maximum discharge during year, 181 cfs July 24 (gage height, 3.98 ft); no flow for many days.
1944-65: Maximum discharge, 460 cfs July 24, 1957 (gage height, 4.76 ft); no flow at times in most years.
The greatest flood known occurred in 1886, from information by local residents. Flood of May 11, 1942, probably reached a discharge of 1,000 cfs.

Remarks.--Records good. Flow partly regulated by Costilla Lake about 23 miles upstream (capacity, 15,700 acre-ft, original survey). Diversions above station for irrigation of about 5,500 acres, 2,000 of which are below station.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

| | | | |
|---|---|---|---|
| 1.8 | 0 | 2.5 | 8.1 |
| 1.9 | .2 | 2.7 | 15 |
| 2.0 | .6 | 3.0 | 31 |
| 2.1 | 1.2 | 3.3 | 54 |
| 2.2 | 2.1 | 3.6 | 89 |
| 2.3 | 3.5 | | |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | | | | | | - | 21 | 3.2 | 13 | 25 | 0 |
| 2 | 0 | | | | | | - | 28 | 1.6 | 16 | 8.5 | 0 |
| 3 | 0 | | | | | | - | 31 | *2.2 | 17 | .4 | 0 |
| 4 | 0 | | | | | | - | 31 | 3.5 | .2 | .1 | 0 |
| 5 | *0 | | | | | | - | 28 | 18 | .3 | .1 | 0 |
| 6 | - | | | | | | - | *28 | 14 | .3 | 1.1 | 0 |
| 7 | - | | | | | | - | 21 | 6.5 | .2 | 3.1 | 0 |
| 8 | - | | | | | | - | 18 | 9.4 | 0 | 1.7 | 1.3 |
| 9 | - | | | | | | - | 13 | 16 | 0 | 2.0 | *3.0 |
| 10 | - | | | | | | - | 10 | 6.2 | 0 | *0 | 1.2 |
| 11 | - | | | | | | - | 13 | 9.4 | 0 | 0 | 17 |
| 12 | - | | | | | | - | 11 | 3.4 | .1 | 0 | 7.1 |
| 13 | - | | | | | | - | 39 | 2.2 | *.1 | 8.2 | 6.7 |
| 14 | - | | | | | | - | 28 | 1.9 | .2 | 12 | 7.3 |
| 15 | - | | | | | | - | 33 | 1.5 | .1 | .4 | 6.3 |
| 16 | - | | | | | | - | 27 | *2.8 | .1 | 6.6 | 5.3 |
| 17 | - | | | | | | - | 12 | 6.8 | 0 | 5.8 | 9.1 |
| 18 | - | | | | | | - | *18 | 13 | 10 | .8 | 12 |
| 19 | - | | | | | | - | 40 | 48 | 2.3 | 1.4 | 6.8 |
| 20 | - | | | | | | - | 46 | 31 | .5 | 1.5 | 10 |
| 21 | - | | | | | | - | 51 | 16 | .3 | .1 | 7.1 |
| 22 | - | | | | | | *23 | 58 | 5.5 | .3 | 0 | *6.0 |
| 23 | - | | | | | | 32 | 67 | 2.0 | .5 | *3.0 | 6.0 |
| 24 | - | | | | | | 34 | 79 | 1.4 | 22 | .1 | 5.1 |
| 25 | - | | | | | | 31 | 60 | 1.3 | 40 | .1 | 4.7 |
| 26 | - | | | | | | 18 | 33 | .9 | *23 | 0 | 4.3 |
| 27 | - | | | | | | 3.0 | 9.7 | 1.1 | 23 | .1 | 4.3 |
| 28 | - | | | | | | 1.7 | 3.1 | 2.2 | 19 | 0 | 3.9 |
| 29 | - | | | | - | | 4.9 | 2.2 | 1.2 | 11 | 0 | 3.4 |
| 30 | - | | | | ---------- | | 11 | 1.6 | .6 | 3.3 | .8 | 2.8 |
| 31 | - | ---------- | | | ---------- | | ---------- | 3.5 | ---------- | 14 | 0 | ---------- |
| Total | - | - | - | - | - | - | - | 864.1 | 232.8 | 216.8 | 82.9 | 151.5 |
| Mean | - | - | - | - | - | - | - | 27.9 | 7.76 | 6.99 | 2.67 | 5.05 |
| Ac-ft | - | - | - | - | - | - | - | 1,710 | 462 | 430 | 164 | 300 |

Calendar year : Max Min Mean Ac-ft
Water year : Max Min Mean Ac-ft

Peak discharge (base, 200 cfs).--No peak above base.

* Discharge measurement made on this day.

Principal diversions from Costilla Creek, New Mexico-Colorado

Records of discharge are collected at 8 gaging stations on 4 diversions from Costilla Creek. Each of these stations is equipped with a water-stage recorder (digital, as noted) and a Parshall flume. Water diverted is used for irrigation in the Sangre de Cristo Grant in New Mexico and Colorado below the gaging station on Costilla Creek near Costilla, N. Mex. Records collected during irrigation seasons only except for No. 8-2620. Discharge measurements generally made twice a month except during winter period.

8-2560. Acequia Madre at Costilla, N. Mex.--Lat 36°58'02", long 105°30'57", 275 ft downstream from diversion dam. Records available, May 1944 to September 1965. Acequia diverts from right bank of Costilla Creek.

8-2565. Mesa ditch near Garcia, Colo.--Lat 36°59'51", long 105°30'49", 429 ft north of milepost No. 136+54 on New Mexico-Colorado State line. Records available, June 1944 to September 1965. Ditch diverts from right bank of Acequia Madre for irrigation in Colorado.

8-2575. Cordillera ditch at Garcia, Colo.--Lat 36°59'42", long 105°31'39", 570 ft south of New Mexico-Colorado State line. Records available, June 1944 to September 1965. Ditch diverts from Acequia Madre for irrigation in Colorado. Digital recorder.

8-2580. Cerro Canal at Costilla, N. Mex.-- Lat 36°57'55", long 105°31'07", 1,400 ft downstream from diversion dam. Records available, April 1944 to September 1965. Canal diverts from left bank of Costilla Creek. Digital recorder.

8-2585. Association ditch at Costilla, N. Mex.--Lat 36°57'38", long 105°32'03", 100 ft downstream from new diversion from Cerro Canal. Records available, May 1955 to September 1965. Ditch diverts from left bank of Cerro Canal.

8-2590. Cerro Canal near Jaroso, Colo.--Lat 36°59'42", long 105°34'35". Records available, June 1944 to September 1965. Flow measured is delivered to Colorado and to New Mexico branch of Cerro Canal.

8-2595. New Mexico Branch Cerro Canal near Jaroso, Colo.--Lat 36°59'44", long 105°34'47", 225 ft downstream from headgate. Records available, June 1944 to September 1965. Canal diverts from left bank of Cerro Canal for irrigation in New Mexico.

8-2620. Eastdale No. 1 intake canal near Jaroso, Colo.--Lat 37°02'40", long 105°37'00", 750 ft downstream from headgate. Records available, June 1944 to September 1965. Canal diverts from right bank of Costilla Creek to Eastdale Reservoir No. 1 for irrigation in Colorado.

Diversions, in acre-feet, water year October 1964 to September 1965

| Month | Acequia Madre | Mesa ditch | Cordil-lera ditch | Cerro Canal at Costilla | Associ-ation ditch | Cerro Canal near Jaroso, Colo. | New Mexico branch Cerro canal | Eastdale No. 1 intake Canal |
|---|---|---|---|---|---|---|---|---|
| October | - | - | - | - | - | - | - | 0 |
| November | - | - | - | - | - | - | - | 0 |
| December | - | - | - | - | - | - | - | 0 |
| January | - | - | - | - | - | - | - | 0 |
| February | - | - | - | - | - | - | - | 0 |
| March | - | - | - | - | - | - | - | 31 |
| April | - | - | - | - | - | - | - | 1,150 |
| May | 740 | 0 | 8.3 | 4,000 | 1,170 | 2,430 | 52 | 1,690 |
| June | 885 | 0 | 89 | 3,870 | 1,210 | 2,120 | 175 | 368 |
| July | 748 | 0 | 32 | 3,330 | 940 | 1,720 | 240 | 208 |
| August | 1,080 | 0 | 8.5 | 3,640 | 1,250 | 1,830 | 344 | 161 |
| September | 660 | 2.8 | 51 | 1,530 | 710 | 562 | 256 | 56 |
| Water year 1964-65 | - | - | - | - | - | - | - | 3,660 |

## 8-2630. Latir Creek near Cerro, N. Mex.

Location.--Lat 36°49'45", long 105°32'50", in S½SW¼ sec. 15, T.30 N., R.13 E., on right bank at mouth of canyon, 100 ft upstream from heading of Cerro community ditch and 6 miles northeast of Cerro.

Drainage area.--10 sq mi, approximately.

Records available.--June 1937 to September 1965. Monthly discharge only for some periods, published in WSP 1312. Records for April and May 1937, published in WSP 828, have been found to be unreliable (unknown portion of flow bypassing gage) and should not be used.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 8,280 ft (from topographic map).

Average discharge.--28 years, 6.30 cfs (4,560 acre-ft per year).

Extremes.--Maximum discharge during year, 126 cfs June 18 (gage height, 3.17 ft), from rating curve extended above 60 cfs by logarithmic plotting; minimum discharge determined, 0.9 cfs Dec. 14.
1937-65. Maximum discharge determined, that of June 18, 1965. Maximum gage height recorded, 4.2 ft July 19, 1945 (log jam; discharge not determined, but may have exceeded 126 cfs); minimum daily discharge, 0.2 cfs Jan. 20-21,24, 1961.

Remarks.--Records fair except those for periods of ice effect, backwater from debris, or doubtful or no gage-height record, which are poor.

Rating tables, except periods of ice effect and backwater from debris
(gage height, in feet, and discharge, in cubic feet per second)

| Oct. 1 to Apr. 22 | | Apr. 22 to Sept. 30 | | | |
|---|---|---|---|---|---|
| 1.1 | 0.9 | 0.3 | 3.0 | 1.0 | 22 |
| 1.2 | 2.1 | .4 | 4.7 | 1.4 | 38 |
| 1.3 | 3.4 | .6 | 9.2 | 1.8 | 58 |
| | | .8 | 15 | 2.2 | 83 |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.9 | a 2 | 2.1 | 1.7 | 1.9 | 1.9 | 2.1 | 13 | 22 | 31 | 13 | 5.5 |
| 2 | 2.9 | a 2 | 2.1 | 1.7 | 2.0 | b 1.7 | 2.1 | 13 | 21 | *27 | 13 | 6.1 |
| 3 | 2.9 | a 2.2 | 2.1 | b 1 | 2.0 | b 1.5 | 2.0 | 12 | 18 | 20 | 12 | 5.9 |
| 4 | 2.8 | a 2.2 | 2.0 | b 1.3 | 2.0 | b 1.6 | 2.2 | 11 | *18 | 18 | 11 | 5.5 |
| 5 | 2.6 | a 2.4 | 1.9 | b 1.5 | 2.0 | b 1.7 | 2.4 | 12 | 18 | 18 | 11 | 5.5 |
| 6 | 2.6 | *2.5 | 1.9 | 1.7 | 2.0 | b 1.8 | * 2.0 | 13 | 18 | 17 | 11 | 6.4 |
| 7 | *2.6 | 2.0 | b 1.8 | 1.9 | 2.0 | 1.9 | 2.2 | 8.4 | 18 | 16 | 9.7 | 6.1 |
| 8 | 2.5 | 2.1 | * b 1.8 | 1.5 | 2.0 | 2.0 | 2.2 | 9.0 | 20 | 16 | 9.5 | 9.5 |
| 9 | 2.5 | d 2 | 2.0 | 1.6 | *2.0 | 2.0 | 2.1 | 7.3 | 21 | 15 | * 9.5 | 7.3 |
| 10 | 2.4 | d 2 | 2.0 | a 1.6 | 2.0 | * 2.0 | 2.1 | 9.2 | 22 | 16 | 9.2 | *6.8 |
| 11 | d 2.3 | d 2 | 1.9 | a 1.6 | 2.0 | 2.0 | a 2 | 14 | 22 | 16 | 9.0 | 6.8 |
| 12 | d 2.3 | d 2 | 1.9 | *b 1.7 | 1.9 | 1.9 | a 2 | 10 | 21 | 16 | 8.7 | 6.8 |
| 13 | d 2.2 | d 2 | 1.7 | 2.0 | b 1.5 | 1.9 | a 2 | a 10 | 27 | 16 | 8.2 | 6.8 |
| 14 | a 2.2 | d 2.2 | b 1 | 2.0 | b 1.8 | 1.9 | a 2 | a 13 | 33 | 16 | 8.7 | 6.8 |
| 15 | a 2.2 | 2.4 | 1.6 | 1.9 | 2.0 | 1.9 | a 2 | a 13 | 39 | *16 | 9.0 | 6.6 |
| 16 | a 2.1 | *2.2 | 1.6 | 1.9 | 2.0 | 1.9 | a 3 | 11 | *48 | 15 | 8.2 | 6.6 |
| 17 | a 2.1 | 2.1 | 1.6 | 1.9 | 2.0 | 1.9 | a 4 | *14 | 49 | 14 | 8.0 | 9.6 |
| 18 | a 2.1 | 2.0 | 1.6 | 1.9 | 2.0 | 1.7 | a 5 | 16 | c 67 | 14 | 7.7 | 12 |
| 19 | a 2.1 | b 1.8 | 1.6 | 2.0 | 2.0 | 1.7 | a 5 | 16 | c 76 | 13 | 7.7 | 11 |
| 20 | a 2.1 | b 1.6 | 1.6 | 2.0 | 2.0 | 1.6 | a 6 | 18 | 53 | 12 | 7.5 | 10 |
| 21 | a 2 | b 1.6 | *1.6 | 2.0 | 2.1 | 1.7 | a 7 | 20 | 50 | 12 | a 8 | 9.0 |
| 22 | a 2 | a 1.6 | 1.6 | 2.0 | 2.1 | 1.7 | * 8.5 | 22 | 42 | 12 | a 7 | *9.2 |
| 23 | a 2 | a 1.6 | 1.7 | 2.0 | 2.0 | 1.7 | 9.2 | 21 | 38 | 11 | a 7 | 8.7 |
| 24 | a 2 | a 1.7 | 1.7 | 2.0 | b 1.6 | 1.7 | 9.5 | 18 | 41 | 11 | a 6 | 8.4 |
| 25 | a 2 | a 2 | 1.7 | 2.0 | b 1.8 | 1.9 | 7.5 | 16 | 36 | 11 | *6.1 | 8.2 |
| 26 | a 2 | a 2 | 1.7 | *2.0 | 2.0 | 1.7 | 4.7 | 15 | 26 | *9.7 | 6.4 | 7.7 |
| 27 | a 2 | a 2 | 1.7 | 1.9 | 2.0 | 1.9 | 4.3 | 16 | 22 | a 10 | 6.1 | 7.5 |
| 28 | a 2 | a 2 | 1.5 | 1.9 | 2.0 | 1.9 | 4.5 | 18 | 20 | a 11 | 6.1 | 7.5 |
| 29 | a 2 | a 2 | 1.7 | 1.9 | - | 2.0 | 6.6 | 20 | 18 | *11 | 6.4 | 7.5 |
| 30 | a 2 | a 2 | b 1.7 | 1.9 | ---------- | 2.2 | 9.7 | 21 | 24 | 12 | 6.1 | 7.0 |
| 31 | a 2 | ---------- | 2.0 | 1.9 | ---------- | 2.2 | ---------- | 22 | ---------- | 12 | 5.9 | ---------- |
| Total | 70.4 | 60.2 | 54.4 | 55.9 | 54.7 | 57.1 | 125.9 | 451.9 | 947 | 464.7 | 262.7 | 228.3 |
| Mean | 2.27 | 2.01 | 1.75 | 1.80 | 1.95 | 1.84 | 4.20 | 14.6 | 31.6 | 15.0 | 8.47 | 7.61 |
| Ac-ft | 140 | 119 | 108 | 111 | 108 | 113 | 250 | 896 | 1,880 | 922 | 521 | 453 |

Calendar year 1964: Max 15 Min 1 Mean 2.97 Ac-ft 2,160
Water year 1964-65: Max 76 Min 1 Mean 7.76 Ac-ft 5,620

Peak discharge (base, 40 cfs).--June 18 (2210) 126 cfs (3.17 ft); June 30 (2200) 48 cfs (1.53 ft).

* Discharge measurement made on this day.
a No gage-height record.
b Stage-discharge relation affected by ice.
c Backwater from debris.
d Doubtful gage-height record.

8-2635. Rio Grande near Cerro, N. Mex.

Location.--Lat 36°44'05", long 105°41'05", in N½ sec.20, T.29 N., R.12 E., on left bank 4 miles southwest of Cerro, 5½ miles northwest of Questa, and 7 miles upstream from Red River.

Drainage area.--8,440 sq mi, approximately (includes 2,940 sq mi in closed basin in San Luis Valley, Colo.).

Records available.--May 1948 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 7,100 ft (from river-profile map).

Average discharge.--17 years, 346 cfs (250,500 acre-ft per year).

Extremes.--Maximum discharge during year, 3,860 cfs June 22 (gage height, 10.80 ft); minimum, 55 cfs Oct.6.
1948-65: Maximum discharge, 9,740 cfs June 22, 1949 (gage height, 15.78 ft); minimum, 43 cfs Sept. 22, 1956.

Remarks.--Records good except those for period of no gage-height record, which are fair. Diversions for irrigation of about 626,000 acres above station.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used June 22-28, July 29 to Aug. 1)

| | | | | | |
|---|---|---|---|---|---|
| 1.2 | 54 | 4.0 | 437 | 8.0 | 1,740 |
| 1.5 | 79 | 5.0 | 645 | 9.0 | 2,350 |
| 2.0 | 128 | 6.0 | 920 | 10.0 | 3,100 |
| 3.0 | 259 | 7.0 | 1,280 | 11.0 | 3,950 |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 58 | 85 | *126 | 220 | 230 | 285 | 443 | 434 | 848 | 1,400 | 712 | 190 |
| 2 | 57 | 87 | 128 | 210 | 233 | 241 | 416 | 509 | 886 | 1,430 | 947 | 189 |
| 3 | 57 | 88 | 135 | 200 | 231 | 182 | 437 | 622 | 984 | 1,420 | 1,300 | 202 |
| 4 | 56 | 89 | 126 | 190 | 236 | 248 | 418 | 1,070 | *1,150 | 1,420 | 1,560 | 198 |
| 5 | 56 | 95 | 92 | 195 | 244 | 309 | 376 | 1,400 | 1,190 | 1,740 | 1,540 | 201 |
| 6 | 56 | 96 | 101 | 190 | 240 | 292 | 357 | 1,570 | 1,250 | 1,970 | 1,390 | 215 |
| 7 | *56 | 96 | 106 | 290 | 246 | 282 | *326 | *1,420 | 1,350 | 1,920 | 1,230 | 215 |
| 8 | 58 | 96 | 130 | 280 | 256 | 292 | 297 | 1,250 | 1,360 | 1,790 | 1,060 | 205 |
| 9 | 61 | 93 | 125 | 235 | *262 | 295 | 285 | 1,170 | 1,700 | 1,660 | 854 | 202 |
| 10 | 66 | 92 | 117 | 230 | 267 | 295 | 270 | 1,110 | 2,230 | 1,540 | 695 | *208 |
| 11 | 68 | 199 | 116 | 220 | 244 | 309 | 252 | 932 | 2,380 | 1,540 | 575 | 218 |
| 12 | 70 | 378 | 115 | * 216 | 199 | 326 | 240 | 875 | 2,120 | 1,620 | 481 | 212 |
| 13 | 74 | 431 | 110 | 216 | 243 | 330 | 223 | 827 | 2,070 | 1,680 | *391 | 220 |
| 14 | 75 | 467 | 100 | 212 | 258 | 348 | 216 | 958 | 2,060 | 1,770 | 346 | 205 |
| 15 | 78 | 507 | 105 | 209 | 254 | 371 | 208 | 1,110 | 1,940 | *1,880 | 302 | 192 |
| 16 | 80 | 535 | 100 | 209 | 244 | 376 | 201 | 1,150 | 2,230 | 1,640 | 272 | 180 |
| 17 | 81 | 553 | 100 | 208 | 246 | 399 | 193 | 1,070 | *2,520 | 1,290 | 256 | 177 |
| 18 | 81 | 309 | 110 | 210 | 246 | 391 | 184 | 917 | 2,660 | 1,060 | 250 | 176 |
| 19 | 80 | 206 | 115 | 212 | 247 | 376 | 170 | 993 | 2,760 | 914 | 244 | 177 |
| 20 | 80 | 153 | 115 | 213 | 256 | 403 | 143 | *1,280 | 2,990 | 809 | 237 | 177 |
| 21 | 79 | 116 | 120 | 216 | 256 | 380 | 154 | 1,790 | 3,390 | 732 | 238 | 181 |
| 22 | 77 | 106 | *120 | 216 | 261 | 401 | 327 | 2,240 | 3,760 | 675 | 241 | 368 |
| 23 | 76 | 112 | 125 | 219 | 272 | 405 | *469 | 2,340 | 3,780 | 595 | 240 | *662 |
| 24 | 77 | 126 | 130 | 202 | *258 | *407 | 596 | 2,350 | *3,710 | 475 | 234 | 692 |
| 25 | 78 | 116 | 140 | 206 | 252 | 429 | 771 | 2,390 | 3,720 | 414 | 217 | 692 |
| 26 | *83 | 118 | 160 | 222 | 280 | 433 | 833 | 2,040 | 3,600 | 478 | *210 | 692 |
| 27 | 84 | 131 | 170 | * 202 | 284 | 405 | 770 | 1,600 | 3,320 | 846 | 206 | 695 |
| 28 | 80 | 113 | 190 | 205 | 292 | 384 | 656 | 1,270 | 3,180 | 908 | 216 | 718 |
| 29 | 79 | 125 | 195 | 209 | - | 433 | 553 | 999 | *2,480 | 902 | 217 | 762 |
| 30 | 81 | 127 | 170 | 217 | ------ | 424 | 458 | 902 | 1,660 | *833 | 209 | 827 |
| 31 | 85 | ------ | 205 | 226 | ------ | 446 | ------ | 848 | ------ | 748 | 197 | ------ |
| Total | 2,227 | 5,845 | 3,997 | 6,705 | 7,037 | 10,897 | 11,242 | 39,436 | 69,278 | 38,099 | 17,067 | 10,248 |
| Mean | 71.8 | 195 | 129 | 216 | 251 | 352 | 375 | 1,272 | 2,309 | 1,230 | 551 | 342 |
| Ac-ft | 4,420 | 11,590 | 7,930 | 13,300 | 13,960 | 21,610 | 22,300 | 78,220 | 137,400 | 75,570 | 33,850 | 20,330 |

Calendar year 1964 : Max 553 Min 47 Mean 121 Ac-ft 87,900
Water year 1964-65 : Max 3,780 Min 56 Mean 608 Ac-ft 440,500

Peak discharge (base, 1,000 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 5-6 | 1540 | 7.75 | 1,640 | 6-22 | 2100 | 10.80 | 3,860 |
| 5-25 | 1400 | 9.09 | 2,450 | 7- 6 | 2000 | 8.40 | 2,000 |
| | | | | 8- 4 | 2130 | 7.75 | 1,660 |

* Discharge measurement made on this day.
Note.--No gage-height record Dec. 12 to Jan. 11.

8-2645. Red River below Zwergle damsite, near Red River, N. Mex.

Location.--Lat 36°40'25", long 105°22'50", in NE¼SW¼ sec.7, T.28 N., R.15 E. (projected), on right bank 2,000 ft upstream from Goose Creek, 1.9 miles downstream from Bear Canyon, 2¾ miles southeast of Red River.

Drainage area.--25.7 sq mi.

Records available.--April 1963 to September 1965.

Gage.--Water-stage recorder and concrete control. Datum of gage is 8,871.88 ft above mean sea level, datum of 1929.

Extremes.--Maximum discharge during year, 216 cfs June 19 (gage height, 3.38 ft); minimum recorded, 0.7 cfs Feb. 8, but may have been less during periods of ice effect.
1963-65: Maximum and minimum discharges, those of 1965 water year.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. No diversion above station. Records of suspended sediment loads and water temperatures for the water year 1965 are published in part 2 of this report.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

| Oct. 1 to Apr. 20 | | Apr. 21 to Sept. 30 | | | |
|---|---|---|---|---|---|
| 1.7 | 3.2 | 2.0 | 14 | 2.7 | 80 |
| 1.8 | 5.4 | 2.2 | 27 | 3.0 | 129 |
| 2.0 | 12 | 2.4 | 44 | 3.4 | 221 |
| 2.2 | 24 | | | | |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 8.6 | 6.3 | 6.6 | b5 | 5.6 | 4.0 | 6.3 | 31 | *82 | 95 | 65 | 18 |
| 2 | 8.6 | 6.3 | 6.9 | b3.5 | 5.6 | b3.5 | 6.9 | 39 | *84 | 92 | 57 | 21 |
| 3 | 8.2 | 6.3 | 6.9 | b4.5 | 4.8 | b3 | 7.5 | 44 | 84 | 88 | 51 | 18 |
| 4 | 8.2 | 6.1 | 5.4 | b6 | 5.4 | b3 | 7.8 | 47 | 83 | 82 | 45 | 18 |
| 5 | 7.8 | 6.6 | b4.5 | b7 | 5.4 | b3.5 | 7.5 | 44 | 77 | 77 | 42 | 18 |
| 6 | *7.8 | 6.3 | b4.5 | b7 | 5.6 | b4 | *7.5 | *44 | 72 | 76 | 39 | 19 |
| 7 | a7.8 | 6.3 | b4.5 | 7.5 | 5.6 | b4.5 | 7.2 | 47 | 75 | 74 | 36 | 18 |
| 8 | a7.6 | 6.3 | b4.5 | 7.2 | 4.8 | b4.5 | 7.2 | 47 | 80 | 74 | 33 | 24 |
| 9 | a7.6 | 6.6 | *b4.5 | b7 | *b4.5 | *4.8 | 7.8 | 41 | 89 | 68 | 32 | *21 |
| 10 | a7.6 | 6.6 | b4.5 | b7 | b4 | 4.6 | 6.9 | 39 | 95 | 63 | 33 | 19 |
| 11 | a7.6 | 5.6 | b5 | b6 | b3.5 | 4.4 | 6.3 | 34 | 94 | 62 | 31 | 19 |
| 12 | a7.6 | 5.6 | b4 | b6 | b3 | 4.4 | 7.8 | 36 | 88 | 61 | *29 | 19 |
| 13 | a7.6 | 7.2 | b3 | *b6 | b3 | 4.4 | 8.2 | 46 | 95 | 61 | 26 | 18 |
| 14 | a7.6 | 7.2 | b3.5 | b6.5 | b3.5 | 4.2 | 7.8 | 48 | 111 | 55 | 27 | 17 |
| 15 | a7.6 | 6.9 | b4 | b6.5 | a3.5 | 4.4 | 7.2 | 44 | 127 | *53 | 26 | 17 |
| 16 | a7.2 | 6.9 | b5 | b6.5 | a4 | 4.4 | 9.3 | 40 | 153 | 53 | 26 | 17 |
| 17 | a7.2 | *6.9 | b5 | b6.5 | a4.5 | 4.0 | 12 | 45 | *171 | 48 | 27 | 25 |
| 18 | a7.2 | b6 | b4 | b6.5 | a5 | 4.0 | 14 | 56 | 190 | 45 | 29 | 30 |
| 19 | a7.2 | b5 | b4.5 | b6.5 | a5 | 4.0 | 16 | 71 | 198 | 44 | 28 | 27 |
| 20 | a7.2 | b4 | b4 | b6.5 | a5 | b3.5 | 20 | *79 | 176 | 42 | 25 | 29 |
| 21 | a7.2 | b4 | *b4.5 | b6.5 | a5 | b3.5 | 25 | 84 | 158 | 40 | 24 | 25 |
| 22 | a7.2 | b4 | b5 | b6 | a5 | 4.0 | 31 | 95 | 141 | 39 | 23 | 24 |
| 23 | a7.4 | b4.5 | 6.3 | b6 | a4.5 | 4.2 | *36 | 111 | 125 | 39 | 22 | *24 |
| 24 | a7.6 | b5 | 6.3 | b6.5 | a3.5 | 4.4 | 39 | 108 | 139 | 39 | 21 | 23 |
| 25 | a7.6 | b5.5 | 6.1 | b5.5 | *b4 | *4.2 | 36 | 86 | 127 | 44 | 20 | 22 |
| 26 | a7.0 | b6 | 6.1 | *b4.5 | b4.5 | 4.2 | 30 | 72 | 111 | *40 | *19 | 21 |
| 27 | *6.6 | 6.6 | 6.3 | b4.5 | 4.6 | 4.4 | 26 | 63 | 98 | *40 | 19 | 21 |
| 28 | 6.6 | 6.6 | 4.8 | b5 | 4.6 | 4.8 | 24 | 57 | 89 | 37 | 19 | 21 |
| 29 | 6.6 | 6.9 | b4 | b5 | - | 5.1 | 26 | 60 | 86 | 37 | 19 | 20 |
| 30 | 6.3 | 6.1 | b5 | 5.6 | ------- | 5.4 | 24 | 66 | 90 | 39 | 19 | 19 |
| 31 | 6.3 | ------ | b6 | 5.8 | ------- | 6.1 | ------ | 72 | ------ | 55 | 18 | ------ |
| Total | 230.2 | 180.2 | 155.7 | 186.1 | 127.0 | 131.4 | 478.2 | 1,796 | 3,388 | 1,762 | 930 | 632 |
| Mean | 7.43 | 6.01 | 5.02 | 6.00 | 4.54 | 4.24 | 15.9 | 57.9 | 113 | 56.8 | 30.0 | 21.1 |
| Ac-ft | 457 | 357 | 309 | 369 | 252 | 261 | 948 | 3,560 | 6,720 | 3,490 | 1,840 | 1,250 |

Calendar year 1964: Max 84 Min 3.0 Mean 12.4 Ac-ft 9,020
Water year 1964-65: Max 198 Min 3 Mean 27.4 Ac-ft 19,810

Peak discharge (base, 65 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 5-23 | 1700 | 2.97 | 124 | 7-31 | 2300 | 2.62 | 70 |
| 6-19 | 0400 | 3.38 | 216 | | | | |

* Discharge measurement made on this day.
a No gage-height record.
b Stage-discharge relation affected by ice.

## 8-2650. Red River near Questa, N. Mex.

Location.--Lat 36°42'10", long 105°34'03", in NE¼SE¼ sec.32, T.29 N., R.13 E. (projected), on left bank 1¼ miles upstream from Cabresto Creek and 1.5 miles east of Questa.

Drainage area.--113 sq mi.

Records available.--April to October 1910 and January to September 1911 (gage heights and discharge measurements only), October 1912 to September 1925 (fragmentary prior to September 1915), January to March 1926, September 1926 to September 1965. Published as "above Questa" January 1926 to September 1930, and as Rio Colorado near Questa October 1930 to September 1947. Monthly discharge only for some periods, published in WSP 1312. Previously published figures of discharge for October to December 1925 have been found to be unreliable and should not be used.

Gage.--Water-stage recorder. Wood or concrete control since Mar. 20, 1936. Datum of gage is 7,451.92 ft above mean sea level, datum of 1929 (1957 adjustment). Apr. 5 to Oct. 14, 1910, and Jan. 27 to Sept. 4, 1911, staff gages at sites 1½ and 3½ miles upstream, respectively, each at different datum. Oct. 6, 1912, to Aug. 21, 1920, chain gage at site 200 ft upstream at various datums. Aug. 22, 1920, to June 16, 1921, staff gage at present site at datum 2.29 ft lower. June 17, 1921, to Apr. 30, 1934, water-stage recorder at present site at datum 2.55 ft lower and May 1, 1934, to Oct. 3, 1938, at datum 1.41 ft lower.

Average discharge.--52 years (1912-25, 1926-65), 55.9 cfs (40,470 acre-ft per year).

Extremes.--Maximum discharge during year, 341 cfs June 19 (gage height, 4.10 ft); minimum, about 5 cfs Dec. 13, result of freezeup.
1930-65: Maximum discharge, 886 cfs May 25, 1942 (gage height, 2.32 ft), from rating curve extended above 450 cfs by logarithmic plotting; minimum, 1.5 cfs Nov. 23, 1957.
The peak of June 15, 1921, may have equaled or exceeded the peak of May 25, 1942.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of a few hundred acres above station. Figures of discharge do not include South ditch, which diverts from left bank 1,500 ft upstream and bypasses gage for irrigation (and stock water) below. See monthly table below for record of ditch (record of daily discharge available in district files).

Rating table, except periods of ice effect (gage height, in feet, and discharge in cubic feet per second)
(Shifting-control method used June 8-13, June 27 to July 3, July 15 to Sept.30)

| | | | | | |
|---|---|---|---|---|---|
| 1.8 | 6.1 | 2.6 | 55 | 3.8 | 326 |
| 2.0 | 12 | 3.0 | 111 | | |
| 2.3 | 28 | 3.4 | 199 | | |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 20 | 17 | 14 | 18 | 18 | 14 | 20 | 92 | *179 | 216 | 97 | 32 |
| 2 | 20 | 17 | 16 | b13 | 17 | b12 | 21 | 113 | 186 | 202 | a94 | 36 |
| 3 | 19 | 18 | 17 | b12 | 17 | b11 | 21 | 140 | 179 | 184 | a90 | 34 |
| 4 | 20 | 18 | 16 | 14 | 17 | b10 | 20 | 143 | 169 | 169 | a88 | 34 |
| 5 | 20 | 19 | bi3 | 19 | 17 | b11 | *22 | 115 | 167 | 160 | a84 | 34 |
| 6 | 20 | 19 | b11 | 19 | 17 | b12 | 21 | 124 | 149 | 151 | a82 | 35 |
| 7 | *19 | 18 | b11 | 22 | 17 | b12 | 21 | *132 | 147 | 140 | a82 | 34 |
| 8 | 19 | 18 | b11 | 20 | 17 | b13 | 20 | 134 | 160 | 147 | a80 | 42 |
| 9 | 18 | 19 | a11 | 20 | 16 | *14 | 20 | 126 | 165 | 145 | 76 | 39 |
| 10 | 19 | 18 | a11 | 17 | *14 | 14 | 20 | 124 | 172 | 134 | 74 | *37 |
| 11 | 18 | 18 | b11 | 16 | b13 | 14 | 18 | 108 | 174 | 134 | 73 | 36 |
| 12 | 18 | 15 | 12 | *18 | b11 | 14 | *18 | 104 | 169 | 130 | *69 | 37 |
| 13 | 18 | 18 | b7 | 16 | b10 | 14 | 20 | 132 | 184 | 117 | 64 | 36 |
| 14 | 18 | 18 | b9 | 17 | b11 | 14 | 20 | 126 | 179 | 122 | 62 | 34 |
| 15 | 18 | 18 | 12 | 19 | b12 | 14 | 18 | 147 | 192 | *118 | 61 | 35 |
| 16 | 17 | 18 | 14 | 18 | b14 | 15 | 20 | 140 | 227 | 117 | 62 | 36 |
| 17 | 17 | 17 | 13 | 18 | b15 | 15 | 22 | 138 | *274 | 113 | 58 | 46 |
| 18 | 17 | *16 | b12 | 18 | b16 | 15 | 27 | 165 | a300 | 108 | 53 | 64 |
| 19 | 17 | 12 | 14 | 18 | 16 | 14 | 32 | 199 | a320 | 96 | 51 | 56 |
| 20 | 17 | b8 | 15 | 17 | 16 | 15 | 41 | *221 | a310 | 88 | 48 | 66 |
| 21 | 17 | b7 | 16 | 18 | 17 | 16 | 58 | *221 | a280 | 81 | 47 | 61 |
| 22 | 17 | b7 | *17 | 17 | 16 | 16 | 69 | 227 | a260 | 72 | 45 | 58 |
| 23 | 18 | b7 | 18 | b16 | 16 | 16 | *97 | 245 | a250 | 72 | 42 | *56 |
| 24 | 19 | b8 | 18 | b15 | b15 | 16 | a110 | 236 | a260 | 70 | 40 | 55 |
| 25 | 20 | 8.9 | 17 | b12 | *b16 | 15 | 102 | 216 | a240 | 82 | *36 | 53 |
| 26 | 18 | 11 | 17 | b11 | 16 | 14 | 88 | 196 | a220 | 73 | 36 | 53 |
| 27 | *18 | 12 | 17 | *b11 | 16 | 16 | 74 | 182 | 210 | *74 | 36 | 52 |
| 28 | 18 | 12 | b17 | b12 | 16 | 17 | 63 | 167 | 199 | 68 | 36 | 52 |
| 29 | 18 | 13 | 14 | b13 | - | 17 | 63 | 169 | *184 | 64 | 41 | 50 |
| 30 | 16 | 13 | 12 | b16 | ---------- | 18 | 73 | 176 | 199 | 63 | 36 | 48 |
| 31 | 17 | ---------- | 17 | 18 | ---------- | 19 | ---------- | 182 | ---------- | 87 | 33 | ---------- |
| Total | 565 | 437.9 | 430 | 508 | 429 | 447 | 1,239 | 4,940 | 6,304 | 3,597 | 1,876 | 1,341 |
| Mean | 18.2 | 14.6 | 13.9 | 16.4 | 15.3 | 14.4 | 41.3 | 159 | 210 | 116 | 60.5 | 44.7 |
| Ac-ft | 1,120 | 869 | 853 | 1,010 | 851 | 887 | 2,460 | 9,800 | 12,500 | 7,130 | 3,720 | 2,660 |
| (†) | 102 | 23 | 6.1 | 17 | 0 | 0 | 49 | 37 | 139 | 103 | 109 | 75 |

Calendar year 1964: Max 135 Min 6 Mean 25.6 Ac-ft 18,580
Water year 1964-65: Max 320 Min 7 Mean 60.6 Ac-ft 43,860

Peak discharge (base, 160 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 5-4 | 1500 | 3.24 | 160 | 6-19 | Unknown | 4.10 | 341 |
| 5-23 | 2030 | 3.70 | 280 | | | | |

* Discharge measurement made on this day.
† Diversion, in acre-feet, by South ditch.
a No gage-height record.
b Stage-discharge relation affected by ice.

8-2655. Llano ditch near Questa, N. Mex.

Location.--Lat 36°43'45", long 105°33'00", in SE¼SE¼ sec.21, T.29 N., R.13 E., on left bank 150 ft downstream from heading, 3½ miles northeast of Questa, and 3⅝ miles upstream from mouth of Cabresto Creek.

Records available.--September 1943 to September 1965 (no winter records).

Gage.--Water-stage recorder and Parshall flume. Datum of gage is 7,877 ft above mean sea level (river-profile survey).

Extremes.--1943-65: Maximum daily discharge recorded, 42 cfs June 6, 7, 1958; no flow at times.

Remarks.--Records good. Ditch diverts water from right bank of Cabresto Creek for irrigation of about 800 acres near Questa.

Monthly discharge, in cubic feet per second, water year October 1964 to September 1965

| Month | Maximum | Minimum | Mean | Runoff in acre-feet |
|---|---|---|---|---|
| October | - | - | - | - |
| November | - | - | - | - |
| December | - | - | - | - |
| Calendar year 1964 | - | - | - | - |
| January | - | - | - | - |
| February | - | - | - | - |
| March | - | - | - | - |
| April | 2.1 | 0 | 0.14 | 8.3 |
| May | 20 | 0 | 9.70 | 597 |
| June | 17 | 9.4 | 12.8 | 762 |
| July | 16 | 5.0 | 9.20 | 566 |
| August | 9.3 | .1 | 3.57 | 220 |
| September | 1.9 | 0 | .06 | 3.8 |
| Water year 1964-65 | - | - | - | - |

8-2660. Cabresto Creek near Questa, N. Mex.

Location.--Lat 36°43'45", long 105°33'10", in SE¼SE¼ sec. 21, T.29 N., R.13 E., on right bank a quarter of a mile downstream from Llano ditch heading, 2½ miles downstream from Lake Fork, 3 miles northeast of Questa, and 3½ miles upstream from mouth.

Drainage area.--36.7 sq mi.

Records available.--September 1943 to September 1965.

Gage.--Water-stage recorder (digital, and crest-stage indicator) and concrete control. Datum of gage is 7,845 ft above mean sea level (river-profile survey).

Average discharge.--22 years, 9.79 cfs (7,090 acre-ft per year).

Extremes.--Maximum discharge during year, 53 cfs May 23 (gage height, 2.60 ft); maximum gage-height, 2.90 ft. Dec. 14 (ice jam); minimum discharge determined, 1.2 cfs Mar. 20.
1943-65: Maximum discharge, 176 cfs June 8, 1957 (gage height, 4.44 ft); minimum daily, 1 cfs Jan. 19, 1960.
The high water of May 25, 1942, reached a stage of 4.18 ft (discharge probably exceeded 200 cfs).

Remarks.--Records good except those for periods of ice effect or doubtful gage-height record, which are fair. Llano ditch (the only diversion above station) diverts from right bank a quarter of a mile above gage for irrigation of about 800 acres below. Flow regulated by Cabresto Reservoir (capacity, 732 acre-ft) on Lake Fork 1 mile above its mouth.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

| Oct. 1 to May 19 | | | | May 20 to Sept. 30 | | | |
|---|---|---|---|---|---|---|---|
| 1.0 | 0.8 | 1.7 | 9.2 | 0.4 | 4.5 | 1.4 | 23 |
| 1.1 | 1.5 | 2.2 | 20 | .8 | 11 | 2.4 | 49 |
| 1.4 | 4.7 | 2.7 | 36 | | | | |

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1964 TO SEPTEMBER 1965

| DAY | OCT. | NOV. | DEC. | JAN. | FEB. | MAR. | APR. | MAY | JUNE | JULY | AUG. | SEPT. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 4.7 | 4.0 | 3.7 | 3.9 | 4.0 | 3.9 | 5.0 | 20 | 30 | 13 | 15 | 8.0 |
| 2 | 4.6 | 4.0 | 3.7 | 2.7 | 4.0 | b 3.0 | 5.4 | 24 | * 29 | 11 | 14 | 6.2 |
| 3 | 4.6 | 4.2 | 3.7 | 2.7 | 3.9 | b 2.5 | 5.1 | 28 | 29 | 10 | 13 | 5.6 |
| 4 | 4.6 | 3.9 | 3.5 | 3.6 | 4.0 | b 3.0 | 5.6 | d 30 | 30 | 9.5 | 13 | 7.3 |
| 5 | 4.6 | 4.0 | 2.0 | 4.0 | 4.0 | b 3.0 | * 5.7 | d 32 | 35 | 9.1 | 13 | 9.5 |
| 6 | 4.6 | 4.0 | 1.8 | 4.0 | 4.1 | b 3.5 | 5.7 | d 35 | 27 | 8.8 | 13 | 9.6 |
| 7 | * 4.5 | 4.0 | 1.7 | 4.2 | 4.1 | 4.1 | 6.3 | * d 31 | 21 | 8.6 | 12 | 9.1 |
| 8 | 4.5 | 4.0 | 1.4 | 4.1 | 4.0 | 4.1 | 5.9 | d 31 | 21 | 10 | 12 | 11 |
| 9 | 4.5 | 4.0 | 1.7 | 4.0 | * 4.0 | * 4.0 | 6.5 | d 32 | 23 | 12 | 12 | * 9.7 |
| 10 | 4.5 | 4.1 | 2.0 | 3.5 | 3.6 | 4.0 | 6.2 | d 31 | 29 | 12 | * 12 | 9.1 |
| 11 | 4.3 | 4.1 | 2.3 | 3.4 | 3.5 | 4.0 | 4.7 | d 28 | 34 | 12 | 12 | 9.0 |
| 12 | 4.3 | 3.5 | 3.3 | * 4.2 | b 3.0 | 4.0 | 5.6 | d 27 | 30 | 11 | 11 | 9.0 |
| 13 | 4.3 | 3.9 | b 2.5 | 4.0 | b 2.5 | 3.9 | 6.6 | d 29 | 27 | 10 | 10 | 8.6 |
| 14 | 4.3 | 3.7 | b 1.5 | 4.1 | b 3.0 | 3.9 | 6.6 | d 23 | 27 | 14 | 9.5 | 8.1 |
| 15 | 4.3 | 3.7 | b 2.0 | 4.2 | b 3.5 | 3.9 | 6.0 | d 18 | 31 | * 14 | 10 | 7.9 |
| 16 | 4.2 | 3.7 | b 2.8 | 4.2 | 4.0 | 4.1 | 6.6 | d 17 | * 34 | 14 | 12 | 7.4 |
| 17 | 4.2 | 3.9 | b 2.8 | 4.2 | 4.0 | 4.0 | 7.7 | d 18 | 37 | 14 | 11 | 9.0 |
| 18 | 4.1 | * 3.9 | b 2.5 | 4.2 | 4.0 | 3.9 | 9.2 | d 21 | 38 | 11 | 11 | 11 |
| 19 | 4.2 | 3.5 | b 2.5 | 4.2 | 4.0 | 3.7 | * 9.6 | d 30 | 43 | 8.0 | 12 | 9.9 |
| 20 | 4.2 | 3.0 | b 2.5 | 4.2 | 4.1 | 3.1 | 11 | * d 39 | 38 | 11 | 13 | 11 |
| 21 | 4.2 | 2.8 | b 3.0 | 4.1 | 4.1 | 3.7 | 14 | 44 | 35 | 12 | 13 | 11 |
| 22 | 4.1 | 2.7 | * b 3.3 | 3.9 | 4.2 | 4.0 | 20 | 44 | 30 | 12 | 12 | 10 |
| 23 | 4.1 | 3.1 | b 3.5 | 3.5 | 4.1 | * 4.0 | * 22 | 47 | 27 | 10 | 13 | * 9.4 |
| 24 | 4.1 | 3.1 | b 3.4 | 4.1 | 3.5 | 3.9 | 25 | 48 | 27 | 10 | 12 | 9.0 |
| 25 | 4.1 | 3.3 | 3.4 | 4.0 | 3.9 | 3.7 | 26 | 44 | 25 | 11 | 12 | 8.7 |
| 26 | 4.1 | 3.3 | 3.4 | * b 3.0 | 4.1 | 3.5 | 23 | 38 | 23 | 11 | * 11 | 8.6 |
| 27 | * 4.1 | 3.5 | 3.5 | b 3.0 | 4.1 | 4.0 | 20 | 34 | 19 | * 11 | 11 | 8.4 |
| 28 | 4.1 | 3.3 | 3.7 | b 3.5 | 4.2 | 4.0 | 18 | 30 | 15 | 11 | 12 | 8.3 |
| 29 | 4.0 | 3.5 | 3.2 | b 3.5 | ------ | 4.1 | 16 | 29 | 13 | 11 | 12 | 8.4 |
| 30 | 4.0 | 3.6 | 2.7 | 4.1 | ------ | 4.1 | 17 | 29 | * 12 | 13 | 11 | 8.6 |
| 31 | 4.1 | ------ | 3.9 | 4.1 | ------ | 4.5 | ------ | 30 | ------ | 15 | 8.1 | ------ |
| TOTAL | 133.1 | 109.3 | 86.9 | 118.4 | 107.5 | 117.1 | 332.0 | 961 | 839 | 350.0 | 367.6 | 266.6 |
| MEAN | 4.29 | 3.64 | 2.80 | 3.82 | 3.84 | 3.78 | 11.1 | 31.0 | 28.0 | 11.3 | 11.9 | 8.89 |
| AC-FT | 264 | 217 | 172 | 235 | 213 | 232 | 659 | 1,910 | 1,660 | 694 | 729 | 529 |

CALENDAR YEAR 1964 MAX 19 MIN 1.4 MEAN 5.94 AC-FT 4,310
WATER YEAR 1964-65 MAX 48 MIN 1.4 MEAN 10.4 AC-FT 7,510

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.
d Doubtful gage-height record.

8-2670. Red River at mouth, near Questa, N. Mex.

Location.--Lat 36°39'00", long 105°41'30", in NW¼ sec.20 T.28 N., R.12 E., on left bank 250 ft upstream from Rio Grande and 6.5 miles southwest of Questa.

Drainage area.--190 sq mi.

Records available.--October 1950 to September 1965. Monthly discharge only for October and November 1950, published in WSP 1732.

Gage.--Water-stage recorder. Altitude of gage is 6,600 ft (from topographic map).

Average discharge.--15 years, 80.4 cfs (58,210 acre-ft per year).

Extremes.--Maximum discharge during year, 393 cfs June 19 (gage height, 4.90 ft); minimum, 29 cfs Feb. 13.
1950-65: Maximum discharge, 678 cfs Aug. 12, 1964 (gage height, 6.05 ft); minimum, that of Feb. 13, 1965.

Remarks.--Records good. Diversions for irrigation of about 3,000 acres above station.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Feb. 10, 11, May 20 to June 5)

| | | | |
|---|---|---|---|
| 1.7 | 37 | 3.0 | 153 |
| 2.0 | 60 | 4.0 | 271 |
| 2.5 | 102 | 5.0 | 408 |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 45 | 52 | 49 | 55 | 53 | 50 | 52 | 158 | 218 | 234 | 155 | 82 |
| 2 | 42 | 53 | 48 | 46 | 50 | 45 | 53 | 172 | 216 | 227 | 148 | 87 |
| 3 | 42 | 54 | 53 | 43 | 50 | 45 | 53 | 186 | *214 | 218 | 136 | 84 |
| 4 | 50 | 53 | 53 | 46 | 48 | 44 | 54 | 198 | 212 | 211 | 128 | 80 |
| 5 | 50 | 54 | 44 | 45 | 48 | 46 | 54 | 193 | 216 | 203 | 126 | 82 |
| 6 | 49 | 55 | 42 | 58 | 48 | 47 | *54 | *196 | 206 | 194 | 119 | 87 |
| 7 | *48 | 53 | 41 | 109 | 46 | 49 | 55 | 204 | 184 | 186 | 118 | 84 |
| 8 | 47 | 53 | 41 | 71 | 44 | 49 | 54 | 208 | 183 | 177 | 113 | 98 |
| 9 | 47 | 54 | 41 | 56 | 44 | 49 | 56 | 183 | 206 | 167 | 107 | *90 |
| 10 | 48 | 53 | 42 | 53 | *42 | 49 | 56 | 165 | 233 | 158 | 106 | 87 |
| 11 | 48 | 53 | 44 | 51 | 39 | 50 | 51 | 152 | 244 | 158 | 107 | 86 |
| 12 | 47 | 51 | 47 | 53 | 39 | 50 | 50 | 146 | 234 | 154 | *100 | 88 |
| 13 | 48 | 53 | 42 | *52 | 37 | 48 | 53 | 184 | 230 | 148 | 95 | 85 |
| 14 | 49 | 53 | 42 | 54 | 39 | 48 | 53 | 187 | 240 | 144 | 94 | 79 |
| 15 | 49 | 53 | 44 | 57 | 44 | 47 | 52 | 185 | 259 | *141 | 95 | 77 |
| 16 | 49 | 54 | 48 | 56 | 44 | 49 | 53 | 162 | 287 | 143 | 95 | 77 |
| 17 | 48 | *53 | 49 | 55 | 43 | 48 | 54 | 163 | 315 | 137 | 98 | 90 |
| 18 | 47 | 49 | 48 | 54 | 44 | 48 | 57 | 186 | *333 | 134 | 93 | 116 |
| 19 | 47 | 46 | 51 | 56 | 44 | 47 | 62 | 211 | 378 | 128 | 91 | 106 |
| 20 | 49 | 44 | 51 | 54 | 45 | 44 | 72 | *244 | 369 | 123 | 91 | 121 |
| 21 | 49 | 43 | 53 | 55 | 44 | 46 | 96 | 268 | 345 | 122 | 89 | 110 |
| 22 | 49 | 42 | 54 | 54 | 46 | 48 | 116 | 280 | 316 | 119 | 89 | 104 |
| 23 | 50 | 42 | 55 | 47 | 47 | 48 | *142 | 298 | 293 | 119 | 84 | *101 |
| 24 | 53 | 42 | 56 | 53 | 43 | 47 | 156 | 309 | 309 | 120 | 77 | 101 |
| 25 | 54 | 44 | 56 | 53 | 44 | *47 | 162 | 270 | 305 | 128 | 76 | 98 |
| 26 | 55 | 44 | 54 | 45 | 47 | 46 | 148 | 238 | 279 | 122 | *72 | 95 |
| 27 | *53 | 46 | 54 | *44 | 49 | 48 | 134 | 216 | 251 | 124 | 72 | 93 |
| 28 | 51 | 46 | 56 | 49 | 50 | 48 | 123 | 200 | 236 | 123 | 71 | 94 |
| 29 | 53 | 47 | *53 | 54 | — | 49 | 124 | 192 | 229 | *121 | 77 | 91 |
| 30 | 50 | 48 | 47 | 54 | ------ | 49 | 141 | 198 | 228 | 119 | 90 | 92 |
| 31 | 52 | ------ | 53 | 57 | ------ | 50 | ------ | 209 | ------ | 134 | 86 | ------ |
| Total | 1,518 | 1,487 | 1,511 | 1,689 | 1,261 | 1,478 | 2,440 | 6,361 | 7,768 | 4,736 | 3,098 | 2,765 |
| Mean | 49.0 | 49.6 | 48.7 | 54.5 | 45.0 | 47.7 | 81.3 | 205 | 259 | 153 | 99.9 | 92.2 |
| Ac-ft | 3,010 | 2,950 | 3,000 | 3,350 | 2,500 | 2,930 | 4,840 | 12,620 | 15,410 | 9,390 | 6,140 | 5,480 |

Calendar year 1964: Max 207 Min 41 Mean 59.5 Ac-ft 43,190
Water year 1964-65: Max 378 Min 37 Mean 98.9 Ac-ft 71,620

Peak discharge (base, 220 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 5-8 | 0330 | 3.62 | 223 | 6-19 | 0800 | 4.90 | 393 |
| 5-24 | 0330 | 4.49 | 322 | | | | |

* Discharge measurement made on this day.

## 8-2675. Rio Hondo near Valdez, N. Mex.

Location.--Lat 36°32'30", long 105°33'20", in SW¼SE¼ sec. 28, T.27 N., R.13 E., on right bank 500 ft upstream from first diversion, a quarter of a mile upstream from Forest Service gate, 1½ miles east of Valdez, 4 miles downstream from South Fork, and 9 miles upstream from mouth.

Drainage area.--36.2 sq mi.

Records available.--August 1934 to September 1965.

Gage.--Water-stage recorder (digital, and crest-stage indicator). Concrete control since Oct. 28, 1938. Datum of gage is 7,650 ft above mean sea level, datum of 1929. Prior to Oct. 28, 1938, at datum 1.92 ft lower.

Average discharge.--31 years, 36.1 cfs (26,140 acre-ft per year).

Extremes.--Maximum discharge during year, 260 cfs June 19 (gage height, 3.50 ft); maximum gage height, 3.93 ft Dec. 11 (ice jam); minimum discharge, about 4 cfs Dec. 14, result of freezeup.
1934-65: Maximum discharge, 541 cfs May 13, 1941, from rating curve extended above 300 cfs by logarithmic plotting; maximum gage height, 4.05 ft Dec. 15, 1953 (ice jam); minimum discharge, about 1 cfs Jan. 27, 1942, result of freezeup.

Remarks.--Records good except those for June and July, which are fair, and those for periods of ice effect or no gage-height record, which are poor.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used May 22-24, June 18-25, July 12-30)

| | | | |
|---|---|---|---|
| 1.5 | 4.6 | 2.2 | 35 |
| 1.6 | 5.8 | 2.7 | 91 |
| 1.7 | 7.2 | 3.2 | 159 |
| 1.8 | 9.3 | 3.7 | 250 |
| 2.0 | 18 | | |

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1964 TO SEPTEMBER 1965

| DAY | OCT. | NOV. | DEC. | JAN. | FEB. | MAR. | APR. | MAY | JUNE | JULY | AUG. | SEPT. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 14 | 11 | 9.3 | b11 | 8.9 | 11 | 15 | 63 | 113 | a 129 | 57 | 26 |
| 2 | 14 | 11 | 9.6 | b 7.0 | 9.0 | b10 | 15 | 81 | 117 | a 131 | 54 | 28 |
| 3 | 14 | 11 | 11 | b 6.0 | 9.1 | a 8.0 | 16 | 94 | 119 | a 115 | 52 | 26 |
| 4 | 14 | 11 | 9.6 | b 7.0 | 9.2 | a 8.0 | 17 | 100 | * 120 | a 122 | 50 | 25 |
| 5 | 14 | 11 | b 7.5 | b 8.0 | 9.5 | b 9.0 | 16 | *90 | 114 | a 117 | 50 | 25 |
| 6 | * 14 | 11 | b 6.0 | 8.9 | 9.6 | b 9.0 | * 15 | 85 | 109 | a 112 | 49 | 25 |
| 7 | 14 | 11 | b 7.0 | 9.6 | 9.4 | b 9.0 | 16 | 87 | 110 | a 108 | 49 | 24 |
| 8 | 14 | 11 | b 6.0 | 9.1 | 9.1 | 9.5 | 16 | 90 | 116 | a 104 | 47 | * 31 |
| 9 | 13 | 11 | b 7.0 | 8.7 | 8.9 | * 9.6 | 18 | 80 | a 122 | a 99 | 46 | 27 |
| 10 | 13 | 11 | b 8.0 | b 8.0 | 8.4 | 9.5 | 17 | 71 | a 123 | a 98 | 44 | 25 |
| 11 | 13 | 10 | a 9.0 | b 9.0 | * a 8.0 | 9.6 | 15 | 63 | a 127 | a 93 | * 42 | 25 |
| 12 | 13 | 9.1 | a 9.0 | 8.7 | a 7.0 | 9.6 | 14 | 63 | a 127 | *91 | 40 | 25 |
| 13 | 13 | 10 | a 7.0 | * b 9.0 | a 5.0 | 9.3 | 15 | 85 | a 129 | 85 | 39 | 24 |
| 14 | 13 | 10 | a 5.0 | b 9.0 | a 6.0 | 9.5 | 15 | 92 | a 138 | 79 | 39 | 23 |
| 15 | 12 | 10 | a 7.0 | b 9.0 | a 7.0 | 11 | 15 | 84 | a 159 | 75 | 37 | 23 |
| 16 | 12 | 11 | a 8.0 | b 9.0 | a 7.0 | 9.4 | 18 | 75 | * 190 | *70 | 36 | 23 |
| 17 | 12 | 11 | a 9.0 | b 9.0 | a 7.0 | 9.3 | 26 | 81 | 206 | 68 | 36 | 28 |
| 18 | 12 | * 11 | a 8.0 | b 9.0 | a 8.0 | 9.1 | 32 | 97 | 203 | 66 | 36 | 32 |
| 19 | 12 | 10 | a 9.0 | b 9.0 | a 9.0 | b 9.0 | * 33 | * 119 | 246 | 63 | 34 | 30 |
| 20 | 12 | 10 | a 9.0 | b 9.0 | a10 | b 8.0 | 41 | 144 | 226 | 61 | 33 | 35 |
| 21 | 12 | b 9.5 | a 9.0 | 9.5 | a10 | b 9.0 | *52 | 163 | 216 | 60 | 32 | * 33 |
| 22 | 12 | b 10 | a10 | 9.4 | a12 | 9.3 | 68 | 175 | 203 | 58 | 31 | 30 |
| 23 | 12 | b 10 | * a11 | b 9.0 | a10 | 9.1 | 80 | 181 | * 194 | 57 | 30 | 29 |
| 24 | 12 | b 9.5 | b11 | b 9.0 | a 8.0 | 9.0 | 81 | 175 | 190 | 56 | * 29 | 28 |
| 25 | 12 | 10 | b11 | b 9.0 | b 9.0 | 8.9 | 75 | 136 | * 178 | 58 | 28 | 27 |
| 26 | 11 | 9.3 | b11 | b 8.0 | b10 | 9.7 | 60 | 104 | a 162 | 55 | 27 | 28 |
| 27 | 11 | 9.3 | b12 | b 8.0 | 11 | 9.2 | 51 | 94 | a 156 | 54 | 27 | 28 |
| 28 | * 11 | b 8.5 | b12 | * a 9.0 | 12 | 9.5 | 44 | 85 | a 146 | 53 | 27 | 28 |
| 29 | 11 | 9.3 | b10 | b 9.0 | ------- | 9.8 | 41 | 85 | a 138 | * 52 | 28 | 28 |
| 30 | 11 | 9.3 | b 9.0 | 9.1 | ------- | 10 | 47 | 94 | a 131 | 52 | 28 | 28 |
| 31 | 11 | ------- | b11 | 9.0 | ------- | 12 | ------- | 101 | ------- | 56 | 26 | ------- |
| TOTAL | 388 | 306.8 | 278.0 | 271.0 | 247.1 | 291.9 | 984 | 3,137 | 4,628 | 2,497 | 1,183 | 817 |
| MEAN | 12.5 | 10.2 | 8.97 | 8.74 | 8.83 | 9.42 | 32.8 | 101 | 154 | 80.5 | 38.2 | 27.2 |
| AC-FT | 770 | 609 | 551 | 538 | 490 | 579 | 1,950 | 6,220 | 9,180 | 4,950 | 2,350 | 1,620 |

CALENDAR YEAR 1964 MAX 103 MIN 5.0 MEAN 18.8 AC-FT 13,660
WATER YEAR 1964-65 MAX 246 MIN 5.0 MEAN 41.2 AC-FT 29,810

Peak discharge (base, 100 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 5-4 | 0330 | 2.79 | 102 | 6-19 | 2300 | 3.50 | 260 |
| 5-24 | 0100 | 3.27 | 107 | | | | |

* Discharge measurement made on this day.
a No gage-height record.
b Stage-discharge relation affected by ice.

## 8-2682. Rio Hondo at damsite, at Valdez, N. Mex.

Location.--Lat 36°32'07", long 105°36'07", in T.27 N., R.13 E. (projected), on right bank one mile west of Valdez, 6.5 miles upstream from mouth, and 9 miles north of Taos.

Drainage area.--40.3 sq mi.

Records available.--April 1963 to September 1965. Monthly discharges for January 1916 to September 1934, published in WSP 1312 (at Valdez) are probably comparable.

Gage.--Water-stage recorder. Datum of gage is 7,254 ft above mean sea level, datum of 1929.

Extremes.--Maximum discharge during year, 346 cfs June 20 (gage height, 2.09 ft); minimum, 5.8 cfs Mar. 20, but may have been less during periods of ice effect.
1963-65: Maximum discharge, that of June 20, 1965; minimum, 5.5 cfs Apr. 8, 1964.

Remarks.--Records good except those for periods of ice effect, which are poor. Records of suspended sediment loads and water temperatures for the water year 1965 are published in part 2 of this report.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

| | | | |
|---|---|---|---|
| 0.3 | 6.0 | 1.1 | 64 |
| .4 | 9.0 | 1.3 | 96 |
| .5 | 13 | 1.5 | 139 |
| .7 | 24 | 1.7 | 194 |
| .9 | 40 | 2.0 | 305 |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 9.0 | 6.6 | 13 | 13 | 11 | 11 | 11 | 60 | 76 | 130 | 38 | 15 |
| 2 | 9.4 | 6.6 | 13 | b 9 | 11 | 10 | 11 | 82 | 78 | 121 | 33 | 16 |
| 3 | 9.0 | 6.9 | 14 | b 8 | 11 | b 8 | 13 | 100 | 79 | 114 | 30 | 15 |
| 4 | 9.0 | 6.6 | 14 | b 10 | 11 | b 9 | 14 | 98 | * 82 | 110 | 30 | 14 |
| 5 | 9.0 | 6.9 | b 12 | b 12 | 12 | b 11 | 13 | * 89 | 78 | 106 | 30 | 14 |
| 6 | *9.4 | 6.9 | b 10 | 13 | 12 | b 11 | 12 | 84 | 70 | 104 | 29 | 14 |
| 7 | 9.4 | 6.6 | b 9 | 15 | 11 | 12 | 12 | 82 | 72 | 94 | 28 | 15 |
| 8 | 9.0 | 6.6 | *b 9 | 14 | 11 | 11 | * 12 | 81 | 76 | 81 | 28 | * 19 |
| 9 | 9.0 | 6.6 | b 9 | 13 | 11 | *11 | 14 | 68 | 84 | 72 | 27 | 16 |
| 10 | 9.0 | 6.9 | b 10 | 12 | 10 | 11 | 14 | 59 | 91 | 66 | 25 | 14 |
| 11 | 8.7 | 7.5 | b 10 | b 12 | * b 9 | 9.8 | 12 | 55 | 102 | 64 | *23 | 14 |
| 12 | 8.7 | 7.2 | b 13 | 12 | b 8 | 9.8 | 11 | 51 | 100 | 59 | 20 | 15 |
| 13 | 8.7 | 7.8 | b 10 | *b 11 | b 6 | 9.4 | 12 | 70 | 98 | 51 | 18 | 14 |
| 14 | 8.4 | 8.1 | b 8 | b 12 | b 8 | 9.4 | 11 | 70 | 112 | 46 | 19 | 13 |
| 15 | 8.4 | 8.1 | b 9 | b 12 | b 9 | 9.4 | 11 | 52 | 132 | 46 | 18 | 12 |
| 16 | 8.4 | 8.4 | b 10 | 11 | b 10 | 9.4 | 14 | 48 | *162 | *44 | 16 | 12 |
| 17 | 8.1 | 8.4 | b 11 | 11 | b 9 | 9.8 | 19 | 50 | 204 | 40 | 17 | 14 |
| 18 | 8.1 | * 8.4 | b 11 | 12 | b 9 | 9.0 | 25 | 63 | 197 | 36 | 16 | 16 |
| 19 | 8.1 | 8.4 | b 11 | 12 | 9.8 | 9.0 | 24 | *91 | 260 | 34 | 17 | 16 |
| 20 | 8.4 | 8.1 | b 12 | 11 | 10 | b 8.0 | 27 | 116 | 268 | 31 | 15 | 25 |
| 21 | 8.1 | 10 | 12 | 11 | 11 | b 8.4 | 35 | 128 | 231 | 28 | 14 | * 27 |
| 22 | 7.8 | 14 | 12 | 11 | 12 | b 8.8 | * 59 | 155 | 214 | 26 | 15 | 25 |
| 23 | 7.2 | 14 | * 12 | b 10 | 12 | 9.0 | 66 | 152 | 194 | 25 | 14 | 23 |
| 24 | 7.5 | 14 | 12 | b 10 | 11 | 8.7 | 72 | 152 | 188 | 30 | *14 | 22 |
| 25 | 9.4 | 14 | 12 | 11 | *b 11 | * 8.7 | 63 | 114 | 180 | 36 | 14 | 21 |
| 26 | 7.5 | 14 | 12 | b 9 | 12 | 8.7 | 50 | 89 | 165 | 30 | 13 | 20 |
| 27 | 7.5 | 13 | 12 | b 9 | 12 | 7.8 | 40 | 73 | 155 | 28 | 13 | 21 |
| 28 | * 7.5 | 12 | 12 | *b 12 | 13 | 8.1 | 36 | 58 | 147 | 25 | 15 | 22 |
| 29 | 7.2 | 13 | 9.8 | b 12 | --- | 8.7 | 34 | 54 | 132 | *23 | 16 | 22 |
| 30 | 6.9 | 13 | b 9 | 12 | ------- | 8.7 | 42 | 63 | 132 | 24 | 16 | 22 |
| 31 | 6.9 | ------ | 13 | 11 | ------ | 9.4 | ------ | 68 | ------ | 34 | 15 | ------ |
| Total | 258.7 | 278.6 | 345.8 | 353 | 292.8 | 293.0 | 789 | 2,575 | 4,159 | 1,758 | 636 | 528 |
| Mean | 8.35 | 9.29 | 11.2 | 11.4 | 10.5 | 9.45 | 26.3 | 83.1 | 139 | 56.7 | 20.5 | 17.6 |
| Ac-ft | 513 | 553 | 686 | 700 | 581 | 581 | 1,560 | 5,110 | 8,250 | 3,490 | 1,260 | 1,050 |

Calendar year 1964: Max 81 Min 6 Mean 13.7 Ac-ft 9,960
Water year 1964-65: Max 268 Min 6 Mean 33.6 Ac-ft 24,330

Peak discharge (base, 100 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 5-22 | 0800 | 1.60 | 165 | 7-24 | 1800 | 1.43 | 112 |
| 6-20 | 0100 | 2.09 | 346 | | | | |

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

8-2685. Rio Hondo at Arroyo Hondo, N. Mex.

Location.--Lat 36°31'55", long 105°41'05", in sec.32, T.27 N., R.12 E. (projected), on right bank 1 mile downstream from Arroyo Hondo and 1¼ miles upstream from mouth.

Drainage area.--65.6 sq mi.

Records available.--April 1910 to June 1912, fragmentary (gage heights and discharge measurements only), July 1912 to December 1928, and January 1932 to September 1965. Monthly discharge only for some periods, published in WSP 1312. Published as "near Arroyo Hondo" prior to 1928.

Gage.--Water-stage recorder (digital, and crest-stage indicator). Concrete control since Aug. 12, 1938. Datum of gage is 6,679 ft above mean sea level, datum of 1929. Prior to Feb. 29, 1928, staff gage at site 1.1 miles downstream at different datums. Feb. 29 to Dec. 31, 1928, and Jan. 21, 1932, to Aug. 13, 1934, staff gage at present site at datum 0.4 ft lower. Aug. 13, 1934, to Aug. 11, 1938, water-stage recorder at site half a mile downstream at different datum. Aug. 12, 1938, to Sept. 10, 1963, water-stage recorder on left bank at present datum.

Average discharge.--49 years (1912-28, 1932-65), 28.8 cfs (20,850 acre-ft per year).

Extremes.--Maximum discharge during year, 310 cfs June 19 (gage height, 3.70 ft); minimum, 5.4 cfs Apr. 9.
1938-65: Maximum discharge, 1,060 cfs July 19, 1948 (gage height, 3.75 ft), from rating curve extended above 200 cfs by logarithmic plotting; minimum, 3.8 cfs Aug. 1 and 6, 1963.
Maximum gage height observed, 5.45 ft (site and datum then in use) Aug. 23, 1935 (discharge uncertain, but probably exceeded 1,100 cfs). A minimum daily discharge of 3 cfs occurred Oct. 19, 1912 (statement in WSP 328 that there was no flow in January and much of February 1912 is believed erroneous). Discharge not determined for the major floods of Oct. 6, 1911, Sept. 1, 1932, and July 22, 1934.

Remarks.--Records good except those above 100 cfs, which are fair. Diversions above station for irrigation of about 2,500 acres, most of which is outside basin.
Rating tables, except periods of uncertain stage-discharge relation (gage height, in feet, and discharge, in cubic feet per second)

| Oct. 1 to June 10 | | | | June 10 to Sept. 30 | | | |
|---|---|---|---|---|---|---|---|
| 2.1 | 5.7 | 2.8 | 36 | 2.2 | 8.3 | 2.9 | 56 |
| 2.3 | 9.8 | 3.1 | 73 | 2.4 | 14 | 3.1 | 100 |
| 2.5 | 16 | 3.4 | 142 | 2.7 | 32 | 3.3 | 180 |

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1964 TO SEPTEMBER 1965

| DAY | OCT. | NOV. | DEC. | JAN. | FEB. | MAR. | APR. | MAY | JUNE | JULY | AUG. | SEPT. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7.9 | 7.5 | 14 | 17 | 15 | 17 | 6.8 | 42 | 32 | 75 | 35 | 9.2 |
| 2 | 7.8 | 7.5 | 15 | 10 | 15 | 13 | 6.8 | 55 | 33 | 67 | 33 | 10 |
| 3 | 7.8 | 8.1 | 16 | 9.7 | 15 | 12 | 7.1 | 82 | *33 | 63 | 31 | 9.7 |
| 4 | 7.7 | 7.6 | 15 | 13 | 15 | 13 | 6.8 | 98 | 33 | 61 | 32 | 10 |
| 5 | 7.8 | 8.2 | 12 | 17 | 16 | 15 | 8.0 | * 77 | 33 | 61 | 32 | 10 |
| 6 | *7.6 | 9.5 | 12 | 19 | 16 | 16 | 7.6 | 66 | 29 | 60 | 23 | 10 |
| 7 | 7.5 | 9.9 | 11 | 24 | 15 | 16 | * 7.8 | 64 | 29 | 55 | 17 | 11 |
| 8 | 7.6 | 9.8 | 9.8 | 23 | 15 | 15 | 7.7 | 56 | 31 | 50 | 21 | 15 |
| 9 | 7.7 | 9.7 | 11 | 17 | 15 | 15 | 6.7 | 51 | 35 | 45 | 21 | 12 |
| 10 | 7.8 | 8.7 | 12 | 15 | 14 | * 15 | 6.5 | 44 | 51 | 44 | 19 | * 12 |
| 11 | 7.8 | 8.1 | 12 | 15 | * 12 | 15 | 6.5 | 39 | 97 | 42 | * 13 | 11 |
| 12 | 8.3 | 9.4 | 17 | 17 | 11 | 14 | 6.2 | 38 | 99 | 38 | 12 | 13 |
| 13 | 8.8 | 10 | 11 | * 15 | 9.2 | 14 | 6.1 | 52 | 96 | 32 | 12 | 13 |
| 14 | 8.9 | 10 | 9.4 | 15 | 12 | 13 | 6.1 | 56 | 100 | 32 | 17 | 14 |
| 15 | 8.6 | 10 | 11 | 16 | 14 | 14 | 6.9 | 47 | 119 | 30 | 20 | 14 |
| 16 | 9.1 | 10 | 12 | 16 | 15 | 14 | 7.4 | 39 | * e 150 | * 28 | 11 | 13 |
| 17 | 8.9 | 9.6 | 13 | 15 | 14 | 14 | 8.4 | 39 | e 200 | 26 | 11 | 16 |
| 18 | 8.0 | * 9.1 | 12 | 15 | 15 | 13 | 16 | 50 | e 200 | 26 | 11 | 19 |
| 19 | 9.0 | 8.9 | 14 | 16 | 15 | 13 | * 24 | * 75 | e 250 | 25 | 11 | 18 |
| 20 | 9.1 | 8.9 | 14 | 15 | 15 | 11 | 24 | 112 | e 250 | 25 | 10 | 25 |
| 21 | 9.0 | 12 | 14 | 15 | 15 | 13 | 34 | 130 | @ 200 | 21 | 10 | * 24 |
| 22 | 8.8 | 15 | 14 | 15 | 16 | 15 | * 47 | @ 140 | 179 | 19 | 11 | 24 |
| 23 | 7.7 | 15 | 14 | 11 | 16 | 13 | 56 | e 130 | * 161 | 17 | 10 | 25 |
| 24 | 7.7 | 15 | 16 | 16 | 14 | 13 | 60 | e 100 | * 166 | 18 | * 9.8 | 24 |
| 25 | 7.7 | 16 | 16 | 15 | 15 | 13 | 53 | 63 | 149 | 21 | 9.8 | 21 |
| 26 | 7.7 | 17 | 16 | 10 | 16 | 13 | 41 | 50 | 144 | * 15 | 9.8 | 22 |
| 27 | 7.5 | 16 | 16 | * 9.6 | 17 | 10 | 32 | 42 | 138 | 15 | 9.8 | 22 |
| 28 | * 7.5 | 14 | * 18 | 13 | 17 | 7.7 | 29 | 34 | 111 | 14 | 10 | 22 |
| 29 | 7.6 | 13 | 15 | 16 | ------ | 6.7 | 25 | 28 | 86 | 13 | 11 | 22 |
| 30 | 7.6 | 14 | 12 | 17 | ------ | 6.5 | 28 | 30 | 78 | 14 | 11 | 22 |
| 31 | 7.5 | ------ | 18 | 16 | ------ | 6.6 | ------ | 30 | ------ | 22 | 9.1 | ------ |
| TOTAL | 250.0 | 327.5 | 422.2 | 473.3 | 409.2 | 399.5 | 588.4 | 1,959 | 3,312 | 1,074 | 503.3 | 492.9 |
| MEAN | 8.07 | 10.9 | 13.6 | 15.3 | 14.6 | 12.9 | 19.6 | 63.2 | 110 | 34.6 | 16.2 | 16.4 |
| AC-FT | 496 | 650 | 837 | 939 | 812 | 792 | 1,170 | 3,890 | 6,570 | 2,130 | 998 | 978 |

CALENDAR YEAR 1964 MAX 72 MIN 5.9 MEAN 10.7 AC-FT 7,780
WATER YEAR 1964-65 MAX 250 MIN 6.1 MEAN 28.0 AC-FT 20,260

Peak discharge (base, 100 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 5- 4 | 1130 | 3.28 | 106 | 6-19 | 2230 | 3.70 | 310 |
| 5-22 | about 1000 | 3.32 | 160 | | | | |

* Discharge measurement made on this day.
e Stage-discharge relation uncertain.

8-2687. Rio Grande near Arroyo Hondo, N. Mex.

Location.--Lat 36°32'05", long 105°42'35", in NW¼ sec.31, T.27 N., R.12 E., on right bank 350 ft downstream from Rio Hondo, 400 ft downstream from State Road 111 bridge, 2¼ miles west of Arroyo Hondo and 11½ miles northwest of Taos.

Drainage area.--8,760 sq mi, approximately (includes 2,940 sq mi in closed basin in San Luis Valley, Colo.).

Records available.--February 1963 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 6,460 ft (from topographic map).

Extremes.--Maximum discharge during year, 4,400 cfs June 22 (gage height, 5.81 ft); minimum, 152 cfs Oct. 3.
1963-65: Maximum discharge, that of June 22, 1965; minimum, 136 cfs Aug. 2, 1963.

Remarks.--Records excellent.

Rating tables, (gage height, in feet, and discharge, in cubic feet per second)

| Oct. 1 to July 18 | | | | | | July 19 to Sept. 30 | | | |
|---|---|---|---|---|---|---|---|---|---|
| 0.9 | 154 | 1.6 | 372 | 4.0 | 2,100 | 1.4 | 304 | 2.5 | 870 |
| 1.1 | 202 | 2.0 | 560 | 5.0 | 3,250 | 1.7 | 430 | 3.0 | 1,200 |
| 1.3 | 261 | 2.5 | 840 | 5.8 | 4,380 | 2.0 | 580 | | |
| | | 3.0 | 1,200 | | | Note.--Same as preceeding table above 3.0 ft. | | | |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 156 | 182 | 224 | 321 | 364 | 424 | 560 | 655 | 1,170 | 1,790 | 948 | 320 |
| 2 | 154 | 184 | 230 | 302 | 360 | 372 | 535 | 738 | 1,190 | 1,780 | 1,120 | 327 |
| 3 | 154 | 184 | 236 | 295 | 360 | 295 | 555 | 840 | *1,300 | 1,770 | 1,420 | 331 |
| 4 | 156 | 184 | 236 | 288 | 360 | 340 | 550 | *1,300 | 1,440 | 1,790 | 1,730 | 335 |
| 5 | 156 | 192 | 192 | 292 | 372 | 415 | 505 | 1,630 | 1,530 | 1,970 | 1,760 | 331 |
| 6 | 156 | 194 | 184 | 299 | 372 | 429 | *476 | 1,830 | 1,530 | 2,190 | 1,610 | 351 |
| 7 | *156 | 194 | 190 | 479 | 376 | 415 | 452 | 1,730 | 1,630 | 2,150 | 1,430 | 364 |
| 8 | *154 | 194 | 210 | 447 | 385 | 420 | 415 | 1,570 | 1,650 | 2,010 | 1,260 | 368 |
| 9 | 154 | 194 | 216 | 340 | 394 | *433 | 398 | 1,420 | 1,910 | 1,910 | 1,050 | 351 |
| 10 | 159 | 190 | 208 | 332 | *389 | 443 | 389 | 1,380 | 2,430 | 1,800 | 900 | *343 |
| 11 | 163 | 228 | 208 | 325 | 376 | 447 | 368 | 1,180 | 2,650 | 1,790 | *774 | 347 |
| 12 | 161 | 471 | 216 | 332 | 317 | 461 | 348 | 1,110 | 2,430 | 1,860 | 690 | 360 |
| 13 | 168 | 545 | 208 | *328 | 340 | 461 | 332 | 1,090 | 2,330 | 1,900 | 586 | 351 |
| 14 | 170 | 570 | 197 | 328 | 381 | 471 | 325 | 1,230 | 2,400 | 1,990 | 530 | 343 |
| 15 | 172 | 625 | 205 | 325 | 376 | 490 | 310 | 1,370 | 2,270 | 2,080 | 490 | 320 |
| 16 | 175 | 655 | 205 | 325 | 376 | 505 | 299 | 1,390 | *2,510 | *1,910 | 440 | 304 |
| 17 | 175 | 696 | 205 | 321 | 372 | 510 | 295 | 1,330 | 2,880 | 1,580 | 426 | 308 |
| 18 | 172 | 492 | 210 | 325 | 372 | 510 | 295 | 1,210 | 3,040 | 1,340 | 416 | 331 |
| 19 | 172 | *336 | 222 | 325 | 372 | 505 | 299 | *1,290 | 3,250 | 1,150 | 398 | 327 |
| 20 | 172 | 268 | 219 | 328 | 376 | 510 | 281 | 1,620 | 3,420 | 1,040 | 398 | 320 |
| 21 | 172 | 224 | 227 | 332 | 372 | 510 | 295 | 2,050 | 3,850 | 966 | 385 | *343 |
| 22 | 170 | 210 | 230 | 332 | 406 | 525 | *471 | 2,530 | 4,260 | 900 | 394 | 435 |
| 23 | 168 | 200 | 236 | 328 | 398 | 525 | 645 | 2,660 | 4,290 | 840 | 385 | 816 |
| 24 | 172 | 222 | 239 | 321 | 385 | *545 | 810 | 2,710 | *4,260 | 720 | *377 | 882 |
| 25 | 175 | 213 | 249 | 325 | 356 | 530 | 980 | 2,710 | 4,230 | 657 | 360 | 870 |
| 26 | 180 | 219 | 264 | 321 | 411 | 560 | 1,060 | 2,400 | 4,060 | *662 | 343 | 870 |
| 27 | 177 | 227 | 268 | *317 | 424 | 530 | 1,000 | 1,940 | 3,690 | 984 | 335 | 870 |
| 28 | *177 | 222 | *299 | 314 | 438 | 510 | 875 | 1,640 | 3,480 | 1,080 | 343 | 888 |
| 29 | 177 | 208 | 299 | 328 | - | 555 | 756 | 1,340 | 2,840 | 1,070 | 356 | 918 |
| 30 | 177 | 222 | 288 | 336 | ------ | 550 | 666 | 1,220 | *2,040 | 1,000 | 364 | 966 |
| 31 | 180 | ------ | 306 | 360 | ------ | 555 | ------ | 1,160 | ------ | 984 | 335 | ------ |
| Total | 5,180 | 8,945 | 7,126 | 10,271 | 10,580 | 14,751 | 15,545 | 48,273 | 79,960 | 45,663 | 22,353 | 14,590 |
| Mean | 167 | 298 | 230 | 331 | 378 | 476 | 518 | 1,557 | 2,665 | 1,473 | 721 | 486 |
| Ac-ft | 10,270 | 17,740 | 14,130 | 20,370 | 20,990 | 29,260 | 30,830 | 95,750 | 158,600 | 90,570 | 44,340 | 28,940 |

Calendar year 1964 : Max 696 Min 154 Mean 241 Ac-ft 174,700
Water year 1964-65 : Max 4,290 Min 154 Mean 776 Ac-ft 561,800

Peak discharge (base, 1,400 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 5- 6 | 2000 | 3.78 | 1,880 | 6-22 | 2245 | 5.81 | 4,400 |
| 5-24 | 2300 | 4.61 | 2,770 | 7- 6 | 2200 | 4.13 | 2,230 |
| | | | | 8- 5 | 0040 | 3.72 | 1,820 |

* Discharge measurement made on this day.

8-2690. Rio Pueblo de Taos near Taos, N. Mex.

Location.--Lat 36°26'30", long 105°30'10", in sec.36, T.26 N., R.13 E., on right bank 2½ miles east of Taos Pueblo, 4½ miles northeast of Taos, and 5 miles upstream from Rio Lucero.

Drainage area.--66.6 sq mi.

Records available.--March to December 1910, discharge measurements only. January 1911 to December 1951, May 1952 to November 1962 (annual maximum only), October 1962 to September 1965.

Gage.--Water-stage recorder, and concrete control since Nov. 20, 1962. Altitude of gage is 7,400 ft (from topographic map). Prior to Dec. 19, 1910, staff gage, and Dec. 19, 1910, to Dec. 2, 1916, water-stage recorder (pressure type) at same site and different datums. Jan. 31, 1940 to Dec. 31, 1951, water-stage recorder and May 8, 1952 to Nov. 19, 1962, crest-stage gage 0.2 mile upstream at different datums.

Average discharge.--20 years (1910-16, 1940-51, 1962-65), 31.3 cfs (22,660 acre-ft per year).

Extremes.--Maximum discharge during year, 187 cfs May 4 (gage height, 1.96 ft); minimum, 1.3 cfs Feb. 5, result of freezeup.
1910-16, 1940-65: Maximum discharge, 970 cfs May 14, 1941 (gage height, 3.90 ft, from floodmark), from rating curve extended above 290 cfs by logarithmic plotting; minimum (except 1952-62), about 0.9 cfs Jan. 9, 1964, result of freezeup.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

| | | | |
|---|---|---|---|
| 0.6 | 2.2 | 1.2 | 32 |
| .7 | 4.2 | 1.4 | 56 |
| .8 | 7.3 | 1.7 | 113 |
| 1.0 | 16 | 2.0 | 200 |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 5.1 | 4.5 | 5.4 | 7.3 | 6.4 | 9.5 | 24 | 98 | 95 | 64 | 31 | 11 |
| 2 | 4.8 | 4.8 | 6.4 | b 3.5 | 6.4 | b 6 | 24 | 141 | 98 | 59 | 35 | 13 |
| 3 | 4.8 | 5.4 | 6.4 | b 3 | b 5 | b 6.3 | 27 | 164 | 95 | 56 | 31 | 12 |
| 4 | 4.8 | 5.4 | 6.4 | b 4 | b 5 | b 6.5 | 29 | 177 | 91 | 52 | 28 | 12 |
| 5 | 5.1 | 5.4 | b 4 | 6.7 | b 5.5 | b 7 | *28 | 167 | 89 | 48 | 24 | 12 |
| 6 | *4.8 | 5.1 | b 4 | 6.4 | b 6 | b 7 | 24 | 150 | 80 | 46 | 20 | 13 |
| 7 | 5.1 | 5.1 | b 4 | 8.4 | 7.7 | b 7.5 | 24 | 147 | 76 | 43 | 17 | 15 |
| 8 | 4.8 | 5.1 | b 4 | 8.0 | *7.3 | *b 7.5 | 24 | 150 | 82 | 42 | 16 | *20 |
| 9 | 4.8 | 5.1 | b 4 | 6.7 | 6.7 | 7.7 | 29 | 128 | 91 | 39 | 15 | 16 |
| 10 | 4.5 | 5.4 | b 5 | b 4 | 6.1 | 7.3 | 28 | 109 | 93 | 36 | 17 | 13 |
| 11 | 4.5 | 5.8 | b 5.5 | *b 4.5 | b 5 | 7.3 | b 20 | 93 | 91 | 36 | 15 | 14 |
| 12 | 4.5 | 4.0 | b 6 | b 5 | b 4 | 7.3 | b 18 | 89 | 87 | 33 | 14 | 14 |
| 13 | 4.5 | 5.4 | b 3.5 | b 5 | b 4 | 7.3 | 22 | 126 | 89 | 32 | 16 | 13 |
| 14 | 4.5 | 5.8 | b 4.5 | b 5 | b 5.5 | 7.0 | 22 | 144 | 98 | 34 | 16 | 12 |
| 15 | 4.5 | 5.4 | b 5 | b 5.5 | b 5.5 | b 6 | 21 | 130 | 106 | 34 | 15 | 11 |
| 16 | 4.5 | 5.4 | b 5.5 | b 5.5 | b 6 | 7.3 | 25 | 116 | 118 | 33 | 14 | 11 |
| 17 | 4.5 | 5.8 | b 5.5 | b 5.5 | b 5.5 | 7.3 | 35 | 113 | *126 | *30 | 15 | 14 |
| 18 | 5.1 | 6.7 | 5.8 | b 5.5 | b 5.5 | 7.7 | 52 | *120 | 128 | 26 | 17 | 18 |
| 19 | 5.1 | * 5.8 | 6.4 | b 5.5 | b 6 | 7.3 | 58 | 144 | 152 | 21 | 20 | 16 |
| 20 | 5.1 | b 4.5 | 6.4 | 6.4 | b 6 | b 4.5 | 95 | 167 | 141 | 18 | 17 | 17 |
| 21 | 5.1 | b 4.5 | 5.8 | 6.4 | b 6.5 | b 6 | *104 | *167 | 120 | 16 | 15 | 16 |
| 22 | 5.1 | b 4.5 | 5.8 | 6.4 | b 7 | b 7 | 123 | 164 | 111 | 15 | 17 | 16 |
| 23 | 5.1 | b 4.5 | 5.8 | b 4 | 9.2 | 8.4 | 152 | 164 | 100 | 14 | 16 | 15 |
| 24 | 5.1 | 4.8 | 6.4 | b 5 | b 7 | 8.4 | 161 | 161 | 100 | 14 | 15 | *14 |
| 25 | 5.1 | 5.4 | 6.4 | *6.1 | b 6.5 | 8.0 | 144 | 133 | 95 | 21 | 13 | 14 |
| 26 | 4.8 | 6.4 | 6.1 | b 4 | b 7.5 | b 7 | 113 | 109 | 85 | 19 | 12 | 14 |
| 27 | 5.1 | 6.4 | 6.1 | b 4 | b 7.5 | 8.8 | 85 | 93 | 74 | 18 | 11 | 13 |
| 28 | 5.1 | 5.4 | *6.7 | b 5.5 | 10 | 9.9 | 67 | 83 | 67 | 18 | 11 | 14 |
| 29 | 4.8 | 5.8 | 4.8 | 6.7 | - | 12 | 59 | 78 | 62 | 18 | 11 | 13 |
| 30 | *4.8 | 5.1 | 3.8 | 6.1 | ------ | 14 | 67 | 83 | 62 | 20 | 10 | 12 |
| 31 | 4.5 | ------ | 6.7 | 6.4 | ------ | 19 | ------ | 85 | ------ | 30 | 10 | ------ |
| Total | 150.0 | 158.7 | 168.1 | 172.0 | 176.3 | 249.8 | 1,704 | 3,993 | 2,902 | 985 | 534 | 418 |
| Mean | 4.84 | 5.29 | 5.42 | 5.55 | 6.30 | 8.06 | 56.8 | 129 | 96.7 | 31.8 | 17.2 | 13.9 |
| Ac-ft | 298 | 315 | 333 | 341 | 350 | 495 | 3,380 | 7,920 | 5,760 | 1,950 | 1,060 | 829 |

Calendar year 1964: Max 74 Min 2 Mean 124 Ac-ft 8,970
Water year 1964-65: Max 177 Min 3 Mean 31.8 Ac-ft 23,030

Peak discharge (base, 70 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 4-24 | 0100 | 1.92 | 174 | 5-21 | 0900 | 1.92 | 174 |
| 5-4 | 0330 | 1.96 | 187 | 6-19 | 0430 | 1.87 | 158 |

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.
Note.--No gage-height record July 18 to Sept. 7.

## 8-2710. Rio Lucero near Arroyo Seco, N. Mex.

Location.--Lat 36°30'30", long 105°32'00", in NE¼ sec.10, T.26 N., R.13 E. (projected), on right bank in Antoine Leroux Grant, 200 ft upstream from diversion dam for Tenorio and Indian ditches, 2 miles southeast of Arroyo Seco, and 7½ miles northeast of Taos.

Drainage area.--16.6 sq mi.

Records available.--April to December 1910 (discharge measurements and occasional gage heights), January 1911 to September 1915, March to December 1916 (fragmentary), October 1933 to December 1951, May 1952 to November 1962 (annual maximum only), October 1962 to September 1965. Monthly discharge only for some periods, published in WSP 1312. Published as "near Taos," 1910-1915. Fragmentary records for October 1915 to February 1916, published in WSP 438, have been found to be unreliable and should not be used.

Gage.--Water-stage recorder (digital, and crest-stage indicator); concrete control since Nov. 21, 1962. Datum of gage is 8,051.44 ft above mean sea level, datum of 1929. Prior to Dec. 17, 1910, staff gage, Dec. 17, 1910 to Dec. 31, 1916, pressure type water-stage recorder at site 50 ft downstream at different datum. Nov. 14, 1933 to Jan. 1, 1952, water-stage recorder and wooden control after Mar. 17, 1936, at different datum. May 7, 1952 to Nov. 21, 1962, crest-stage gage at different datum.

Average discharge.--26 years (1910-15, 1933-51, 1962-65), 23.4 cfs (16,940 acre-ft per year).

Extremes.--Maximum discharge during year, 209 cfs June 19 (gage height, 1.94 ft); minimum, about 3 cfs Dec. 14, result of freezeup.
1911-15, 1933-65: Maximum discharge, 300 cfs May 13, 1941 (gage height, 3.12 ft); minimum daily (except 1952-62), 2.5 cfs Feb. 12, 1948, Feb. 1, 2, 1951, Jan. 13, 14, 1964.

Remarks.--Records good except those for periods of ice effect, which are poor.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used June 13 to July 20)

| Oct. 1 to Apr. 17 | | Apr. 18 to Sept. 30 | | | |
|---|---|---|---|---|---|
| 0.7 | 5.2 | 1.0 | 16 | 1.7 | 103 |
| .8 | 7.7 | 1.2 | 29 | 2.0 | 193 |
| .9 | 11 | 1.4 | 51 | | |
| 1.1 | 22 | | | | |

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1964 TO SEPTEMBER 1965

| DAY | OCT. | NOV. | DEC. | JAN. | FEB. | MAR. | APR. | MAY | JUNE | JULY | AUG. | SEPT. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 9.1 | 7.2 | b 7.0 | 5.7 | 5.7 | 7.7 | 11 | 39 | 76 | 80 | 48 | 18 |
| 2 | 8.7 | 7.0 | 6.5 | b 5.0 | 5.7 | b 7.0 | 11 | 52 | 78 | 80 | 53 | 18 |
| * 3 | 8.7 | 7.2 | * b 6.5 | b 4.5 | b 5.5 | b 6.0 | 12 | 59 | 78 | 79 | 50 | 17 |
| 4 | 8.4 | 6.7 | b 6.5 | b 5.0 | 5.7 | b 5.0 | 13 | 62 | 75 | 76 | 47 | 16 |
| 5 | 8.7 | 7.2 | b 6.0 | b 5.0 | 6.2 | b 5.5 | * 13 | 54 | 69 | 72 | 44 | 16 |
| 6 | * 8.4 | 7.0 | b 5.5 | b 5.5 | 6.5 | b 6.0 | 13 | 52 | 63 | 68 | 41 | 17 |
| 7 | 8.4 | 6.7 | b 5.5 | 6.5 | 6.5 | 6.2 | 13 | * 54 | 66 | 65 | 39 | 16 |
| 8 | 8.0 | 6.7 | b 5.5 | 6.2 | * 6.2 | * 6.2 | 14 | 56 | 72 | 62 | 36 | * 22 |
| 9 | 8.0 | 7.0 | b 5.5 | 6.0 | 6.2 | 6.2 | 15 | 48 | 79 | 59 | 34 | 20 |
| 10 | 8.0 | 7.0 | b 5.5 | 6.0 | 6.0 | 6.5 | 14 | 40 | 77 | 56 | 32 | 19 |
| 11 | 8.0 | 6.2 | b 5.5 | * 6.0 | b 5.5 | 6.5 | 13 | 36 | 74 | 55 | 30 | 19 |
| 12 | 7.7 | 7.0 | b 6.0 | 5.7 | b 5.0 | 6.5 | 12 | 36 | 72 | 52 | 29 | 19 |
| 13 | 7.7 | 7.2 | b 5.0 | 6.0 | b 5.0 | 6.2 | 12 | 51 | 79 | 49 | * 28 | 18 |
| 14 | 7.7 | 6.7 | b 4.0 | 6.0 | b 5.0 | 6.2 | 11 | 53 | 95 | 47 | 27 | 17 |
| 15 | 7.7 | 6.7 | b 4.5 | 6.0 | b 5.0 | 6.0 | 12 | 46 | 106 | 48 | 26 | 17 |
| 16 | 7.5 | 6.7 | b 5.0 | 6.0 | 5.2 | 6.0 | 13 | 40 | 118 | 47 | 25 | 17 |
| 17 | 7.5 | 6.7 | b 5.0 | 6.0 | 5.2 | 6.5 | * 17 | 47 | 145 | * 45 | 26 | 19 |
| 18 | 7.5 | 6.5 | b 5.0 | 6.2 | 5.2 | 6.0 | 23 | 61 | * 152 | 43 | 26 | 21 |
| 19 | 7.2 | 6.7 | b 5.0 | 6.2 | 5.5 | 6.0 | 25 | * 72 | 192 | 41 | 26 | 20 |
| 20 | 7.2 | 6.0 | b 5.5 | 6.0 | 6.0 | b 5.0 | 32 | 83 | 167 | 39 | 24 | 22 |
| 21 | 7.2 | b 6.0 | b 5.5 | 5.7 | 6.5 | b 5.0 | * 39 | 86 | 148 | 37 | 23 | * 21 |
| 22 | 7.0 | b 6.5 | * b 5.7 | 5.7 | 7.0 | b 5.5 | 50 | 92 | 136 | 35 | 22 | 20 |
| * 23 | 7.0 | b 6.5 | b 5.7 | 5.7 | 7.2 | 6.0 | 55 | 92 | 129 | 38 | 21 | 20 |
| 24 | 7.0 | b 6.5 | 5.7 | 5.7 | b 6.0 | 6.0 | 55 | 94 | 126 | 40 | 21 | 20 |
| 25 | 7.5 | b 7.0 | 5.7 | * 5.5 | b 6.5 | 6.0 | 50 | 77 | 121 | 45 | 20 | 19 |
| 26 | 7.2 | b 6.5 | 5.7 | 6.0 | 7.0 | 6.0 | 37 | 63 | 108 | 40 | 20 | 19 |
| 27 | 7.5 | 6.5 | 5.7 | b 5.0 | 7.5 | 6.2 | 28 | 54 | 94 | 40 | 19 | 19 |
| 28 | 7.2 | b 6.5 | 5.2 | b 4.5 | 7.7 | 6.5 | 24 | 50 | 85 | 37 | 19 | 19 |
| 29 | 7.2 | b 7.0 | b 5.0 | b 4.5 | ------ | 6.5 | 23 | 54 | 81 | 35 | 19 | 18 |
| 30 | * 7.2 | b 7.0 | b 5.0 | 5.7 | ------ | 7.2 | 27 | 63 | 79 | 36 | 19 | 18 |
| 31 | 7.2 | ------ | 5.5 | 6.0 | ------ | 9.1 | ------ | 67 | ------ | 42 | 18 | ------ |
| TOTAL | 239.3 | 202.1 | 170.9 | 175.5 | 168.2 | 193.2 | 687 | 1,833 | 3,040 | 1,588 | 912 | 561 |
| MEAN | 7.72 | 6.74 | 5.51 | 5.66 | 6.01 | 6.23 | 22.9 | 59.1 | 101 | 51.2 | 29.4 | 18.7 |
| AC-FT | 475 | 401 | 339 | 348 | 334 | 383 | 1,360 | 3,640 | 6,030 | 3,150 | 1,810 | 1,110 |

CALENDAR YEAR 1964 MAX 69 MIN 2.5 MEAN 12.6 AC-FT 9,130
WATER YEAR 1964-65 MAX 192 MIN 4.0 MEAN 26.8 AC-FT 19,380

Peak discharge (base, 70 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 5-23 | 2200 | 1.60 | 97 | 6-19 | 0400 | 1.94 | 209 |

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

8-2750. Rio Fernando de Taos near Taos, N. Mex.

Location (revised).--Lat 36°22'32", long 105°32'55", in W½NW¼ sec.27, T.25 N., R.13 E., on right bank 2½ miles southeast of Taos.

Drainage area.--71.7 sq mi.

Records available.--April to September 1910, gage heights and discharge measurements only. October 1910 to June 1911, discharge measurements only; October 1912 to September 1917; October 1927 to December 1929; October 1962 to September 1965. Previously published figures of discharge for October 1917 to September 1927 appear unreliable and should not be used.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 7,140 ft (from topographic map). Prior to July 21, 1921, and Aug. 23, 1921 to Dec. 31, 1928, staff gages at sites 125 ft and 425 ft upstream, respectively, at various datums.

Average discharge.--9 years (1912-17, 1927-28, 1962-65), 8.32 cfs (6,020 acre-ft per year).

Extremes.--Maximum discharge during year, 49 cfs May 4 (gage height, 1.21 ft); minimum, 0.2 cfs Nov. 13
1962-65: Maximum discharge, 82 cfs Aug. 9, 1964 (gage height, 1.64 ft), from rating curve extended above 22 cfs on basis of slope-area measurement of peak flow; minimum, 0.06 cfs Aug. 23, 1963.
Peak discharge not determined prior to 1962; maximum daily discharge observed, 132 cfs May 2-6, 1914.
A flood of undetermined magnitude occurred July 21, 1921.

Remarks.--Records good except those for periods of backwater from debris, which are fair. A few very small diversions above station for irrigation. Randall's ditch diverts from left bank 175 ft downstream from gage for irrigation below station.

Rating table, except periods of backwater from debris (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Apr. 28 to May 9)

| | | | |
|---|---|---|---|
| 0.4 | 0.4 | 0.8 | 9.0 |
| .5 | 1.4 | .9 | 14 |
| .6 | 3.0 | 1.1 | 26 |
| .7 | 5.5 | 1.4 | 53 |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | c 0.6 | 0.6 | 0.8 | 1.3 | 2.2 | 2.0 | 9.0 | 36 | 12 | 8.6 | 13 | 2.0 |
| 2 | c .6 | .6 | .8 | .6 | 2.0 | 1.1 | 11 | 40 | 10 | 7.6 | 11 | 2.5 |
| 3 | c .5 | .6 | .7 | .6 | 1.9 | 1.7 | 15 | *45 | 9.9 | 6.9 | 9.4 | 2.5 |
| 4 | c .5 | .7 | .8 | .9 | 1.9 | 1.9 | 16 | 46 | 9.4 | 6.6 | 8.3 | 2.4 |
| 5 | c .5 | .7 | .4 | 1.4 | 2.0 | 2.0 | 18 | 44 | 10 | 5.5 | 6.9 | c 2.0 |
| 6 | c .5 | .7 | .6 | 1.9 | 2.2 | 2.2 | 14 | 41 | 10 | 5.0 | 5.8 | c 2.5 |
| 7 | c .5 | .6 | .7 | 2.4 | 2.2 | 2.2 | *15 | 38 | 9.0 | 5.0 | 5.2 | * c 1.9 |
| 8 | * .5 | .6 | .6 | 2.5 | * 2.0 | 2.2 | 15 | 36 | 8.0 | 4.8 | 4.8 | 3.8 |
| 9 | .5 | .7 | .6 | 2.4 | 1.9 | * 2.2 | 18 | 33 | 7.6 | 4.5 | *4.5 | 4.2 |
| 10 | .5 | .8 | .6 | 2.2 | 1.6 | 1.9 | 14 | 32 | 7.6 | 4.0 | 7.2 | 2.8 |
| 11 | .4 | .8 | .6 | *1.7 | 1.4 | 1.9 | 9.9 | 29 | 8.0 | 4.2 | 6.2 | 2.7 |
| 12 | .5 | .5 | .6 | 2.5 | 1.4 | 1.7 | 12 | 28 | 8.3 | 5.0 | 4.8 | 3.2 |
| 13 | .5 | .5 | .6 | 2.0 | .9 | 1.6 | 15 | *32 | 8.3 | 4.2 | 4.0 | 2.7 |
| 14 | .5 | .6 | .6 | 2.0 | 1.4 | 1.4 | 15 | 30 | *6.6 | 4.8 | 3.8 | 2.4 |
| 15 | .5 | .8 | .6 | 2.5 | 1.9 | 1.6 | 13 | 29 | 6.2 | 5.2 | 4.2 | 2.0 |
| 16 | .6 | .9 | .6 | 2.5 | 1.9 | 1.9 | 15 | 28 | 8.6 | * 4.2 | 4.5 | 1.9 |
| 17 | .6 | .9 | .6 | 2.4 | 1.6 | 1.9 | 16 | 24 | 17 | 3.8 | 4.0 | 2.2 |
| 18 | .6 | 1.0 | .5 | 2.4 | 1.6 | 2.0 | 15 | *24 | 15 | 3.0 | 4.8 | 4.0 |
| 19 | .6 | * .8 | .4 | 2.4 | 1.7 | 1.9 | 19 | 24 | 23 | 2.8 | 6.6 | 3.0 |
| 20 | .6 | .4 | .4 | 2.4 | 1.9 | 1.3 | *21 | 23 | 21 | 2.7 | 5.2 | 3.0 |
| 21 | .6 | .5 | .5 | 2.4 | 1.7 | 1.7 | 26 | 21 | 20 | 2.7 | 4.0 | *3.2 |
| 22 | .6 | .6 | .6 | 2.2 | 2.2 | 2.4 | 30 | 21 | 18 | 2.4 | 4.0 | 2.7 |
| 23 | .6 | .6 | * .6 | 1.3 | 2.0 | 2.5 | 35 | 22 | 16 | 3.2 | 3.5 | 2.5 |
| 24 | .6 | .6 | .6 | 1.7 | 1.6 | 2.7 | 38 | 25 | 16 | 2.7 | 3.2 | 2.4 |
| 25 | .6 | .6 | .6 | 2.2 | 1.4 | 2.5 | 38 | 21 | 17 | 4.2 | *2.7 | 2.2 |
| 26 | .4 | .8 | .6 | 1.0 | 1.9 | 2.2 | 39 | 19 | 14 | 4.2 | 2.5 | 2.4 |
| 27 | .5 | .8 | .6 | *1.0 | 2.2 | 2.8 | 37 | 18 | 12 | 3.5 | 2.4 | 2.4 |
| 28 | .5 | .6 | .8 | 1.6 | 2.4 | 3.2 | 34 | 16 | 10 | 7.2 | 2.2 | 2.2 |
| 29 | .5 | .6 | .8 | 2.0 | -- | 4.5 | 32 | 15 | 9.0 | 9.0 | 2.5 | 2.0 |
| 30 | * .6 | .6 | .6 | 2.0 | ---------- | 5.2 | 33 | 14 | 8.6 | * 5.2 | 2.7 | 2.0 |
| 31 | .6 | ---------- | 1.3 | 2.2 | ---------- | 7.2 | ---------- | 14 | ---------- | 8.0 | 2.4 | ---------- |
| Total | 16.7 | 20.1 | 19.7 | 58.6 | 51.0 | 73.5 | 637.9 | 868 | 356.1 | 150.7 | 156.3 | 77.7 |
| Mean | 0.54 | 0.67 | 0.64 | 1.89 | 1.82 | 2.37 | 21.3 | 28.0 | 11.9 | 4.86 | 5.04 | 2.59 |
| Ac-ft | 33 | 40 | 39 | 116 | 101 | 146 | 1,270 | 1,720 | 706 | 299 | 310 | 154 |

Calendar year 1964: Max 24 Min 0.1 Mean 2.78 Ac-ft 2,020
Water year 1964-65: Max 46 Min 0.4 Mean 6.81 Ac-ft 4,930

Peak discharge (base, 25 cfs).--May 4 (0730) 49 cfs (1.21 ft); June 19 (0830) 29 cfs (1.16 ft).

* Discharge measurement made on this day.
c Backwater from debris.

## 8-2753. Rio Pueblo de Taos near Ranchito, N. Mex.

Location.--Lat 36°23'30", long 105°37'30", on left bank 300 ft downstream from Rio Fernando de Taos and 1.6 miles southwest of Ranchito, Taos County.

Drainage area.--199 sq mi.

Records available.--March 1957 to September 1965.

Gage.--Water-stage recorder. Datum of gage is 6,747 ft above mean sea level, datum of 1929.

Average discharge.--8 years, 29.5 cfs (21,360 acre-ft per year).

Extremes.--Maximum discharge during year, 264 cfs June 19 (gage height, 2.95 ft), from rating curve extended above 120 cfs by logarithmic plotting; maximum gage height, 3.70 ft Dec. 14 (ice jam); minimum discharge, 2.9 cfs Oct. 17.
1957-65: Maximum discharge, 600 cfs May 13, 1958, corrected (gage height, 3.72 ft), from rating curve extended above 230 cfs by logarithmic plotting; minimum, 0.8 cfs July 6, 1963, Aug. 6, 1964.

Remarks.--Records good except those for periods of ice effect, which are poor. Diversions for irrigation of about 9,000 acres above station. Anderson ditch diverts from right bank about 125 ft below gage.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

| Oct. 1 to Mar. 31 | | | Apr. 1 to Sept. 30 | |
|---|---|---|---|---|
| Mostly ice-affected or shifting-control method. | 1.3 | 7.1 | 2.2 | 87 |
| | 1.4 | 11 | 2.5 | 144 |
| | 1.6 | 22 | 2.9 | 248 |
| | 1.9 | 47 | | |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 4.2 | 6.1 | 17 | 18 | 19 | 18 | 31 | 60 | 54 | 81 | 36 | 16 |
| 2 | 4.5 | 5.8 | 19 | b15 | b17 | b15 | 35 | 82 | 58 | 76 | 41 | 18 |
| 3 | 4.8 | 6.1 | 22 | b10 | b16 | b12 | 38 | 110 | 60 | 71 | 36 | 18 |
| 4 | 4.2 | 6.1 | 21 | b13 | b16 | b13 | 41 | 129 | 64 | 65 | 33 | 18 |
| 5 | 4.0 | 5.8 | b15 | 16 | 16 | b14 | *42 | 121 | 71 | 56 | 30 | 18 |
| 6 | *4.0 | 5.5 | b13 | 20 | 16 | b15 | 32 | *112 | 67 | 45 | 27 | 20 |
| 7 | 3.8 | 5.5 | b14 | 37 | 19 | b15 | 32 | 114 | 56 | 39 | 24 | *20 |
| 8 | 3.5 | 5.2 | b12 | 43 | *18 | b15 | 32 | 119 | 53 | 35 | 20 | 39 |
| 9 | 3.5 | 5.2 | b13 | 27 | 18 | 16 | 42 | 108 | 59 | 32 | *19 | 30 |
| 10 | 3.5 | 5.2 | b14 | 23 | 17 | *16 | 43 | 94 | 69 | 27 | 19 | 24 |
| 11 | 3.5 | 5.5 | b15 | *b20 | b13 | 16 | 35 | 81 | 75 | 28 | 19 | 24 |
| 12 | 3.3 | 4.8 | 16 | b22 | b11 | 18 | 31 | 72 | 74 | 24 | 18 | 26 |
| 13 | 3.3 | 5.8 | b14 | b19 | b10 | 16 | 31 | 106 | 78 | 22 | 19 | 23 |
| 14 | 3.3 | 5.8 | b 9 | b17 | b13 | 16 | 28 | 134 | 84 | 26 | 19 | 23 |
| 15 | 3.3 | 5.5 | b 9.5 | b18 | 16 | 15 | 27 | 121 | *106 | 24 | 19 | 22 |
| 16 | 3.3 | 5.5 | b10 | b19 | b15 | 16 | 30 | 94 | 140 | *20 | 17 | 20 |
| 17 | 3.3 | 5.8 | b11 | b20 | b14 | 17 | 36 | 80 | 182 | 17 | 19 | 22 |
| 18 | 3.5 | *7.1 | b10 | b20 | b15 | 16 | 48 | *96 | 175 | 15 | 23 | 24 |
| 19 | 3.5 | 10 | 9.6 | b20 | b16 | 16 | 52 | 123 | 245 | 13 | 25 | 24 |
| 20 | 3.5 | 10 | 11 | b20 | b16 | 15 | 65 | 149 | 222 | 12 | 23 | *31 |
| 21 | 3.5 | 9.1 | 13 | 19 | b15 | 15 | *81 | 170 | 216 | 12 | 20 | 29 |
| 22 | 3.5 | 9.6 | 13 | 19 | b17 | *16 | 101 | 195 | 190 | 11 | 22 | 26 |
| 23 | 3.8 | 10 | 14 | b16 | *19 | 16 | 129 | 206 | 156 | 10 | *22 | 25 |
| 24 | 3.8 | 10 | *18 | b18 | b17 | 16 | 151 | 225 | 187 | 11 | 21 | 24 |
| 25 | 4.0 | 11 | 24 | 20 | b16 | 17 | 129 | 180 | 195 | 20 | 20 | 23 |
| 26 | 4.2 | 13 | 19 | b16 | b17 | 16 | 112 | 125 | 170 | 17 | 18 | 21 |
| 27 | 4.5 | 15 | 20 | b14 | b17 | 17 | 84 | 87 | 142 | 16 | 17 | 20 |
| 28 | 4.8 | 15 | 33 | b16 | 20 | 17 | 60 | 65 | 114 | *15 | 17 | 20 |
| 29 | 5.2 | 16 | 18 | *18 | — | 19 | 53 | 54 | 92 | 16 | 16 | 20 |
| 30 | *5.8 | 16 | 14 | 19 | ------ | 21 | 50 | 53 | 75 | 18 | 16 | 20 |
| 31 | 5.8 | ------ | 17 | 19 | ------ | 25 | ------ | 53 | ------ | 34 | 15 | ------ |
| Total | 122.7 | 247.0 | 478.1 | 611 | 449 | 505 | 1,701 | 3,518 | 3,529 | 908 | 690 | 688 |
| Mean | 3.96 | 8.23 | 15.4 | 19.7 | 16.0 | 16.3 | 56.7 | 113 | 118 | 29.3 | 22.3 | 22.9 |
| Ac-ft | 243 | 490 | 948 | 1,210 | 891 | 1,000 | 3,370 | 6,980 | 7,000 | 1,800 | 1,370 | 1,360 |

Calendar year 1964: Max 69 Min 1.1 Mean 10.1 Ac-ft 7,320
Water year 1964-65: Max 245 Min 3.3 Mean 36.8 Ac-ft 26,660

Peak discharge (base, 130 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 4-24 | 0600 | 2.55 | 172 | 6-19 | 0630 | 2.95 | 264 |
| 5-24 | 0630 | 2.87 | 242 | | | | |

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

## 8-2755. Rio Grande de Ranchos near Talpa, N. Mex.

Location.--Lat 36°17'55", long 105°34'55", in Rancho del Rio Grande Grant, on right bank 1⅝ miles downstream from Rito de la Olla (locally known as Pot Creek), 3.0 miles south of Talpa, and 3.5 miles upstream from Rio Chiquito.

Drainage area.--83 sq mi, approximately.

Records available.--October 1952 to September 1965. Prior to October 1955, published as Rio Grande del Rancho near Ranchos de Taos.

Gage.--Water-stage recorder. Altitude of gage is 7,250 ft (from topographic map). Prior to Nov. 11, 1952, staff gage at site 35 ft downstream at datum 0.39 ft lower.

Average discharge.--13 years, 20.1 cfs (14,550 acre-ft per year).

Extremes.--Maximum discharge during year, 283 cfs May 24 (gage height, 3.21 ft); maximum gage height, 3.90 ft Feb. 17 (backwater from ice); minimum discharge, about 3 cfs Dec. 13 or 14, result of freezeup.
1952-65: Maximum discharge, 435 cfs Sept. 10, 1964; (gage height, 4.01 ft); minimum, 0.2 cfs Jan. 5, 1955.

Remarks.--Records good except those for periods of ice effect or doubtful or no gage-height record, which are poor. Discharge measurements generally made at least twice a month. Minor diversions upstream for irrigation. Records of suspended sediment loads and water temperatures for the water year 1965 are published in part 2 of this report.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Apr. 27 to Sept. 30)

| | | | | | |
|---|---|---|---|---|---|
| 1.5 | 3.4 | 1.8 | 12 | 2.6 | 72 |
| 1.6 | 5.5 | 2.0 | 21 | 2.9 | 115 |
| 1.7 | 8.2 | 2.3 | 42 | 3.2 | 172 |
| | | | | 3.6 | 280 |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 5.5 | 5.8 | b 5 | 7.1 0 | 5.8 | b 6 | a 13 | 110 | 102 | 42 | 30 | 13 |
| 2 | 5.8 | 5.8 | 5.5 | b 4 | b5.5 | b 5 | a 15 | 147 | 104 | 37 | 32 | 13 |
| 3 | 5.5 | 5.8 | 5.8 | b 4 | b5.5 | b 4.5 | a 17 | 170 | 101 | 35 | 33 | 13 |
| 4 | 5.5 | 5.8 | 5.8 | b 4 | b5.5 | a 5 | a 19 | 190 | 95 | 33 | 33 | 13 |
| 5 | 5.1 | 5.8 | b 5 | b 6 | b5.5 | a 5 | a 22 | 193 | 92 | 30 | 31 | 12 |
| 6 | 5.8 | 5.8 | b 5 | b 9 | b6 | a 5.5 | a 19 | 188 | 80 | 29 | 28 | 15 |
| 7 | 5.8 | 5.8 | b 4.5 | 11 | 6.0 | a 5.5 | 19 | 190 | 76 | 28 | 26 | 13 |
| 8 | 5.5 | 5.8 | b 4 | 9.2 | 5.5 | a 5.5 | 19 | 188 | d 72 | 26 | 24 | 21 |
| 9 | 5.5 | 5.1 | b 4.5 | 7.4 | b5.5 | 5.5 | 21 | 172 | d 72 | 25 | 22 | 15 |
| 10 | 5.8 | 5.8 | b 5 | b 6 | b5.5 | 5.8 | 23 | 155 | d 75 | 22 | 21 | 11 |
| 11 | 5.5 | 6.0 | b5.5 | b 6 | b 5 | 5.5 | 21 | 142 | d 80 | 22 | 20 | 12 |
| 12 | 5.1 | b 5.5 | b 6 | b 8 | b4.5 | 5.5 | 20 | 130 | d 78 | 23 | 18 | 16 |
| 13 | 5.5 | b 5.5 | b 4 | b 7 | b 4 | 5.3 | 22 | 145 | d 75 | 22 | 24 | 11 |
| 14 | 5.5 | 5.3 | b 4 | b 6 | a 4.5 | b5.3 | 21 | 157 | d 70 | 22 | 20 | 9.2 |
| 15 | 5.5 | 5.3 | b4.5 | b 7 | a 5 | 5.5 | 20 | 149 | d 75 | 25 | 19 | 8.5 |
| 16 | 6.0 | 5.3 | a 5 | b 7 | a5 | 5.5 | 23 | 129 | 82 | 22 | 18 | 7.9 |
| 17 | 5.8 | 5.3 | a 5 | b 7 | a6 | 5.5 | 28 | 122 | 110 | 19 | 18 | 10 |
| 18 | 5.8 | 5.5 | a 5 | b 7 | a6 | 5.5 | 45 | 138 | 132 | 18 | 20 | 14 |
| 19 | 5.8 | b5.8 | a 5 | b 7 | a6 | b5.5 | 52 | 159 | 145 | 17 | 26 | 11 |
| 20 | 6.0 | b5.3 | a 5 | b 7 | a6 | b5 | 64 | 186 | 140 | 16 | 21 | 15 |
| 21 | 5.5 | b 4.5 | a 6 | 6.6 | a6 | b5.5 | 77 | 200 | 125 | 15 | 18 | 14 |
| 22 | 5.8 | b 4.5 | a 6 | 6.3 | 6.3 | b6 | 102 | 218 | 109 | 14 | 18 | 12 |
| 23 | 5.8 | b 4.5 | a 6 | b6 | 6.6 | 6.3 | 127 | 244 | 88 | 15 | 18 | 11 |
| 24 | 6.0 | b 5 | a 7 | b8 | b5 | 6.3 | 142 | 274 | 80 | 14 | 16 | 9.9 |
| 25 | 6.0 | b 5 | 7.7 | 7.1 | b6 | 6.3 | 143 | 218 | 71 | 22 | 15 | 9.9 |
| 26 | 5.5 | b 5 | 7.4 | b5 | b7 | a6.3 | 134 | 168 | 61 | 18 | 14 | 9.9 |
| 27 | 5.5 | 5.1 | 7.7 | a4.5 | b7 | a 6.4 | 113 | 143 | 54 | 17 | 14 | 9.9 |
| 28 | 5.8 | b 5 | 9.9 | b5 | 7.1 | a 6.6 | 92 | 120 | 49 | 20 | 13 | 10 |
| 29 | 5.5 | b 4.5 | b 6 | b6 | - | a 7 | 82 | 107 | 46 | 17 | 15 | 9.6 |
| 30 | 5.5 | b 4.5 | b 5 | b6.5 | ------ | a 9 | 84 | 101 | 45 | 16 | 15 | 9.9 |
| 31 | 5.8 | ------ | 7.4 | 6.0 | ------ | a 11 | ------ | 102 | ------ | 26 | 14 | ------ |
| Total | 175.0 | 159.7 | 175.2 | 203.7 | 159.3 | 184.1 | 1,599 | 5,055 | 2,584 | 707 | 654 | 359.7 |
| Mean | 5.65 | 5.32 | 5.65 | 6.57 | 5.69 | 5.94 | 53.3 | 163 | 86.1 | 22.8 | 21.1 | 12.0 |
| Ac-ft | 347 | 317 | 348 | 404 | 316 | 365 | 3,170 | 10,030 | 5,130 | 1,400 | 1,300 | 713 |

Calendar year 1964: Max 155 Min 2 Mean 16.0 Ac-ft 11,600
Water year 1964-65: Max 274 Min 4 Mean 32.9 Ac-ft 23,840

Peak discharge (base, 75 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 4-25 | 0430 | 3.00 | 147 | 6-19 | 0600 | 2.76 | 155 |
| 5- 6 | 0400 | 3.18 | 200 | 8-13 | 1500 | 2.43 | 92 |
| 5-24 | 0830 | 3.21 | 283 | | | | |

a No gage-height record.
b Stage-discharge relation affected by ice.
d Doubtful gage-height record.

## 8-2756. Rio Chiquito near Talpa, N. Mex.

Location.--Lat 36°19'50", long 105°34'50", in Rancho del Rio Grande Grant, on right bank 1 mile southeast of Talpa, Taos County, and 1½ miles upstream from mouth.

Drainage area.--37.0 sq mi.

Records available.--March 1957 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 7,230 ft (from topographic map).

Average discharge.--8 years, 9.02 cfs (6,530 acre-ft per year).

Extremes.--Maximum discharge during year, 100 cfs May 3 (gage height, 2.07 ft); minimum, about 0.4 cfs Jan. 26, result of freezeup.
1957-65: Maximum discharge, about 144 cfs May 13, 1958 (gage height, 2.24 ft), from rating curve extended above 50 cfs by logarithmic plotting; minimum, about 0.3 cfs Jan. 13, 1964.

Remarks.--Records good except those for periods of ice effect or doubtful gage-height record, which are poor.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

| | | | |
|---|---|---|---|
| 1.1 | 0.6 | 1.7 | 21 |
| 1.2 | 1.4 | 1.8 | 31 |
| 1.3 | 2.7 | 1.9 | 46 |
| 1.4 | 5.0 | 2.0 | 68 |
| 1.5 | 8.4 | 2.1 | 100 |
| 1.6 | 14 | | |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.4 | 2.4 | 2.2 | 2.6 | 2.6 | 2.7 | 5.0 | 50 | 34 | 21 | 17 | 5.3 |
| 2 | 2.3 | 2.4 | 2.4 | 1.6 | 2.4 | b 1.5 | 6.0 | 81 | 32 | 19 | 18 | 6.0 |
| 3 | 2.3 | 2.6 | 2.6 | b 1 | 2.4 | b 2 | 7.7 | 84 | 31 | 18 | 16 | 5.7 |
| 4 | 2.3 | 2.6 | 2.4 | b 2 | 2.4 | b 2 | 9.4 | 78 | * 29 | 17 | 14 | 5.3 |
| 5 | 2.4 | 2.6 | b1 | b 3 | 2.6 | b 2 | 10 | 71 | 28 | 17 | 13 | 5.3 |
| 6 | * 2.3 | 2.4 | b1 | 3.4 | 2.6 | b 2.2 | 8.9 | * 68 | 26 | 15 | 12 | 6.4 |
| 7 | 2.3 | 2.4 | b1 | 3.8 | 2.7 | b 2.5 | * 8.9 | 61 | 23 | 15 | 12 | * 5.7 |
| 8 | 2.3 | 2.4 | b1 | 3.4 | 2.6 | b 2.5 | 8.4 | 59 | 21 | 14 | 11 | 8.9 |
| 9 | 2.2 | 2.4 | b1 | 3.2 | 2.4 | 2.7 | 10 | 64 | 20 | 13 | 10 | 8.4 |
| 10 | 2.2 | 2.7 | b2 | b 2.5 | 2.4 | 2.6 | 10 | 61 | 20 | 13 | 10 | 6.4 |
| 11 | 2.2 | 2.6 | b2.5 | * b 2.2 | * b2 | * 2.6 | 7.4 | 55 | 20 | 13 | 10 | 6.0 |
| 12 | 2.2 | 2.2 | b3 | b 2.2 | b1.5 | 2.6 | 7.4 | 53 | 20 | 13 | 9.4 | 6.7 |
| 13 | 2.2 | b 2.1 | b .5 | b 2.2 | b 1 | 2.6 | 10 | * 59 | 20 | 12 | * 8.9 | 5.7 |
| 14 | 2.2 | d 2.1 | b1 | b 2.2 | b 1.5 | 2.4 | 8.9 | 59 | 17 | 14 | 8.4 | 5.3 |
| 15 | 2.2 | d 2.3 | b2 | b 2.3 | b 2 | 2.4 | 7.4 | 59 | *17 | 15 | 9.4 | 4.8 |
| 16 | 2.2 | d 2.5 | b2.2 | b 2.3 | b 2 | 2.7 | 10 | 53 | 23 | *13 | 10 | 4.5 |
| 17 | 2.2 | d 2.2 | b2.3 | b 2.3 | b 2.2 | 2.6 | 12 | * 50 | 40 | 12 | 9.4 | 5.0 |
| 18 | 2.3 | d 2 | 2.3 | b 2.3 | b 2.3 | 2.6 | 17 | 57 | 55 | 11 | 10 | 6.4 |
| 19 | 2.4 | d 1.2 | 2.3 | b 2.3 | 2.4 | b 2 | 20 | 59 | 57 | 11 | 12 | 5.7 |
| 20 | 2.6 | * b 1.2 | 2.2 | b 2.5 | 2.4 | b 1.5 | * 28 | 59 | 55 | 10 | 10 | * 6.4 |
| 21 | 2.6 | b 1.3 | 2.2 | 2.7 | 2.4 | b 2 | 38 | 64 | 46 | 10 | 8.1 | 6.0 |
| 22 | 2.6 | b 1.4 | 2.2 | 2.6 | 2.6 | b 2.5 | 43 | 64 | 43 | 8.9 | 8.4 | 5.3 |
| 23 | 2.6 | b 1.5 | 2.3 | 1.9 | 2.6 | 2.7 | 55 | 64 | 42 | 8.9 | 7.4 | 5.0 |
| 24 | 2.7 | b 1.5 | 2.4 | b 2 | b 2 | 2.7 | 59 | 64 | 40 | 8.9 | 7.0 | 4.8 |
| 25 | 2.7 | b 2 | 2.4 | b 2.2 | b 2 | 2.6 | 71 | 61 | 38 | 12 | * 6.7 | 4.3 |
| 26 | 2.4 | b 2 | 2.4 | b 1.5 | b 2.3 | 2.4 | 59 | 59 | 34 | 11 | 6.4 | 4.3 |
| 27 | 2.4 | b 2 | 2.4 | b 1.5 | b 2.5 | 2.9 | 44 | 50 | 28 | 10 | 6.0 | 4.5 |
| 28 | 2.4 | b 2 | *2.7 | b 2 | 2.9 | 2.9 | 38 | 46 | 25 | * 11 | 5.7 | 4.5 |
| 29 | 2.4 | 2.2 | 2.4 | * b 3 | — | 3.4 | 32 | 43 | 22 | 12 | 6.0 | 4.3 |
| 30 | * 2.4 | 2.2 | 2.0 | b 3 | ---------- | 3.4 | 36 | 40 | 21 | 10 | 6.0 | 4.3 |
| 31 | 2.4 | ---------- | 2.9 | 2.7 | ---------- | 4.3 | ---------- | 38 | ---------- | 14 | 5.7 | ---------- |
| Total | 73.3 | 63.4 | 63.2 | 74.4 | 63.7 | 78.5 | 687.4 | 1,833 | 927 | 402.7 | 303.9 | 167.2 |
| Mean | 2.36 | 2.11 | 2.04 | 2.40 | 2.28 | 2.53 | 22.9 | 59.1 | 30.9 | 13.0 | 9.80 | 5.57 |
| Ac-ft | 145 | 126 | 125 | 148 | 126 | 156 | 1,360 | 3,640 | 1,840 | 799 | 603 | 332 |

Calendar year 1964: Max 36 Min 0.5 Mean 6.64 Ac-ft 4,820
Water year 1964-65: Max 84 Min 0.5 Mean 13.0 Ac-ft 9,400

Peak discharge (base, 35 cfs).--May 3 (0300) 100 cfs (2.07 ft).

* Discharge measurement made on this day.
b Stage discharge relation affected by ice.
d Doubtful gage-height record.

8-2760. Rio Pueblo de Taos at Los Cordovas, N. Mex.

Location.--Lat 36°23'20", long 105°38'00", in N½ sec. 23, T.25 N., R.12 E. (projected), in Martinez Grant, on left bank 200 ft downstream from Rio Grande de Ranchos, 0.2 mile downstream from Arroyo Seco, half a mile northeast of Los Cordovas, and 3½ miles west of Taos.

Drainage area.--359 sq mi.

Records available.--April 1910 to January 1926, September 1926 to September 1965 (discontinued). Monthly discharge only for some periods, published in WSP 1312. Prior to October 1955, published as Rio Taos at Los Cordovas. All records include flow of Rio Grande de Ranchos.

Gage.--Water-stage recorder. Datum of gage is 6,709.59 ft above mean sea level, datum of 1929. Prior to Oct. 4, 1921, staff gages at nearby sites at different datums. Oct. 4, 1921 to Sept. 30, 1934, water-stage recorder at site 200 ft upstream at datum about 1.26 ft higher and Oct. 1, 1934 to Apr. 30, 1957, at site 200 ft upstream at datum 1.00 ft higher.

Average discharge.--54 years (1910-25, 1926-65), 58.5 cfs (42,350 acre-ft per year).

Extremes.--Maximum discharge during year, 521 cfs June 19 (gage height, 3.82 ft); minimum, 6.3 cfs Oct. 5.
1915, 1922, 1924-25, 1927, 1929-65: Maximum discharge, 1,830 cfs May 14, 1941 (gage height, 5.81 ft, site and datum then in use), from rating curve extended above 1,300 cfs by logarithmic plotting; minimum, 0.8 cfs July 17, 1951.

Remarks.--Records good except those for periods of ice effect, which are fair. Diversions above station for irrigation of about 12,000 acres, a small part of which is below station.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1 to Dec. 5)

| | | | | | |
|---|---|---|---|---|---|
| 1.5 | 7.0 | 2.0 | 42 | 3.0 | 223 |
| 1.6 | 11 | 2.3 | 79 | 3.4 | 343 |
| 1.8 | 24 | 2.6 | 130 | 3.8 | 495 |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 9.2 | 11 | 21 | 30 | 32 | 28 | 45 | 160 | 138 | 138 | 58 | 23 |
| 2 | 9.2 | 11 | 23 | b23 | 30 | b 23 | 51 | 226 | 145 | 130 | 63 | 26 |
| 3 | 9.2 | 12 | 26 | b20 | 30 | b 21 | 58 | 294 | 145 | 106 | 58 | 25 |
| 4 | 8.3 | 12 | 24 | 23 | 30 | b 20 | 61 | 350 | 145 | 96 | 53 | 24 |
| 5 | 7.9 | 12 | 19 | 28 | 30 | 25 | *68 | *354 | 153 | 84 | 48 | 25 |
| 6 | *7.4 | 11 | 17 | 35 | 31 | 27 | 59 | 336 | 134 | 68 | 43 | 26 |
| 7 | 8.3 | 12 | *b 18 | 63 | 34 | 27 | 59 | 323 | 119 | 60 | 37 | * 28 |
| 8 | 9.2 | 12 | b 14 | 71 | *33 | 27 | 59 | 326 | 109 | 55 | 31 | 59 |
| 9 | 9.6 | 12 | b 16 | 46 | 31 | 28 | 72 | 291 | 119 | 51 | *28 | 43 |
| 10 | 9.6 | 12 | 18 | 40 | 29 | * 27 | 73 | 245 | 138 | 43 | 30 | 35 |
| 11 | 10 | 12 | 19 | *32 | 24 | 26 | 63 | 218 | 147 | 43 | 27 | 35 |
| 12 | 9.6 | 11 | 21 | 36 | b 22 | 27 | 55 | 200 | 138 | 37 | 25 | 38 |
| 13 | 9.6 | 14 | b 18 | 32 | b 21 | 25 | 61 | 262 | 138 | 32 | 28 | 35 |
| 14 | 9.6 | 14 | b 15 | 30 | b 24 | 24 | 59 | 320 | 136 | 46 | 28 | 31 |
| 15 | 9.2 | 13 | b 17 | 33 | b 27 | 23 | 58 | 288 | *151 | 38 | 27 | 30 |
| 16 | 8.7 | 13 | b 19 | 34 | 28 | 26 | 60 | 234 | 178 | *31 | 25 | 29 |
| 17 | 8.7 | *14 | 20 | 33 | 27 | 25 | 71 | 195 | 242 | 27 | 30 | 30 |
| 18 | 9.2 | 15 | 19 | 32 | 29 | 25 | 92 | *223 | 313 | 23 | 34 | 36 |
| 19 | 10 | 17 | 19 | 32 | 29 | 24 | * 99 | 276 | 495 | 19 | 40 | 36 |
| 20 | 11 | 16 | 20 | 31 | 28 | 23 | 126 | 336 | 487 | 16 | 37 | *50 |
| 21 | 10 | 15 | 21 | 33 | 27 | 24 | 173 | *378 | 431 | 15 | 30 | 46 |
| 22 | 10 | 15 | 22 | 31 | 28 | *26 | 218 | 393 | 354 | 14 | 35 | 42 |
| 23 | 10 | 16 | 23 | 24 | *29 | 27 | 276 | 411 | 298 | 14 | *32 | 38 |
| 24 | 10 | 16 | 27 | 27 | 27 | 27 | 313 | 479 | 313 | 14 | 31 | 37 |
| 25 | 10 | 16 | 38 | 31 | 27 | 28 | 294 | 408 | 301 | 30 | 29 | 36 |
| 26 | 9.6 | 18 | 30 | 23 | 30 | 26 | 259 | 304 | 267 | 26 | 26 | 34 |
| 27 | 10 | 20 | 33 | b 21 | 31 | 28 | 202 | 223 | 218 | 23 | 23 | 33 |
| 28 | 12 | 19 | 57 | 24 | 32 | 27 | 162 | 178 | 180 | *23 | 23 | 35 |
| 29 | 12 | 20 | *32 | *31 | | 30 | 136 | 145 | 147 | 23 | 22 | 33 |
| 30 | *12 | 20 | 24 | 34 | ---------- | 31 | 130 | 140 | 132 | 26 | 21 | 33 |
| 31 | 12 | ---------- | 28 | 34 | ---------- | 37 | ---------- | 140 | ---------- | 58 | 21 | ---------- |
| Total | 301.1 | 431 | 718 | 1,017 | 800 | 812 | 3,512 | 8,656 | 6,411 | 1,409 | 1,043 | 1,031 |
| Mean | 9.71 | 14.4 | 23.2 | 32.8 | 28.6 | 26.2 | 117 | 279 | 214 | 45.5 | 33.6 | 34.4 |
| Ac-ft | 597 | 855 | 1,420 | 2,020 | 1,590 | 1,610 | 6,970 | 17,170 | 12,720 | 2,790 | 2,070 | 2,040 |

Calendar year 1964 : Max 171 Min 4.0 Mean 19.9 Ac-ft 14,470
Water year 1964-65 : Max 495 Min 7.4 Mean 71.6 Ac-ft 51,850

Peak discharge (base, 200 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 4-24 | 1000 | 3.42 | 343 | 6-19 | 0945 | 3.82 | 521 |
| 5-24 | 0815 | 3.85 | 499 | | | | |

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

## 8-2763. Rio Pueblo de Taos below Los Cordovas, N. Mex.

Location.--Lat 36°22'38", long 105°40'04", in Gijosa Grant, on left bank 2 miles southwest of Los Cordovas, Taos County, 2½ miles downstream from Rio Grande de Ranchos, 4½ miles upstream from mouth.

Drainage area.--380 sq mi.

Records available.--March 1957 to September 1965.

Gage.--Water-stage recorder (digital, and crest-stage indicator). Concrete control since July 16, 1963. Datum of gage is 6,652 ft above mean sea level, datum of 1929.

Average discharge.--8 years, 53.2 cfs (38,520 acre-ft per year).

Extremes.--Maximum discharge during year, 552 cfs May 24 and June 19 (gage height, 4.13 ft); minimum, 6.8 cfs Mar. 3.
1957-65: Maximum discharge, 2,380 cfs Aug. 24, 1957 (gage height, 5.80 ft), from rating curve extended above 900 cfs on basis of logarithmic plotting; minimum, 3.0 cfs July 14, 17, 22, 23, 25, 1963.

Remarks.--Records good except those for periods of ice effect, which are fair. Diversions for irrigation of about 12,000 acres above station.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

| | | | |
|---|---|---|---|
| 1.8 | 7.3 | 2.5 | 71 |
| 1.9 | 11 | 3.0 | 172 |
| 2.0 | 16 | 3.5 | 314 |
| 2.2 | 32 | 4.1 | 540 |

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1964 TO SEPTEMBER 1965

| DAY | OCT. | NOV. | DEC. | JAN. | FEB. | MAR. | APR. | MAY | JUNE | JULY | AUG. | SEPT. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 9.1 | 11 | 22 | 33 | 31 | 33 | 48 | 160 | 138 | 138 | 62 | 25 |
| 2 | 9.5 | 11 | 23 | b 30 | 30 | 27 | 53 | 227 | 145 | 123 | 67 | 30 |
| 3 | 9.5 | 12 | 25 | b 23 | 29 | 25 | 59 | 298 | 142 | 106 | 61 | 30 |
| 4 | 9.1 | 12 | 24 | b 25 | 30 | 26 | 64 | * 348 | 142 | 97 | 57 | 28 |
| 5 | 8.7 | 12 | b 21 | b 30 | 30 | 29 | 71 | 345 | 152 | 84 | 52 | 28 |
| 6 | 8.7 | 12 | b 19 | 36 | 30 | 31 | 65 | 328 | 132 | 69 | 48 | 31 |
| 7 | * 8.7 | 13 | b 20 | 65 | 31 | 31 | *65 | 317 | 115 | 62 | 42 | * 32 |
| 8 | 8.7 | 13 | b 17 | 74 | 31 | 31 | 64 | 321 | 114 | 55 | 36 | 73 |
| 9 | 9.1 | 13 | b 18 | 47 | 31 | 31 | 74 | 295 | 124 | 49 | * 31 | 46 |
| 10 | 9.5 | 14 | b 19 | 41 | * 29 | 30 | 78 | 264 | 140 | 42 | 33 | 35 |
| 11 | 9.5 | 14 | 21 | * 35 | 24 | *29 | 68 | 232 | 148 | 43 | 31 | 33 |
| 12 | 9.1 | 14 | 21 | 39 | b 23 | 31 | 62 | 205 | 140 | 36 | 31 | 38 |
| 13 | 9.5 | 15 | 20 | 38 | b 23 | 29 | 70 | 273 | 138 | 33 | 32 | 35 |
| 14 | 9.5 | 16 | b 16 | 36 | 26 | 28 | 66 | 334 | 138 | 60 | 34 | 30 |
| 15 | 9.1 | 16 | b 17 | 35 | 28 | 27 | 64 | 314 | * 154 | 42 | 33 | 30 |
| 16 | 9.1 | 16 | b 18 | 36 | 28 | 29 | 67 | 252 | 186 | *34 | 30 | 29 |
| 17 | 9.1 | * 16 | b 20 | 35 | 29 | 28 | *76 | 211 | 257 | 31 | 31 | 30 |
| 18 | 9.5 | 17 | b 20 | 34 | 30 | 28 | 96 | * 232 | 338 | 26 | 38 | 38 |
| 19 | 10 | 20 | b 20 | 34 | 30 | 27 | * 102 | 285 | 518 | 22 | 43 | 39 |
| 20 | 11 | 20 | b 21 | 35 | 30 | 26 | 124 | 348 | 505 | 19 | 42 | 53 |
| 21 | 10 | 19 | b 22 | 34 | 29 | 28 | 170 | * 392 | 442 | 18 | 35 | 51 |
| 22 | 9.8 | 20 | b 23 | 33 | 31 | 30 | 216 | 411 | 370 | 17 | 39 | 46 |
| 23 | 10 | 19 | 25 | 28 | 32 | 30 | 276 | 438 | 296 | 16 | * 36 | 43 |
| 24 | 10 | 20 | 31 | 30 | 30 | 30 | 314 | 522 | 317 | 16 | 35 | * 40 |
| 25 | 11 | 20 | 41 | *33 | 31 | 31 | 301 | 441 | 304 | 36 | 33 | 39 |
| 26 | 11 | 21 | 35 | 28 | 35 | 30 | 270 | 325 | 266 | 30 | 28 | 37 |
| 27 | 11 | 22 | 36 | b 22 | 35 | 32 | 211 | 234 | 214 | 27 | 28 | 36 |
| 28 | 11 | 22 | 55 | b 25 | 36 | 31 | 170 | 183 | 180 | *26 | 25 | 36 |
| 29 | 11 | 22 | * 35 | 32 | ------- | 34 | 141 | 149 | 144 | 27 | 24 | 34 |
| 30 | 11 | 22 | b 28 | 33 | ------- | 36 | 130 | 140 | * 127 | 29 | 25 | 34 |
| 31 | * 11 | ------- | 30 | 33 | ------- | 41 | ------- | 139 | ------- | 71 | 24 | ------- |
| TOTAL | 302.8 | 494 | 763 | 1,092 | 832 | 929 | 3,635 | 8,963 | 6,526 | 1,484 | 1,166 | 1,109 |
| MEAN | 9.77 | 16.5 | 24.6 | 35.2 | 29.7 | 30.0 | 121 | 289 | 218 | 47.9 | 37.6 | 37.0 |
| AC-FT | 601 | 980 | 1,510 | 2,170 | 1,650 | 1,840 | 7,210 | 17,780 | 12,940 | 2,940 | 2,310 | 2,200 |

Calendar year 1964 : Max 179 Min 4.7 Mean 21.0 Ac-ft 15,280
Water year 1964-65 : Max 522 Min 8.7 Mean 74.8 Ac-ft 54,130

Peak discharge (base, 230 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 4-24 | 1030 | 3.56 | 348 | 6-19 | 1030 | 4.13 | 552 |
| 5- 5 | 0900 | 3.64 | 373 | 7-14 | 1630 | 3.36 | 273 |
| 5-24 | 1030 | 4.13 | 552 | | | | |

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

8-2765. Rio Grande below Taos Junction Bridge, near Taos, N. Mex.

Location.--Lat 36°19'00", long 105°45'30", in N½ sec.15, T.24 N., R.11 E., on left bank 2 miles downstream from Rio Pueblo de Taos and bridge on State Highway 96 and 12 miles southwest of Taos.

Drainage area.--9,730 sq mi, approximately (includes 2,940 sq mi in closed basin in San Luis Valley, Colo.).

Gage.--Water-stage recorder (digital). Datum of gage is 6,050.3 ft above mean sea level (planetable survey). Prior to Apr. 14, 1934, at bridge 2 miles upstream at different datum.

Average discharge.--40 years, 740 cfs (535,700 acre-ft per year).

Extremes.--Maximum discharge during year, 4,580 cfs June 24 (gage height, 7.06 ft); minimum, 171 cfs Oct. 4.

1926-65: Maximum discharge, 9,730 cfs June 7, 1948, June 22, 1949; maximum gage height, 10.7 ft July 3, 1927 (site and datum then in use), from graph based on recorder record ending at a gage-height of 10.5 ft, 6 hours prior to peak; minimum daily discharge, 159 cfs Oct. 8-11, 1956.

Maximum flood known since at least 1888, about 14,000 cfs June 19, 1903, from records for Rio Grande at Embudo and estimated inflow. Other floods exceeding 10,000 cfs occurred June 9, 1905, May 28, 1920, and June 16, 1921, from comparison of records for stations near Lobatos and at Embudo.

Remarks.--Records good. Diversions for irrigation of about 650,000 acres above station.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

| | | | |
|---|---|---|---|
| 3.3 | 135 | 5.0 | 1,360 |
| 3.5 | 220 | 5.5 | 1,970 |
| 4.0 | 500 | 6.0 | 2,680 |
| 4.5 | 875 | 7.0 | 4,440 |

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1964 TO SEPTEMBER 1965

| DAY | OCT. | NOV. | DEC. | JAN. | FEB. | MAR. | APR. | MAY | JUNE | JULY | AUG. | SEPT. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 185 | 216 | 279 | 362 | 420 | 481 | 639 | 832 | 1,340 | 1,980 | 1,030 | 379 |
| 2 | 181 | 218 | * 276 | 348 | * 409 | 427 | 623 | 975 | 1,350 | 1,930 | 1,160 | 384 |
| 3 | 175 | 221 | 281 | 333 | 409 | 378 | 634 | 1,130 | 1,450 | 1,930 | * 1,460 | 386 |
| 4 | 182 | 220 | 297 | * 330 | 411 | 375 | 641 | 1,580 | 1,610 | 1,820 | 1,830 | 394 |
| 5 | 184 | * 227 | 247 | 339 | 420 | 446 | * 607 | 1,960 | 1,750 | 2,090 | 1,880 | 383 |
| 6 | 184 | 232 | 227 | 348 | 423 | 476 | 574 | 2,190 | 1,700 | 2,300 | 1,740 | 404 |
| 7 | 181 | 233 | 220 | 488 | 427 | 466 | 547 | 2,130 | 1,610 | 2,280 | 1,550 | 415 |
| 8 | * 180 | 232 | 240 | 619 | 430 | 465 | 508 | 1,950 | 1,800 | 2,160 | 1,380 | * 476 |
| 9 | 182 | 232 | 250 | 423 | 439 | 473 | 501 | 1,780 | 2,010 | 2,040 | 1,150 | 429 |
| 10 | 187 | 231 | 248 | 411 | 441 | 485 | 493 | * 1,720 | 2,600 | 1,880 | 978 | 407 |
| 11 | 194 | 228 | 244 | 393 | 429 | 483 | 462 | 1,470 | 2,890 | 1,840 | 849 | 414 |
| 12 | 193 | 481 | 253 | 405 | 385 | 506 | 436 | 1,370 | 2,680 | * 1,930 | 756 | 429 |
| 13 | 198 | 569 | 241 | 399 | 378 | 511 | 429 | 1,390 | 2,490 | 1,950 | 648 | 416 |
| 14 | 203 | 602 | 230 | 393 | 414 | 516 | 408 | 1,550 | 2,600 | 2,110 | 592 | 415 |
| 15 | 204 | 647 | 235 | 393 | 423 | 540 | 400 | 1,710 | * 2,460 | 2,170 | 560 | 390 |
| 16 | 207 | 677 | 237 | 393 | 424 | 552 | 392 | 1,720 | 2,730 | 2,030 | 504 | 376 |
| 17 | 208 | 721 | 238 | 393 | 415 | 572 | 396 | 1,610 | 3,190 | 1,700 | 469 | 372 |
| 18 | 208 | 579 | 238 | 387 | 417 | * 575 | 411 | 1,490 | 3,370 | 1,410 | 481 | 395 |
| 19 | 207 | 399 | 256 | 393 | 419 | 565 | 431 | 1,570 | 3,670 | 1,220 | 470 | 398 |
| 20 | 208 | 332 | 256 | 393 | * 425 | 568 | 435 | 1,960 | 3,830 | 1,110 | 473 | * 433 |
| 21 | 207 | 283 | 262 | * 405 | 424 | 564 | 474 | 2,460 | 4,060 | 995 | 448 | 425 |
| 22 | 206 | 256 | 268 | 403 | 444 | 578 | 652 | 3,030 | 4,340 | 944 | 459 | 438 |
| 23 | 205 | 242 | 268 | 388 | 450 | 583 | 901 | 3,200 | 4,440 | 877 | * 448 | 603 |
| 24 | 208 | 250 | 285 | 392 | 445 | 605 | 1,110 | * 3,240 | 4,480 | 778 | 444 | 904 |
| 25 | 210 | 264 | 302 | 400 | 413 | 583 | 1,230 | 3,190 | 4,400 | 716 | 425 | 897 |
| 26 | 213 | 263 | 307 | 372 | 457 | 616 | 1,370 | 2,840 | 4,250 | 688 | 405 | 906 |
| 27 | 218 | 275 | 310 | 379 | 476 | 598 | * 1,250 | 2,290 | 3,870 | 968 | 392 | 896 |
| 28 | 214 | 280 | 356 | 370 | 482 | 574 | 1,090 | 1,930 | 3,620 | 1,130 | 391 | 901 |
| 29 | 213 | 252 | 356 | 389 | ------- | 588 | 935 | 1,570 | 3,080 | 1,130 | 405 | 934 |
| 30 | 212 | 271 | 328 | 397 | ------- | 619 | 849 | 1,400 | 2,260 | 1,070 | 416 | 989 |
| 31 | 212 | ------- | 341 | 408 | ------- | 618 | ------- | 1,340 | ------- | 1,210 | 395 | ------- |
| TOTAL | 6,169 | 10,133 | 8,376 | 12,246 | 11,949 | 16,386 | 19,828 | 58,577 | 86,130 | 48,386 | 24,608 | 16,188 |
| MEAN | 199 | 338 | 270 | 395 | 427 | 529 | 661 | 1,890 | 2,871 | 1,561 | 794 | 540 |
| AC-FT | 12,240 | 20,100 | 16,610 | 24,290 | 23,700 | 32,500 | 39,330 | 116,200 | 170,800 | 95,970 | 48,810 | 32,110 |

CALENDAR YEAR 1964 MAX 721 MIN 175 MEAN 281 AC-FT 203,900
WATER YEAR 1964-65 MAX 4,480 MIN 175 MEAN 874 AC-FT 632,700

Peak discharge (base, cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 5- 6 | 2300 | 5.68 | 2,240 | 7-14 | 1550 | 5.90 | 2,590 |
| 5-24 | 0530 | 6.35 | 3,270 | 7-31 | 1700 | 5.75 | 2,320 |
| 6-24 | 1800 | 7.06 | 4,580 | | | | |

* Discharge measurement made on this day.

## 8-2790. Embudo Creek at Dixon, N. Mex.

Location.--Lat 36°12'40", long 105°54'55", in NW¼SE¼ sec.19, T.23 N., R.10 E., at downstream end of bridge pier on U. S. Highway 64, 0.5 mile upstream from mouth, three-quarters of a mile east of Embudo Post Office, and 1.6 miles northwest of Dixon.

Drainage area.--305 sq mi.

Records available.--October 1923 to September 1955, April 1956 to September 1962 (annual maximum only). September 1962 to September 1965.

Gage.--Water-stage recorder. Datum of gage is 5,849.54 ft above mean sea level, datum of 1929. Prior to Nov. 30, 1938, at site about 1 mile upstream at different datums. Nov. 30, 1938, to Aug. 1, 1941, at site about three-quarters of a mile upstream at datum about 69.0 ft higher. April 1956 to Sept. 21, 1962, crest-stage gage.

Average discharge.--34 years (1923-25, 1926-55, 1962-65), 81.3 cfs (58,860 acre-ft per year).

Extremes.--Maximum discharge during year, 1,100 cfs July 27 (gage height, 5.42 ft); minimum, 9.0 cfs Feb. 25, result of freezeup. 1923-65: Maximum discharge determined, 2,180 cfs Aug. 22, 1946 (gage height, 7.00 ft); minimum daily (except 1956-62), 0.2 cfs June 27, 1950, July 8, 22, Aug. 17, 1951.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor. Diversions above station for irrigation of about 6,500 acres, a small part of which is below gage.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1 to Apr. 26, May 7-13, Aug. 8-29)

| Oct. 1 to Apr. 23 | | | | Apr. 24 to Sept. 30 | | | |
|---|---|---|---|---|---|---|---|
| 1.4 | 9.0 | 2.3 | 116 | 2.5 | 40 | 3.5 | 242 |
| 1.5 | 16 | 2.6 | 170 | 2.7 | 65 | 4.0 | 425 |
| 1.7 | 35 | 3.0 | 256 | 3.0 | 116 | 4.5 | 645 |
| 2.0 | 71 | 3.4 | 358 | | | 5.0 | 890 |
| | | 3.8 | 476 | | | | |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 13 | 14 | 28 | 33 | 33 | 33 | 71 | 268 | 245 | 180 | 262 | 50 |
| 2 | 13 | 12 | *31 | b20 | *26 | 28 | 78 | 389 | 242 | a160 | 242 | 57 |
| 3 | 14 | 13 | 32 | b23 | b24 | 28 | 86 | *478 | 233 | a150 | *221 | 60 |
| 4 | 13 | 14 | 31 | *b26 | b24 | b23 | 94 | 519 | 236 | a150 | 190 | 51 |
| 5 | 13 | *13 | 24 | 35 | 26 | b25 | *100 | 492 | 236 | a150 | 162 | 47 |
| 6 | 14 | 13 | 21 | 35 | 27 | b28 | 94 | 465 | 218 | a150 | 137 | 57 |
| 7 | 14 | 14 | 22 | 45 | 32 | 30 | 97 | 429 | 201 | a150 | 125 | 57 |
| 8 | *16 | 15 | b19 | 46 | 29 | 31 | 97 | 401 | 196 | a150 | 115 | *105 |
| 9 | 15 | 16 | b19 | 43 | 27 | 32 | 108 | 345 | 215 | a140 | *106 | 103 |
| 10 | 14 | 17 | 22 | 36 | 24 | 31 | 114 | *306 | 221 | a130 | 97 | 78 |
| 11 | 14 | 17 | 22 | b30 | 19 | 32 | 97 | 268 | 233 | a120 | 88 | 72 |
| 12 | 13 | 14 | 26 | 40 | b17 | 34 | 96 | 252 | 230 | a110 | 74 | 80 |
| 13 | 13 | 15 | b20 | 35 | b15 | 32 | 100 | 310 | 230 | a100 | 68 | 70 |
| 14 | 14 | 18 | b18 | 35 | b20 | 31 | 100 | 349 | *218 | a120 | 90 | 66 |
| 15 | 13 | 20 | b19 | 36 | 30 | 30 | 96 | 338 | 236 | a110 | 83 | 61 |
| 16 | 12 | 19 | b21 | 37 | 28 | 35 | 105 | 310 | 292 | a100 | 172 | 60 |
| 17 | 13 | 20 | 23 | 36 | b25 | 33 | 126 | *282 | 373 | a90 | a140 | 60 |
| 18 | 13 | 21 | b24 | 35 | b25 | *34 | 168 | 289 | 486 | a80 | a110 | 77 |
| 19 | 13 | 21 | 27 | 34 | b25 | 30 | 194 | 338 | 875 | a70 | a90 | 72 |
| 20 | 14 | 20 | b28 | 33 | *29 | 28 | 251 | 377 | 755 | a60 | a80 | *103 |
| 21 | 13 | 21 | 29 | *33 | 30 | 28 | 295 | 385 | 636 | a50 | a70 | 87 |
| 22 | 12 | 21 | 27 | 32 | 30 | 33 | 372 | 393 | 546 | a50 | a70 | 77 |
| 23 | 13 | 24 | 28 | b18 | 32 | 37 | 473 | 445 | 457 | a50 | *65 | 72 |
| 24 | 14 | 26 | 32 | 26 | 25 | 37 | 555 | *532 | 441 | a50 | 62 | 66 |
| 25 | 14 | 28 | 42 | 32 | 27 | 37 | 528 | 445 | 437 | a50 | 60 | 65 |
| 26 | 14 | 28 | 33 | b18 | 29 | 35 | 441 | 369 | 365 | a50 | 52 | 61 |
| 27 | 14 | 30 | 32 | b18 | 31 | 40 | *342 | 310 | 296 | a130 | 51 | 61 |
| 28 | 14 | 26 | 35 | b23 | 36 | 43 | 275 | 265 | *236 | a100 | 50 | 60 |
| 29 | 13 | 27 | 31 | 31 | | 45 | *221 | 236 | 185 | a110 | 58 | 60 |
| 30 | 14 | 27 | 21 | 31 | | 47 | 227 | 236 | 170 | a100 | 58 | 58 |
| 31 | 14 | | 35 | 33 | | 57 | | 258 | | a120 | 55 | |
| Total | 420 | 584 | 822 | 988 | 745 | 1047 | 6001 | 11079 | 9940 | 3330 | 3303 | 2053 |
| Mean | 13.5 | 19.5 | 31.9 | 31.9 | 26.6 | 33.8 | 200 | 357 | 331 | 107 | 107 | 68.4 |
| Ac-ft | 833 | 1160 | 1630 | 1960 | 1480 | 2080 | 11900 | 21970 | 19720 | 6600 | 6550 | 4070 |

Calendar year 1964: Max 315 Min 6.2 Mean 38.8 Ac-ft 28,160
Water year 1964-65: Max 875 Min 12 Mean 110 Ac-ft 79,950

Peak discharge (base, 800 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 6-19 | 0800 | 5.30 | 1,040 | 8- 1 | 1545 | 480 | 790 |
| 6-27 | 1530 | 5.42 | 1,100 | | | | |

* Discharge measurement made on this day.
a No gage-height record.
b Stage-discharge relation affected by ice.

## 8-2795. Rio Grande at Embudo, N. Mex.

Location.--Lat 36°12'20", long 105°57'50", in SW¼SW¼ sec.23, T.23 N., R.9 E., on right bank a quarter of a mile downstream from bridge at Embudo and 2½ miles downstream from Embudo Creek.

Drainage Area.--10,400 sq mi, approximately (includes 2,940 sq mi in closed basin in San Luis Valley, Colo.).

Records available.--January 1889 to September 1965. Monthly discharge only for some periods, published in WSP 1312. Figures of daily discharge published in WSP 358 for period Oct. 4 to Nov. 30, 1896, have been found to be unreliable and should not be used.

Gage.--Water-stage recorder (digital). Datum of gage is 5,789.14 ft above mean sea level, datum of 1929. Jan. 1 to Feb. 28, 1889, staff gage 1¼ miles upstream at different datum. March 1889 to December 1903, staff gage 1,300 ft upstream at different datum. September 1912 to June 1914 on downstream end of bridge pier at site 200 ft upstream at present datum.

Average discharge.--76 years, 1,036 cfs (750,000 acre-ft per year).

Extremes.--Maximum discharge during year, 5,200 cfs June 22 (gage height, 8.17 ft); minimum, 196 cfs Oct. 4.
1889-1903, 1912-65: Maximum discharge, 16,200 cfs June 19, 1903 (gage height, abouy 15.9 ft); minimum daily, 130 cfs June 30, 1902.
A flood of about 14,000 cfs occurred between May 20 and June 10, 1905, from a comparison of records for Lobatos and Otowi Bridge. Another major flood occurred Sept. 29 or 30, 1904.

Remarks.--Records good. Diversions for irrigation of about 660,000 acres above station.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used June 10-19)

| | | | | | |
|---|---|---|---|---|---|
| 1.9 | 179 | 3.0 | 595 | 6.0 | 3,000 |
| 2.1 | 231 | 3.5 | 860 | 7.0 | 4,000 |
| 2.4 | 327 | 4.0 | 1,190 | 8.2 | 5,280 |
| 2.7 | 450 | 5.0 | 2,000 | | |

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1964 TO SEPTEMBER 1965

| DAY | OCT. | NOV. | DEC. | JAN. | FEB. | MAR. | APR. | MAY | JUNE | JULY | AUG. | SEPT. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 204 | 231 | 303 | 423 | 473 | 525 | 700 | 1,090 | 1,540 | 2,360 | 1,230 | 443 |
| 2 | 202 | 231 | * 314 | 393 | *450 | 486 | 700 | 1,290 | * 1,540 | 2,210 | 1,300 | 455 |
| 3 | 196 | 234 | 325 | 381 | 450 | 428 | 710 | 1,500 | 1,640 | 2,200 | * 1,540 | 467 |
| 4 | 199 | 240 | 332 | * 381 | 455 | 385 | 730 | 1,880 | 1,780 | 2,030 | 1,920 | 460 |
| 5 | 204 | * 240 | 297 | 397 | 459 | 464 | * 720 | 2,430 | 1,960 | 2,220 | 1,980 | 441 |
| 6 | 204 | 248 | 261 | 405 | 468 | 520 | 680 | 2,680 | 1,870 | 2,460 | 1,840 | 469 |
| 7 | 204 | 251 | b 250 | 525 | 473 | 510 | 660 | 2,640 | 1,960 | 2,490 | 1,620 | 480 |
| 8 | * 202 | 251 | b 260 | 767 | 473 | 505 | 625 | 2,420 | 1,930 | 2,360 | 1,450 | 583 |
| 9 | 202 | 254 | b 270 | 495 | 482 | 515 | 625 | 2,130 | 2,110 | 2,190 | 1,230 | * 557 |
| 10 | 204 | 255 | b 280 | 468 | 482 | 520 | 635 | * 2,020 | 2,770 | 1,990 | 1,050 | 503 |
| 11 | 209 | 251 | 290 | 437 | 473 | 520 | 585 | 1,730 | 3,140 | 1,910 | 920 | 505 |
| 12 | 209 | 403 | 304 | 450 | 428 | 545 | 555 | 1,550 | 3,020 | * 1,990 | 806 | 533 |
| 13 | 212 | 569 | 284 | 446 | 393 | 550 | 550 | 1,610 | 2,690 | 2,010 | 705 | 510 |
| 14 | 218 | 615 | b 260 | 446 | 437 | 545 | 530 | 1,780 | * 2,810 | 2,230 | 675 | 506 |
| 15 | 218 | 665 | b 260 | 446 | 473 | 570 | 515 | 1,960 | 2,660 | 2,310 | 640 | 470 |
| 16 | 220 | 694 | b 270 | 446 | 464 | 595 | 520 | 1,970 | 2,980 | 2,200 | 680 | 450 |
| 17 | 223 | 730 | b 270 | 441 | 455 | 605 | 550 | 1,830 | 3,570 | 1,810 | 600 | 445 |
| 18 | 226 | 664 | b 280 | 437 | 464 | * 610 | 615 | 1,730 | 3,920 | 1,460 | 630 | 488 |
| 19 | 223 | 456 | b 280 | 441 | 464 | 605 | 665 | 1,800 | 4,620 | 1,250 | 640 | 498 |
| 20 | 226 | 371 | 303 | 441 | * 468 | 580 | 715 | 2,240 | 4,710 | 1,130 | 625 | 540 |
| 21 | 226 | 317 | 303 | * 450 | 473 | 610 | 795 | 2,740 | 4,850 | 1,000 | 580 | 550 |
| 22 | 226 | 284 | 313 | 446 | 482 | 610 | 1,020 | 3,390 | 5,090 | 946 | 605 | * 518 |
| 23 | 223 | 277 | 317 | 419 | 500 | 625 | 1,360 | 3,650 | 5,050 | 872 | * 585 | 793 |
| 24 | 226 | 283 | 331 | 428 | 482 | 635 | 1,580 | 3,820 | 5,010 | 812 | 561 | 958 |
| 25 | 228 | 300 | 361 | 441 | 464 | 610 | 1,690 | * 3,760 | 5,020 | 735 | 529 | 951 |
| 26 | 231 | 295 | 365 | 401 | 491 | 650 | 1,790 | 3,400 | 4,910 | 740 | 492 | 956 |
| 27 | 231 | 302 | 361 | 410 | 520 | 640 | * 1,580 | 2,740 | 4,470 | 966 | 470 | 941 |
| 28 | 234 | 309 | 401 | 397 | 525 | 615 | 1,370 | 2,280 | * 4,150 | 1,160 | 457 | 953 |
| 29 | 231 | 288 | 419 | 428 | ------ | 605 | 1,170 | 1,800 | 3,700 | 1,150 | 482 | 977 |
| 30 | 231 | 301 | 377 | 441 | ------ | 675 | 1,080 | 1,590 | 2,760 | 1,100 | 488 | 1,010 |
| 31 | 231 | ------ | 389 | 455 | ------ | 655 | ------ | 1,580 | ------ | 1,240 | 473 | ------ |
| TOTAL | 6,723 | 10,809 | 9,630 | 13,782 | 13,121 | 17,513 | 26,020 | 69,030 | 98,230 | 51,541 | 27,803 | 18,410 |
| MEAN | 217 | 360 | 311 | 445 | 469 | 565 | 867 | 2,227 | 3,274 | 1,663 | 897 | 614 |
| AC-FT | 13,330 | 21,440 | 19,100 | 27,340 | 26,030 | 34,740 | 51,610 | 136,900 | 194,800 | 102,200 | 55,150 | 36,520 |

CALENDAR YEAR 1964 MAX 927 MIN 196 MEAN 322 AC-FT 233,400
WATER YEAR 1964-65 MAX 5,090 MIN 196 MEAN 993 AC-FT 719,200

Peak discharge (base, 2,000 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 5-17 | 0500 | 5.79 | 2,740 | 6-22 | 1600 | 8.17 | 5,200 |
| 5-24 | 0600 | 6.97 | 3,890 | 8- 5 | 0900 | 5.13 | 2,040 |

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

8-2801. San Juan lateral above San Juan Pueblo, N. Mex.

Location.--Lat 36°04'03", long 105°04'07", in SW¼NW¼ sec.11, T.21 N., R.8 E., on right bank upstream from second drop structure below division box, 500 ft downstream from Arroyo de Chinguague, 0.9 mile north of San Juan Pueblo, and 5 miles north of Espanola.

Records available.--April 1963 to September 1965.

Gage.--Water-stage recorder (digital) and concrete control. Altitude of gage is 5,660 ft (from topographic map). Prior to Mar. 4, 1965, at datum 3.51 ft higher.

Extremes.--1963-65: Maximum daily discharge, 20 cfs June 9, 1963; no flow at times.

Remarks.--Records good except those for July and August, which are fair. This is 1 of 3 ditch stations operated to gage flow bypassing Rio Grande above San Juan Pueblo, N. Mex. (see 8-2811). Takeouts between division box and gage irrigate a few acres, but percentage of total acreage is small.

Monthly discharge, in cubic feet per second, water year October 1964 to September 1965

| Month | Discharge, in cubic feet per second | | | Diversion in acre-feet |
|---|---|---|---|---|
| | Maximum | Minimum | Mean | |
| October | 8.7 | 0.1 | 2.79 | 172 |
| November | 4.5 | .4 | 2.31 | 138 |
| December | .1 | 0 | .09 | 5.8 |
| Calendar year 1964 | 11 | 0 | 1.02 | 740 |
| January | 0 | 0 | 0 | 0 |
| February | 0 | 0 | 0 | 0 |
| March | 0 | 0 | 0 | 0 |
| April | 13 | 0 | 2.67 | 159 |
| May | 7.6 | 0 | .50 | 31 |
| June | 1.8 | 0 | .54 | 32 |
| July | 7.6 | 0 | 1.53 | 94 |
| August | 5.7 | .1 | 1.17 | 72 |
| September | 8.3 | 2.3 | 4.91 | 292 |
| Water year 1964-65 | 13 | 0 | 1.37 | 996 |

8-2802. San Juan Pueblo ditch above San Juan Pueblo, N. Mex.

Location.--Lat 36°03'55", long 106°04'10", in NW¼SW¼ sec.11, T.21 N., R.8 E., on right bank 1,000 ft downstream from Arroyo de Chinguague, 0.7 mile north of San Juan Pueblo, and 5 miles north of Espanola.

Records available.--March 1963 to September 1965.

Gage.--Water-stage recorder (digital) and concrete control. Altitude of gage is 5,660 ft (from topographic map). Prior to Mar. 4, 1965, at datum 4.00 ft higher.

Extremes.--1963-65: Maximum daily discharge, 26 cfs Aug. 22,23, 1965; no flow at times.

Remarks.--Records good. This is one of three ditch stations operated to gage flow bypassing Rio Grande above San Juan Pueblo, N. Mex. (see 8-2811). Takeouts for irrigation above and below gage.

Monthly discharge, in cubic feet per second, water year October 1964 to September 1965

| Month | Discharge, in cubic feet per second | | | Diversions in Acre-feet |
|---|---|---|---|---|
| | Maximum | Minimum | Mean | |
| October | 12 | 0.3 | 3.49 | 215 |
| November | 2.3 | 0 | .67 | 40 |
| December | 2.0 | 0 | .20 | 12 |
| Calendar year 1964 | 23 | 0 | 2.76 | 2,000 |
| January | 0 | 0 | 0 | 0 |
| February | 0 | 0 | 0 | 0 |
| March | 0 | 0 | 0 | 0 |
| April | 18 | 0 | 4.23 | 252 |
| May | 24 | 1.0 | 13.5 | 829 |
| June | 22 | .4 | 13.1 | 780 |
| July | 23 | .1 | 13.1 | 805 |
| August | 26 | 1.6 | 12.1 | 742 |
| September | 11 | 4.1 | 7.18 | 427 |
| Water year 1964-65 | 26 | 0 | 5.67 | 4,100 |

8-2807. Guique ditch near San Juan Pueblo, N. Mex.

Location.--Lat 36°04'16", long 106°04'42", in NW¼NE¼ sec.10, T.21 N., R.8 E., on right bank above farm road culvert, 1,500 ft downstream from Pueblito, 1.1 miles south of Guique, 1.1 miles northwest of San Juan Pueblo, and 5 miles north of Espanola.

Records available.--April 1963 to September 1965.

Gage.--Water-stage recorder (digital) and concrete control. Altitude of gage is 5,660 ft (from topographic map). Prior to Mar. 4, 1965, at datum 3.50 ft higher.

Extremes.--1963-65: Maximum daily discharge, 19 cfs May 8, 1965; no flow at times.

Remarks.--Records good. This is one of three ditches gaged to determine flow bypassing station Rio Grande above San Juan Pueblo, N. Mex. (see 8-2811). Takeouts from ditch irrigate land above and below gage, or waste back to Rio Grande.

Monthly discharge, in cubic feet per second, water year October 1964 to September 1965

| Month | Discharge, in cubic feet per second | | | Diversion in acre-feet |
|---|---|---|---|---|
| | Maximum | Minimum | Mean | |
| October | 13 | 0.7 | 6.42 | 395 |
| November | 11 | 0 | 2.41 | 143 |
| December | 0 | 0 | 0 | 0 |
| Calendar year 1964 | 17 | 0 | 2.62 | 1,900 |
| January | 0 | 0 | 0 | 0 |
| February | 0 | 0 | 0 | 0 |
| March | 0 | 0 | 0 | 0 |
| April | 11 | 0 | 2.29 | 136 |
| May | 19 | 0 | 7.28 | 448 |
| June | 18 | 0 | 7.83 | 466 |
| July | 11 | 0 | 5.12 | 315 |
| August | 5.9 | 0 | 2.27 | 140 |
| September | 8.8 | 0 | 1.58 | 94 |
| Water year 1964-65 | 19 | 0 | 2.95 | 2,140 |

## 8-2811. Rio Grande above San Juan Pueblo, N. Mex.

Location.--Lat 36°04'00", long 106°04'30", in NE¼SE¼ sec.10, T.21 N., R.8 E., on left bank three quarters of a mile upstream from bridge on State Highway 74, three-quarters of a mile north of San Juan Pueblo, 1.8 miles upstream from Rio Chama, and 5 miles north of Espanola.

Drainage area.--10,550 sq mi, approximately (includes 2,940 sq mi in closed basin in San Luis Valley, Colo.).

Records available.--March 1963 to September 1965.

Gage.--Water-stage recorder (digital, and crest-stage indicator). Altitude of gage is 5,630 ft (from topographic map).

Extremes.--Maximum discharge during year, 4,900 cfs June 22 (gage height, 4.95 ft); minimum, 141 cfs Oct. 3.
1963-65: Maximum discharge, that of June 22, 1965: minimum, 96 cfs Aug. 1, 1963.
For years of outstanding floods see records for station at Embudo.

Remarks.--Records good except those for periods of ice effect, which are fair. Diversions above station for irrigation of about 619,000 acres in Colorado and 42,000 in New Mexico; bypass canals irrigate a few hundred acres below station. (see 8-2801, 8-2802, 8-2803).

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

| | | | |
|---|---|---|---|
| 0.7 | 137 | 2.0 | 970 |
| 1.0 | 267 | 3.0 | 1,980 |
| 1.5 | 575 | 5.0 | 4,810 |

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1964 TO SEPTEMBER 1965

| DAY | OCT. | NOV. | DEC. | JAN. | FEB. | MAR. | APR. | MAY | JUNE | JULY | AUG. | SEPT. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 170 | 200 | 309 | 434 | 479 | 533 | 698 | *1,030 | 1,630 | 2,260 | 1,410 | 416 |
| 2 | 156 | 204 | 320 | 410 | 460 | 505 | 705 | 1,180 | 1,630 | 2,110 | *1,390 | 492 |
| 3 | 152 | 217 | 338 | b 380 | 460 | 453 | 705 | 1,380 | 1,680 | 2,070 | 1,560 | 460 |
| 4 | 148 | 217 | 338 | b 390 | 460 | 386 | 728 | 1,660 | 1,770 | 1,950 | 1,830 | 440 |
| 5 | 163 | 217 | 320 | * 404 | 466 | 466 | 720 | 2,050 | 1,950 | 2,000 | 1,890 | 428 |
| 6 | 187 | 227 | 278 | 410 | 473 | 533 | 675 | 2,300 | 1,910 | 2,160 | 1,790 | 440 |
| 7 | 191 | 227 | * b 270 | 466 | 479 | 526 | 645 | 2,340 | 1,960 | 2,230 | 1,620 | * 447 |
| 8 | 187 | 232 | b 270 | 752 | * 479 | 519 | * 631 | 2,210 | 1,950 | 2,160 | 1,440 | 540 |
| 9 | 183 | 247 | b 280 | 512 | 486 | 526 | 608 | 2,010 | * 2,060 | * 2,060 | 1,230 | 547 |
| 10 | 187 | 257 | b 290 | 466 | 492 | * 533 | 617 | 1,920 | 2,610 | 1,900 | * 1,070 | 486 |
| 11 | 191 | * 252 | 309 | 440 | 479 | 533 | 588 | 1,710 | 2,990 | 1,840 | 928 | 486 |
| 12 | 196 | 315 | 320 | 453 | 447 | 554 | 540 | 1,560 | 2,990 | 1,900 | 817 | 512 |
| 13 | 196 | 526 | 320 | 440 | 404 | 561 | 528 | *1,610 | 2,720 | 1,900 | 698 | 499 |
| 14 | 196 | * 582 | 299 | 434 | b 440 | 561 | 505 | 1,740 | 2,800 | 2,060 | 653 | 492 |
| 15 | 200 | 631 | b 280 | 440 | 479 | 582 | 490 | 1,890 | 2,690 | 2,140 | 624 | 466 |
| 16 | 187 | 668 | b 290 | 440 | 473 | 603 | * 477 | 1,900 | * 2,850 | 2,070 | 610 | 434 |
| 17 | 191 | 705 | b 290 | 440 | 460 | 610 | 490 | 1,770 | 3,420 | 1,780 | 624 | 434 |
| 18 | 191 | 698 | b 300 | 434 | 466 | 617 | 549 | *1,690 | 3,820 | 1,520 | 582 | 466 |
| 19 | * 196 | 505 | 299 | 440 | 466 | 610 | 599 | 1,740 | 4,500 | 1,320 | 596 | 479 |
| 20 | 200 | 404 | b 320 | 440 | 473 | 589 | 644 | 2,030 | 4,610 | *1,180 | 582 | 499 |
| 21 | 196 | 344 | b 320 | 447 | 479 | 624 | 690 | 2,440 | 4,660 | 1,060 | 547 | 526 |
| 22 | 200 | 299 | b 320 | 447 | * 479 | 617 | 849 | 3,060 | * 4,030 | 992 | 568 | * 492 |
| 23 | 196 | 294 | 332 | 428 | 505 | 638 | 1,170 | 3,420 | 4,790 | 904 | 568 | 683 |
| 24 | 191 | * 294 | 344 | 428 | 486 | 638 | 1,420 | *3,630 | 4,710 | 858 | 540 | 919 |
| 25 | 191 | 309 | 380 | 447 | 473 | 631 | 1,510 | 3,590 | 4,730 | 766 | 519 | 946 |
| 26 | 196 | 304 | 380 | 416 | 486 | 653 | 1,620 | 3,300 | 4,590 | 768 | 486 | 939 |
| 27 | 208 | 309 | 380 | * 416 | 519 | 653 | 1,500 | 2,710 | 4,220 | 937 | * 460 | 931 |
| 28 | 204 | 320 | 404 | 404 | 533 | 631 | 1,350 | 2,310 | 3,850 | 1,230 | 434 | 937 |
| 29 | 191 | 309 | 440 | 428 | ------- | 617 | 1,170 | 1,920 | 3,470 | 1,230 | 453 | 953 |
| 30 | 196 | 299 | 398 | 447 | ------- | 683 | 1,070 | 1,730 | * 2,630 | 1,160 | 460 | 1,000 |
| 31 | 196 | ------- | 398 | 460 | ------- | 653 | ------- | 1,680 | ------- | 1,390 | 440 | ------- |
| TOTAL | 5,833 | 10,612 | 10,136 | 13,793 | 13,281 | 17,838 | 24,491 | 65,510 | 95,010 | 49,905 | 27,419 | 17,789 |
| MEAN | 188 | 354 | 327 | 445 | 474 | 575 | 816 | 2,113 | 3,167 | 1,610 | 884 | 593 |
| AC-FT | 11,570 | 21,050 | 20,100 | 27,360 | 26,340 | 35,380 | 48,580 | 129,900 | 188,400 | 98,990 | 54,380 | 35,280 |

CALENDAR YEAR 1964 MAX 880 MIN 134 MEAN 309 AC-FT 224,200
WATER YEAR 1964-65 MAX 4,830 MIN 148 MEAN 963 AC-FT 697,300

Peak discharge (base, 2,000 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 5- 7 | 0630 | 3.36 | 2,420 | 6-22 | 2400 | 4.95 | 4,900 |
| 5-24 | 0800 | 4.27 | 3,660 | 7-31 | 1830 | 3.74 | 2,910 |
| 6-11 | 2200 | 3.86 | 3,070 | | | | |

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

## 8-2841. Rio Chama near La Puente, N. Mex.

Location.--Lat 36°39'45", long 106°38'00", in Tierra Amarilla Grant, on right bank 0.7 mile downstream from Rito de Tierra Amarilla, 3 miles southwest of La Puente, and 6.7 miles upstream from flow line of El Vado Reservoir, Rio Arriba County, and at mile 91.4 above Rio Grande.

Drainage area.--480 sq mi, approximately.

Records available.--October 1955 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 7,083 ft (from river-profile map).

Average discharge.--10 years, 323 cfs (223,800 acre-ft per year).

Extremes.--Maximum discharge during year, 7,140 cfs May 21 (gage height, 5.64 ft); minimum, 18 cfs Oct. 15, 16.
1955-65: Maximum discharge, 8,040 cfs June 7, 1957 (gage height, 6.07 ft), from rating curve extended above 3,000 cfs on basis of logarithmic plotting and an inflow-outflow study of El Vado Reservoir; minimum daily, 4.4 cfs Sept. 19, 1956.
A discharge of about 9,000 cfs occurred Apr. 16, 1937, based on flow of Rio Chama at Park View with allowance for tributary inflow. A peak on May 21 or 22, 1926, may have exceeded 10,000 cfs.

Remarks.--Records good except those for periods of ice effect, which are poor. Discharge measurements generally made two or more times a month. Diversions for irrigation of about 10,300 acres above station (1962 determination).

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used May 1-13, 20-23, Sept. 24-30)

| | | | | | |
|---|---|---|---|---|---|
| 1.2 | 15 | 2.3 | 168 | 4.2 | 1,690 |
| 1.3 | 20 | 2.6 | 270 | 4.6 | 2,450 |
| 1.5 | 36 | 3.0 | 461 | 5.0 | 3,550 |
| 1.7 | 56 | 3.4 | 765 | 5.4 | 5,000 |
| 2.0 | 102 | 3.8 | 1,160 | | |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 39 | 27 | 48 | 55 | 80 | 59 | 485 | 2,090 | 2,320 | 606 | 339 | 64 |
| 2 | 37 | 30 | 56 | 55 | 80 | 55 | 503 | 2,880 | 2,210 | 590 | 357 | 81 |
| 3 | 36 | 35 | 53 | 55 | 70 | 50 | 413 | 3,340 | 2,050 | 556 | 321 | 80 |
| 4 | 34 | 35 | 52 | 55 | 70 | 50 | 399 | 3,250 | 1,820 | 509 | 224 | 66 |
| 5 | 33 | 32 | 41 | 80 | 80 | 55 | 302 | 2,820 | 1,680 | 473 | 185 | 61 |
| 6 | 31 | 33 | 40 | 180 | 80 | 55 | 247 | 2,750 | 1,620 | 429 | 154 | 76 |
| 7 | 30 | 34 | 37 | 270 | 80 | 57 | 321 | 2,680 | 1,720 | 403 | 136 | 91 |
| 8 | 30 | 34 | 40 | 258 | 80 | 60 | 298 | 2,520 | 1,750 | 419 | 119 | 105 |
| 9 | 28 | 36 | 45 | 150 | 80 | 62 | 357 | 2,010 | 1,750 | 371 | 108 | 117 |
| 10 | 30 | 39 | 40 | 100 | 70 | 66 | 279 | 1,940 | 1,540 | 334 | 104 | 81 |
| 11 | 28 | 41 | 40 | 100 | 60 | 66 | 217 | 1,650 | 1,490 | 348 | 100 | 74 |
| 12 | 21 | 34 | 40 | 90 | 50 | 65 | 204 | 1,800 | 1,490 | 376 | 91 | 81 |
| 13 | 21 | 37 | 40 | 70 | 35 | 62 | 325 | 2,270 | 1,550 | 334 | 84 | 78 |
| 14 | 21 | 43 | 35 | 50 | 40 | 61 | 334 | 2,150 | 1,560 | 298 | 91 | 66 |
| 15 | 18 | 44 | 30 | 60 | 40 | 61 | 314 | 1,920 | 1,560 | 321 | 86 | 59 |
| 16 | 18 | 48 | 35 | 65 | 45 | 65 | 506 | 1,680 | 1,520 | 325 | 114 | 55 |
| 17 | 21 | 55 | 40 | 70 | 45 | 65 | 734 | 1,940 | 1,480 | 288 | 175 | 53 |
| 18 | 24 | 59 | 40 | 70 | 45 | 65 | 978 | 2,390 | 1,710 | 254 | 138 | 66 |
| 19 | 24 | 45 | 40 | 70 | 55 | 60 | 1,120 | 3,440 | 1,650 | 235 | 121 | 162 |
| 20 | 24 | 40 | 40 | 70 | 60 | 54 | 1,370 | 4,600 | 1,450 | 200 | 98 | 401 |
| 21 | 21 | 41 | 40 | 60 | 65 | 60 | 1,620 | 4,720 | 1,280 | 197 | 88 | 221 |
| 22 | 20 | 43 | 45 | 60 | 65 | 65 | 1,850 | 4,360 | 1,130 | 177 | 97 | 163 |
| 23 | 20 | 46 | 45 | 60 | 62 | 74 | 2,030 | 3,520 | 1,020 | 161 | 88 | 188 |
| 24 | 21 | 46 | 45 | 60 | 56 | 75 | 2,270 | 3,100 | 1,180 | 156 | 80 | 203 |
| 25 | 26 | 45 | 50 | 60 | 54 | 72 | 2,130 | 2,380 | 1,070 | 214 | 74 | 172 |
| 26 | 27 | 49 | 70 | 50 | 61 | 65 | 1,690 | 1,900 | 917 | 400 | 68 | 161 |
| 27 | 26 | 56 | 120 | 50 | 61 | 108 | 1,350 | 1,650 | 774 | 411 | 62 | 142 |
| 28 | 27 | 42 | 120 | 55 | 65 | 140 | 1,120 | 1,690 | 680 | 311 | 61 | 151 |
| 29 | 26 | 46 | 70 | 60 | -- | 180 | 1,120 | 1,920 | 630 | 231 | 70 | 174 |
| 30 | 27 | 46 | 45 | 60 | ---------- | 231 | 1,480 | 2,150 | 614 | 211 | 81 | 146 |
| 31 | 26 | ---------- | 55 | 70 | ---------- | 350 | ---------- | 2,230 | ---------- | 282 | 74 | ---------- |
| Total | 815 | 1,241 | 1,537 | 2,618 | 1,734 | 2,613 | 26,366 | 79,740 | 43,215 | 10,420 | 3,988 | 3,638 |
| Mean | 26.3 | 41.4 | 49.6 | 84.4 | 61.9 | 84.3 | 879 | 2,572 | 1,440 | 336 | 129 | 121 |
| Ac-ft | 1,620 | 2,460 | 3,050 | 5,190 | 3,440 | 5,180 | 52,300 | 158,200 | 85,720 | 20,670 | 7,910 | 7,220 |

Calendar year 1964: Max 2,100 Min 13 Mean 163 Ac-ft 118,600
Water year 1964-65: Max 4,720 Min 18 Mean 487 Ac-ft 353,000

Peak discharge (base, 2,700 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 5-3 | 0010 | 4.98 | 4,060 | 5-21 | 2330 | 5.64 | 7,140 |
| 5-19 | 2300 | 5.61 | 6,540 | | | | |

Note.--Stage-discharge relation affected by ice Nov. 19, 20, Dec. 6 to Jan. 5, Jan. 9 to Feb. 22, Mar. 2-6.

8-2842. Willow Creek above Heron Reservoir, near Park View, N. Mex.

Location.--Lat 36°44'30", long 106°37'35", in Tierra Amarilla Grant, on right bank 3.6 miles west of Park View, 7½ miles upstream from Horse Lake Creek, Rio Arriba County.

Drainage area.--112 sq mi.

Records available.--October 1962 to September 1965.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 7,210 ft (from topographic map). Prior to June 6, 1963, at datum 2.74 ft lower, and natural control.

Extremes.--Maximum discharge during year, 1,240 cfs Mar. 31 (gage height, 3.64 ft); no flow at times.
1962-65: Maximum discharge, 1,300 cfs about Mar. 22, 1963 (gage height, 6.48 ft from floodmarks, former datum), from rating curve extended above 60 cfs on basis of slope-area measurement of peak flow; no flow at times.

Remarks.--Records good except those for periods of ice effect, which are poor. Discharge measurements generally made two or more times a month.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

| | | | | | |
|---|---|---|---|---|---|
| 0.29 | 0 | 0.7 | 3.6 | 1.7 | 86 |
| .4 | .1 | .9 | 9.3 | 2.0 | 155 |
| .5 | .7 | 1.1 | 19 | 2.5 | 340 |
| .6 | 1.9 | 1.4 | 44 | 3.0 | 640 |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.1 | 0.6 | 0.2 | 2.5 | 2.2 | 4.5 | 539 | 39 | 2.2 | 1.8 | 41 | 0 |
| 2 | .1 | .7 | .2 | 2.3 | 1.8 | 4 | 460 | 34 | 1.8 | 2.2 | 62 | .1 |
| 3 | 0 | .1 | .3 | 2 | 1.8 | 3.5 | 360 | 28 | 1.6 | 1.7 | 19 | .1 |
| 4 | 0 | 0 | .3 | 1.6 | 1.8 | 3.5 | 250 | 23 | 1.6 | 1.1 | 5.4 | .1 |
| 5 | .1 | 0 | .2 | 1.2 | 2.2 | 4 | 126 | 18 | 1.8 | .5 | 3.2 | .2 |
| 6 | .2 | 0 | .1 | 1.4 | 2.3 | 4.6 | 147 | 14 | 2.0 | .3 | 2.0 | .7 |
| 7 | .4 | 0 | .1 | 15 | 2.4 | 4.8 | 184 | 12 | 1.8 | .2 | 1.3 | 1.0 |
| 8 | .2 | 0 | 0 | 60 | 2.5 | 5.1 | 185 | 9.7 | 1.6 | .1 | 1.4 | 2.9 |
| 9 | .1 | 0 | 0 | 35 | 2.2 | 5.6 | 150 | 8.7 | 1.6 | .1 | 1.3 | 3.6 |
| 10 | .1 | 0 | 0 | 20 | 2 | 5.8 | 102 | 11 | 1.6 | .1 | 1.1 | 3.2 |
| 11 | .1 | .1 | 0 | 10 | 1.5 | 7.1 | 76 | 11 | 2.5 | .1 | .9 | 2.5 |
| 12 | .1 | .1 | 0 | 5 | 1 | 8.0 | 92 | 10 | 3.2 | .1 | 1.1 | 1.3 |
| 13 | .1 | .1 | .1 | 3 | 1.3 | 8.3 | 195 | 14 | 18 | 1.2 | .8 | 1.1 |
| 14 | .1 | .1 | .1 | 2.5 | 1.5 | 8.0 | 140 | 15 | 5.4 | 1.6 | .7 | .9 |
| 15 | .2 | .3 | .1 | 2.5 | 1.8 | 6.7 | 137 | 17 | 3.1 | 2.0 | 1.2 | .6 |
| 16 | .3 | .5 | 0 | 3 | 2 | 8.7 | 173 | 15 | 2.2 | .8 | 1.0 | .4 |
| 17 | 1.6 | .7 | 0 | 3 | 2 | 9.0 | 169 | 9.7 | 1.7 | .7 | 17 | .2 |
| 18 | 1.4 | 1.0 | 0 | 3 | 2.1 | 8.7 | 169 | 9.7 | 1.7 | .4 | 8.7 | .1 |
| 19 | 1.0 | 1.8 | .1 | 2.9 | 2.2 | 8.0 | 158 | 9.3 | 2.4 | .1 | 5.4 | 1.2 |
| 20 | .9 | 1.1 | .1 | 2.7 | 2.5 | 7.1 | 165 | 8.3 | 3.4 | .4 | 1.2 | 41 |
| 21 | 1.8 | .9 | .5 | 2.9 | 2.7 | 6.4 | 154 | 8.0 | 3.4 | .8 | .5 | 9.3 |
| 22 | 2.4 | .6 | .3 | 2.7 | 3.3 | 8.0 | 142 | 7.4 | 2.2 | .7 | .3 | 2.9 |
| 23 | 2.5 | .4 | .2 | 2 | 4 | 11 | 116 | 6.4 | 1.7 | .3 | .1 | 1.1 |
| 24 | 2.2 | .3 | .2 | 1.6 | 3.5 | 13 | 93 | 6.1 | 1.7 | .2 | .1 | .6 |
| 25 | 1.2 | .3 | .6 | 1.4 | 3.5 | 14 | 71 | 5.6 | 2.4 | 3.1 | .1 | .3 |
| 26 | .6 | .3 | .7 | 1 | 3.5 | 20 | 52 | 5.1 | 5.4 | 7.6 | 0 | .2 |
| 27 | .3 | .5 | .8 | 1 | 3.5 | 84 | 43 | 4.1 | 3.8 | 47 | 0 | .1 |
| 28 | .2 | .5 | 4.0 | 1 | 5 | 152 | 41 | 3.4 | 2.7 | 16 | 0 | .1 |
| 29 | .1 | .3 | 3.5 | 1 | -- | 162 | 37 | 2.9 | 2.2 | 6.4 | 0 | .1 |
| 30 | .3 | .3 | 3.3 | 1.2 | ---------- | 322 | 37 | 2.5 | 2.4 | 21 | 0 | .1 |
| 31 | .2 | ---------- | 3.0 | 1.7 | ---------- | 583 | ---------- | 2.4 | ---------- | 11 | 0 | ---------- |
| Total | 18.9 | 11.6 | 19.0 | 196.1 | 68.1 | 1,500.4 | 4,763 | 370.3 | 89.1 | 129.6 | 176.8 | 76.0 |
| Mean | 0.61 | 0.39 | 0.61 | 6.33 | 2.43 | 48.4 | 159 | 11.9 | 2.97 | 4.18 | 5.70 | 2.53 |
| Ac-ft | 37 | 23 | 38 | 389 | 135 | 2,980 | 9,450 | 734 | 177 | 257 | 351 | 151 |

Calendar year 1964: Max 137 Min 0 Mean 3.48 Ac-ft 2,530
Water year 1964-65: Max 583 Min 0 Mean 20.3 Ac-ft 14,720

Peak discharge (base, 300 cfs).--Mar. 31 (1830) 1,240 cfs (3.64 ft); Aug. 2 (2000) 331 cfs (2.48 ft).

Note.--Stage-discharge relation affected by ice Dec. 28 to Jan. 18, Jan. 23-29, Feb. 6 to Mar. 5.

8-2843.Horse Lake Creek above Heron Reservoir, near Park View, N. Mex.

Location.--Lat 36°42'30", long 106°44'50", in Tierra Amarilla Grant, on left bank 300 ft downstream from pond with open spillway, 5½ miles upstream from mouth, 8 miles downstream from Horse Lake, and 13 miles west of Park View, Rio Arriba County.

Drainage area.--45 sq mi.

Records available.--October 1962 to September 1965.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 7,220 ft (from topographic map). Prior to June 10, 1963, at datum 1.77 ft higher.

Extremes.--Maximum discharge during year, 82 cfs Mar. 27 (gage height, 2.10 ft), from rating curve extended above 37 cfs as explained below; no flow for long periods.
1962-65: Maximum discharge, 440 cfs Aug. 1, 1964 (gage height, 3.20 ft), from rating curve extended above 9.0 cfs on basis of slope-area measurement of peak flow; no flow for long periods.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions above station for irrigation of meadows and for off-channel stock tanks. Discharge measurements or observations of no flow generally made at least twice each month.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

| | | | |
|---|---|---|---|
| 0.3 | 0 | 0.8 | 2.7 |
| .4 | .1 | .9 | 4.4 |
| .5 | .3 | 1.0 | 6.6 |
| .6 | .8 | 1.2 | 13 |
| .7 | 1.6 | 1.4 | 22 |
| | | 1.7 | 42 |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | 0 | 0.1 | 0.5 | 42 | 0.7 | | | 0 | |
| 2 | | | | 0 | .1 | .1 | 40 | .5 | | | 2.2 | |
| 3 | | | | 0 | .2 | .1 | 26 | .4 | | | .6 | |
| 4 | | | | 0 | .2 | 0 | 18 | .3 | | | 0 | |
| 5 | | | | 0 | .2 | 0 | 11 | .2 | | | 0 | |
| 6 | | | | .5 | .2 | .1 | 9.6 | .1 | | | 0 | |
| 7 | | | | 1 | .2 | .1 | 13 | .1 | | | 0 | |
| 8 | | | | .6 | .1 | .4 | 12 | 0 | | | 0 | |
| 9 | | | | .4 | .1 | .8 | 9.7 | 0 | | | 0 | |
| 10 | | | | .2 | .1 | 1.0 | 7.8 | 0 | | | 0 | |
| 11 | | | | .1 | 0 | 1.0 | 7.4 | 0 | | | 0 | |
| 12 | | | | .2 | 0 | 2.0 | 4.2 | 0 | | | 0 | |
| 13 | | | | .2 | 0 | 2.2 | 4.8 | .2 | | | 0 | |
| 14 | | | | .1 | .1 | 1.5 | 3.5 | .7 | | | 0 | |
| 15 | | | | .2 | .1 | 1.8 | 2.4 | .5 | | | 0 | |
| 16 | | | | .2 | .1 | 2.0 | 2.1 | .3 | | | 0 | |
| 17 | | | | .2 | .1 | 2.4 | 1.6 | .2 | | | 0 | |
| 18 | | | | .2 | .1 | 2.6 | 1.3 | 0 | | | 0 | |
| 19 | | | | .2 | .1 | 1.5 | 6.4 | 0 | | | 0 | |
| 20 | | | | .2 | .1 | .5 | 9.4 | 0 | | | 0 | |
| 21 | | | | .2 | .1 | 1.5 | 8.0 | 0 | | | 0 | |
| 22 | | | | .2 | .1 | 3.3 | 5.5 | 0 | | | 0 | |
| 23 | | | | .1 | .3 | 6.8 | 3.5 | 0 | | | 0 | |
| 24 | | | | .1 | .1 | 5.0 | 2.6 | 0 | | | 0 | |
| 25 | | | | .2 | .1 | 4.4 | 2.0 | 0 | | | 0 | |
| 26 | | | | 0 | .1 | 10 | 2.4 | 0 | | | 0 | |
| 27 | | | | 0 | .2 | 25 | 3.5 | 0 | | | 0 | |
| 28 | | | | 0 | 1.0 | 31 | 2.7 | 0 | | | 0 | |
| 29 | | | | 0 | | 29 | 1.4 | 0 | | | 0 | |
| 30 | | | | 0 | | 30 | 1.0 | 0 | | | 0 | |
| 31 | | | | 0 | | 36 | | 0 | | | 0 | |
| Total | 0 | 0 | 0 | 5.3 | 4.2 | 202.6 | 264.8 | 4.2 | 0 | 0 | 2.8 | 0 |
| Mean | 0 | 0 | 0 | 0.17 | 0.15 | 6.54 | 8.83 | 0.14 | 0 | 0 | 0.09 | 0 |
| Ac-ft | 0 | 0 | 0 | 11 | 8.3 | 402 | 525 | 8.3 | 0 | 0 | 5.6 | 0 |

Calendar year 1964: Max 98 Min 0 Mean 0.58 Ac-ft 421
Water year 1964-65: Max 42 Min 0 Mean 1.33 Ac-ft 960

Peak discharge (base, 50 cfs).--Mar. 27 (1630) 82 cfs (2.10 ft)

Note.--No gage-height record Dec. 29 to Jan. 28, Feb. 11-15, Apr. 4. Stage-discharge relation affected by ice Jan. 29 to Feb. 10, Feb. 16 to Mar. 15, Mar. 19-21.

## 8-2845. Willow Creek near Park View, N. Mex.

Location.--Lat 36°40'20", long 106°42'10", in Tierra Amarilla Grant, on right bank 400 ft upstream from Willow Creek damsite, 0.3 mile downstream from Horse Lake Creek, and 8½ miles southwest of Park View, Rio Arriba County.

Drainage area.--193 sq mi.

Records available.--May 1936 to September 1965 (no winter records prior to 1943). Monthly or yearly discharges only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Datum of gage is 6,944.99 ft above mean sea level (Bureau of Reclamation datum). Prior to Oct. 1, 1937, at datum 0.79 ft higher. Apr. 19, 1949 to Aug. 8, 1951, at different datums. Aug. 9, 1951 to Sept. 30, 1960, at datum 0.41 ft higher.

Average discharge.--28 years (1936-38, 1939-65), 21.5 cfs (15,570 acre-ft per year).

Extremes.--Maximum discharge during year, 1,270 cfs Mar. 31 (gage height, 5.60 ft); no flow at times.
1936-65: Maximum discharge, 4,500 cfs Apr. 23, 1942 (gage height, 10.45 ft), from rating curve extended above 1,400 cfs on basis of slope-area measurement of peak flow; no flow at times.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Discharge measurements generally made two or more times a month. Diversions for irrigation of about 300 acres above station. Records of suspended sediment loads and water temperatures for the water year 1965 are published in part 2 of this report.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 0.3 | 0 | 0.7 | 1.1 | 1.1 | 7.5 | 2.5 | 129 |
| .4 | .1 | .8 | 2.0 | 1.3 | 15 | 3.0 | 220 |
| .5 | .3 | .9 | 3.2 | 1.6 | 31 | 3.7 | 395 |
| .6 | .6 | 1.0 | 5.1 | 2.0 | 65 | 4.4 | 630 |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 3 | 0 | 3 | 3 | 13 | 597 | 44 | 2 | 8 | 65 | 0 |
| 2 | 0 | 3 | 1 | 3 | 3 | 11 | 532 | 42 | 2 | 7 | 69 | 1 |
| 3 | 0 | 3 | 1 | 2 | 3 | 9 | 400 | 35 | 1 | 6 | 47 | 1 |
| 4 | 0 | 2 | 1 | 2 | 4 | 8 | 279 | 28 | 1 | 4 | 12 | 1 |
| 5 | 0 | 1 | 1 | 1 | 4 | 8 | 155 | 22 | 2 | 4 | 8 | 1 |
| 6 | 0 | 1 | 0 | 1 | 4 | 9 | 149 | 18 | 2 | 4 | 5 | 2 |
| 7 | 0 | 1 | 0 | 30 | 4 | 10 | 216 | 11 | 3 | 2 | 4 | 2 |
| 8 | 0 | 0 | 0 | 100 | 4 | 11 | 199 | 11 | 3 | 2 | 3 | 3 |
| 9 | 0 | 0 | 0 | 50 | 4 | 13 | 185 | 9 | 4 | 2 | 3 | 5 |
| 10 | 0 | 0 | 0 | 30 | 3 | 15 | 117 | 11 | 7 | 3 | 3 | 5 |
| 11 | 0 | 1 | 0 | 10 | 3 | 17 | 89 | 15 | 8 | 3 | 3 | 4 |
| 12 | 0 | 1 | 0 | 9 | 2 | 19 | 85 | 13 | 8 | 3 | 2 | 4 |
| 13 | 0 | 0 | 0 | 6 | 2 | 22 | 193 | 16 | 20 | 4 | 2 | 3 |
| 14 | 1 | 0 | 0 | 5 | 3 | 25 | 161 | 26 | 10 | 5 | 2 | 2 |
| 15 | 2 | 1 | 0 | 6 | 3 | 22 | 130 | 23 | 6 | 6 | 2 | 2 |
| 16 | 2 | 1 | 0 | 6 | 3 | 20 | 180 | 21 | 5 | 6 | 4 | 2 |
| 17 | 2 | 2 | 0 | 7 | 3 | 25 | 170 | 15 | 4 | 4 | 62 | 1 |
| 18 | 3 | 3 | 0 | 7 | 3 | 26 | 168 | 12 | 3 | 4 | 30 | 1 |
| 19 | 2 | 3 | 0 | 7 | 5 | 18 | 160 | 12 | 11 | 4 | 13 | 2 |
| 20 | 1 | 3 | 0 | 6 | 15 | 15 | 172 | 14 | 8 | 3 | 5 | 51 |
| 21 | 1 | 2 | 0 | 5 | 17 | 21 | 163 | 13 | 8 | 4 | 2 | 19 |
| 22 | 2 | 2 | 0 | 4 | 18 | 21 | 154 | 12 | 7 | 5 | 2 | 6 |
| 23 | 5 | 1 | 0 | 3 | 15 | 39 | 127 | 9 | 5 | 4 | 1 | 3 |
| 24 | 5 | 1 | 0 | 3 | 13 | 34 | 112 | 9 | 7 | 3 | 1 | 3 |
| 25 | 4 | 1 | 1 | 2 | 13 | 33 | 81 | 9 | 7 | 7 | a 1 | 1 |
| 26 | 2 | 1 | 1 | 1 | 13 | 52 | 65 | 8 | 10 | 33 | a 1 | 1 |
| 27 | 1 | 1 | 1 | 1 | 15 | 118 | 54 | 7 | 12 | 47 | a 0 | 1 |
| 28 | 2 | 1 | 5 | 1 | 15 | 182 | 53 | 5 | 8 | 40 | a 0 | 1 |
| 29 | 2 | 1 | 4 | 1 | — | 227 | 48 | 3 | 7 | 15 | a 0 | 0 |
| 30 | 3 | 1 | 4 | 2 | ---------- | 357 | 44 | 3 | 8 | 26 | a 0 | 0 |
| 31 | 3 | ---------- | 3 | 3 | ---------- | 619 | ---------- | 3 | ---------- | 17 | a 0 | ---------- |
| Total | 43 | 41 | 23 | 317 | 197 | 2,032 | 5,238 | 479 | 189 | 285 | 352 | 128 |
| Mean | 1.4 | 1.4 | 0.7 | 10.2 | 7.0 | 65.1 | 175 | 15.5 | 6.3 | 9.2 | 11.4 | 4.3 |
| Ac-ft | 85 | 81 | 46 | 629 | 391 | 4,000 | 10,390 | 950 | 375 | 565 | 698 | 254 |

Calendar year 1964: Max 360 Min 0 Mean 5.8 Ac-ft 4,220
Water year 1964-65: Max 619 Min 0 Mean 25.5 Ac-ft 18,460

Peak discharge (base, 500 cfs, revised).--Mar. 31 (2000) 1,270 cfs (5.60 ft).

a No gage-height record.
Note.--Stage-discharge relation affected by ice Dec. 28 to Mar. 15 (no gage-height record Jan. 9 to Feb. 3, Mar. 1-15).

8-2850. El Vado Reservoir near Tierra Amarilla, N. Mex.

Location.--Lat 36°34'45", long 106°43'55", in Tierra Amarilla Grant, at left end of dam on Rio Chama, at Village of El Vado, and 13 miles southwest of Tierra Amarilla.

Drainage area.--873 sq mi.

Records available.--January 1935 to September 1965.

Gage.--Water-stage recorder (records stages above spillway floor only) and inclined staff gage. Datum of gage is 8.21 ft above mean sea level, datum of 1929, leveling of 1953.

Extremes.--Maximum contents at 0800 during year, 137,400 acre-ft June 19,20 (gage height, 6,882.4 ft); minimum, 2,430 acre-ft at times during winter (gage height, 6,775.0 ft).
1935-65: Maximum contents, 204,900 acre-ft June 4, 5, 1948 (gage height, 6,904.2 ft); no contents at times.

Remarks.--Reservoir is formed by rock-fill dam, steel faced. Storage began in January 1935. Capacity 194,500 acre-ft between gage heights 6,758.5 (stoplog seat) and 6,902.0 ft (top of spillway gate). No dead storage. Prior to Jan. 1, 1947, figures represent usable contents computed from capacity table furnished by Middle Rio Grande Conservancy District in 1940; Jan. 1, 1947, to Sept. 30, 1954, figures represent usable contents, computed from capacity table based on Survey of 1944 by Corps of Engineers; after Oct. 1, 1954 used revised table based on partial survey (below gage height, 6,770 ft) by Bureau of Reclamation. Water is used for irrigation by Middle Rio Grande Conservancy District. Gage readings and contents given herein are generally those at 0730.

Cooperation.--Staff gage readings furnished by Middle Rio Grande Conservancy District.

Month-end gage heights and contents, water year October 1964 to September 1965

| Date | Gage height (feet) | Contents (acre-feet) | Change in contents (acre-feet) |
|---|---|---|---|
| Sept. 30 | 6,803.7 | 18,040 | - |
| Oct. 31 | 6,803.7 | 18,040 | 0 |
| Nov. 30 | 6,775.0 | 2,430 | - 15,610 |
| Dec. 31 | 6,775.5 | 2,580 | + 150 |
| Calendar year 1964 | - | - | + 150 |
| Jan. 31 | 6,775.1 | 2,460 | - 120 |
| Feb. 28 | 6,775.3 | 2,520 | + 60 |
| Mar. 31 | 6,780.1 | 4,180 | + 1,660 |
| Apr. 30 | 6,814.5 | 27,110 | + 22,930 |
| May 31 | 6,877.0 | 124,000 | + 96,890 |
| June 30 | 6,879.5 | 130,000 | + 6,000 |
| July 31 | 6,855.5 | 80,710 | - 49,290 |
| Aug. 31 | 6,799.8 | 15,200 | - 65,510 |
| Sept. 30 | 6,783.2 | 5,520 | - 9,680 |
| Water year 1964-65 | - | - | - 12,520 |

## 8-2855. Rio Chama below El Vado Dam, N. Mex.

Location.--Lat 36°34'50", long 106°43'30", in Tierra Amarilla Grant, on left bank 1.5 miles downstream from El Vado Dam, 2.7 miles upstream from Rio Nutrias, and 13 miles southwest of Tierra Amarilla.

Drainage area.--877 sq mi, of which about 100 sq mi is probably noncontributing.

Records available.--October 1913 to November 1915, April to November 1916, March, April 1920, September 1920 to August 1924, October 1935 to September 1965. Monthly discharge only for some periods, published in WSP 1312. Published as "Chama River" prior to 1935, as near Tierra Amarilla 1913-14, 1935-47, as "near El Vado" 1915-17, and as "at El Vado" 1920-24.

Gage.--Water-stage recorder. Datum of gage is 6,696.12 ft above mean sea level, datum of 1929. Prior to October 1935, at site 1.5 miles upstream at different datum. October 1935 to September 1938 at site 1.1 miles upstream at datum 30.34 ft higher.

Average discharge.--5 years (1913-15, 1920-23), 448 cfs (324,300 acre-ft per year), prior to completion of El Vado Dam; 30 years (1935-65), 383 cfs (277,300 acre-ft per year), after completion of El Vado Dam.

Extremes.--Maximum discharge during year, 1,750 cfs Aug. 2 (gage height, 4.24 ft); minimum, 8.2 cfs Sept. 11.
1913-16, 1920-22, 1923-24: Maximum discharge observed, 9,000 cfs May 22, 1920 (gage height, 12 ft, site and datum then in use); minimum unknown.
1935-65: Maximum discharge, 6,010 cfs May 17, 1941 (gage height, 6.89 ft at present site and datum); no flow Mar. 25, 26, 31, 1955.

Remarks.--Records good except those for periods of ice effect, which are fair. Flow regulated since 1935 by El Vado Reservoir (see 8-2850). Diversions for irrigation of about 10,600 acres above station.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1.1 | 5.7 | 1.3 | 22 | 1.7 | 97 | 2.5 | 410 | 3.6 | 1,150 |
| 1.2 | 12 | 1.5 | 52 | 2.0 | 191 | 3.0 | 700 | 4.1 | 1,610 |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 21 | 26 | *49 | 60 | 73 | 122 | 819 | 1,090 | 1,070 | 1,050 | 1,420 | 975 |
| 2 | 22 | 26 | 49 | b55 | 83 | 90 | 840 | 1,110 | 1,080 | 1,050 | 1,430 | 945 |
| 3 | 22 | 26 | 50 | b55 | 78 | 71 | 855 | 1,090 | 1,160 | 1,050 | 1,410 | 915 |
| 4 | 23 | 26 | 52 | b58 | 75 | b67 | 848 | 1,050 | 1,230 | 1,050 | 1,390 | 878 |
| 5 | 27 | 26 | 50 | 60 | 80 | b65 | 738 | 1,080 | 1,280 | 1,050 | 1,360 | 833 |
| 6 | 27 | 26 | 47 | 58 | 83 | 69 | 377 | 1,100 | 1,360 | 1,050 | 1,360 | 580 |
| 7 | 26 | 26 | 45 | 134 | 87 | 80 | 535 | 1,090 | 1,400 | 1,050 | 1,350 | 160 |
| 8 | 26 | 26 | 44 | 430 | 87 | 103 | 488 | 1,050 | 1,460 | 1,050 | 1,350 | 119 |
| 9 | 26 | 190 | 44 | 278 | 83 | 125 | 365 | 1,050 | 1,510 | 1,050 | 1,340 | 122 |
| 10 | 25 | 1,010 | 44 | 195 | 73 | 131 | 670 | 1,060 | 1,530 | 1,050 | 1,330 | 114 |
| 11 | 25 | 982 | 44 | 137 | 65 | 137 | 658 | 1,060 | 1,530 | 1,050 | 1,320 | 88 |
| 12 | 25 | 968 | 44 | b100 | b56 | 131 | 363 | 1,070 | 1,510 | 1,050 | 1,260 | 105 |
| 13 | 28 | 930 | b42 | b80 | b45 | 119 | 588 | 1,080 | 1,520 | 1,050 | 1,290 | 97 |
| 14 | 30 | 892 | b40 | *b65 | b45 | 105 | *667 | 1,090 | 1,520 | 1,050 | 1,280 | 85 |
| 15 | *30 | 855 | *b35 | b65 | b50 | *103 | 361 | 1,090 | *1,520 | 1,150 | 1,280 | 75 |
| 16 | 30 | *812 | b38 | b65 | b52 | 117 | 226 | 1,060 | 1,520 | *1,260 | 1,260 | *69 |
| 17 | 27 | 460 | b40 | b65 | *b52 | 103 | 379 | 1,060 | 1,500 | 1,340 | 1,250 | 62 |
| 18 | 25 | 125 | b40 | b65 | b52 | 117 | 735 | *1,070 | 1,510 | 1,060 | 1,170 | 60 |
| 19 | 25 | 87 | 40 | b65 | b58 | 108 | 900 | 1,090 | 1,560 | 1,260 | *1,210 | 85 |
| 20 | 25 | 69 | 40 | b65 | b67 | 85 | 930 | 1,100 | 1,560 | 1,420 | 1,200 | 92 |
| 21 | 23 | 62 | 42 | 71 | b75 | 78 | 960 | 1,120 | 1,490 | 1,410 | 1,190 | 62 |
| 22 | 22 | 54 | 42 | b70 | b94 | 103 | 982 | 1,130 | 1,480 | 1,400 | 1,170 | 80 |
| 23 | 22 | 52 | 44 | b60 | 108 | 117 | 1,020 | 1,060 | 1,410 | 1,400 | 1,150 | 78 |
| 24 | 22 | 50 | 44 | b60 | 90 | 144 | 1,050 | 1,040 | 1,360 | 1,390 | 1,130 | 100 |
| 25 | 22 | 50 | 47 | b65 | b78 | 137 | 1,080 | 1,040 | 1,340 | 1,390 | 1,120 | 137 |
| 26 | 23 | 50 | 50 | b58 | *80 | 117 | 1,090 | 1,050 | 1,280 | 1,420 | 1,100 | 150 |
| 27 | 25 | 50 | 54 | b55 | 108 | 184 | 1,110 | 1,050 | 1,230 | 1,420 | 1,080 | 160 |
| 28 | 26 | 49 | 75 | *b55 | 144 | 410 | 1,090 | *1,050 | 1,170 | 1,410 | 1,060 | 156 |
| 29 | *26 | 50 | 85 | b55 | - | 556 | 1,070 | 1,050 | 1,130 | 1,400 | 1,040 | 226 |
| 30 | 26 | 49 | *71 | b58 | ---------- | 634 | *1,080 | 1,050 | *1,090 | *1,410 | *1,010 | *268 |
| 31 | 26 | ---------- | 60 | 65 | ---------- | *763 | ---------- | 1,060 | ---------- | 1,410 | 998 | ---------- |
| Total | 778 | 8,104 | 1,491 | 2,827 | 2,121 | 5,291 | 22,874 | 33,240 | 41,310 | 37,650 | 38,308 | 7,876 |
| Mean | 25.1 | 270 | 48.1 | 91.2 | 75.8 | 171 | 762 | 1,072 | 1,377 | 1,215 | 1,236 | 263 |
| Ac-ft | 1,540 | 16,070 | 2,960 | 5,610 | 4,210 | 10,490 | 45,370 | 65,930 | 81,940 | 74,680 | 75,980 | 15,620 |

Calendar year 1964 : Max 1,080 Min 16 Mean 179 Ac-ft 129,600
Water year 1964-65 : Max 1,560 Min 21 Mean 553 Ac-ft 400,400

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

8-2865. Rio Chama above Abiquiu Reservoir, N. Mex.

Location.--Lat 36°19'05", long 106°35'50", in NW¼ sec.14, T.24 N., R.3 E. (projected), on left bank 7.7 miles downstream from Rio Gallina, 10 miles northwest of Youngsville, 16 miles upstream from Abiquiu Dam and 30 miles downstream from El Vado Dam.

Drainage area.--1,600 sq mi, of which about 100 sq mi is probably noncontributing.

Records available.--August 1961 to September 1965.

Gage.--Water-stage recorder (digital, and crest-stage indicator). Altitude of gage is 6,280 ft (from river-profile map).

Extremes.--Maximum discharge during year, 4,520 cfs Aug. 1 (gage height, 7.22 ft), from rating curve extended above 1,600 cfs by logarithmic plotting; minimum, about 15 cfs Dec. 14, result of freezeup.
1961-65: Maximum discharge, that of Aug. 1, 1965; minimum, 7.5 cfs Oct. 17,18, 1963.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Flow regulated by El Vado Reservoir (see 8-2850). Diversions for irrigation of about 15,000 acres above station. Records of suspended sediment loads and water temperatures for water year 1965 are published in part 2 of this report.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

| Oct. 1 to May 12 | | | | May 13 to Sept. 30 | | | |
|---|---|---|---|---|---|---|---|
| 0.8 | 18 | 2.5 | 285 | 1.3 | 58 | 3.5 | 660 |
| 1.0 | 31 | 3.0 | 445 | 1.6 | 97 | 4.0 | 930 |
| 1.3 | 60 | 3.5 | 660 | 2.0 | 166 | 4.5 | 1,260 |
| 1.6 | 97 | 4.0 | 920 | 2.5 | 285 | 5.0 | 1,650 |
| 2.0 | 166 | 4.8 | 1,430 | 3.0 | 445 | 5.7 | 2,340 |

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1964 TO SEPTEMBER 1965

| DAY | OCT. | NOV. | DEC. | JAN. | FEB. | MAR. | APR. | MAY | JUNE | JULY | AUG. | SEPT. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 24 | 31 | 53 | 80 | 289 | 235 | 835 | 1,100 | 1,080 | 1,100 | 2,300 | 978 |
| 2 | 23 | 31 | 55 | 69 | 238 | * b130 | 866 | 1,140 | 1,080 | 1,080 | 2,210 | * 960 |
| 3 | 24 | 32 | 58 | b 50 | 162 | b90 | 884 | 1,160 | 1,130 | 1,070 | 1,680 | 924 |
| 4 | 26 | 31 | 56 | b 40 | * 141 | b80 | 872 | 1,120 | 1,200 | 1,070 | 1,400 | 876 |
| 5 | 25 | 32 | 54 | b 60 | 154 | 86 | 806 | 1,130 | 1,260 | 1,060 | 1,370 | 834 |
| 6 | 28 | 32 | 44 | 78 | 164 | 84 | 517 | 1,130 | 1,310 | 1,060 | 1,350 | 747 |
| 7 | 28 | 32 | b 40 | 695 | 136 | 106 | 315 | 1,140 | 1,380 | 1,060 | 1,350 | a 350 |
| 8 | 30 | 32 | b 40 | 1,390 | 150 | 144 | 682 | 1,080 | 1,430 | 1,060 | 1,340 | a 170 |
| 9 | 30 | 32 | b 40 | a 600 | 110 | 224 | 249 | 1,090 | 1,490 | 1,060 | 1,330 | a 150 |
| 10 | 30 | 702 | b 40 | a 280 | 91 | 205 | 618 | 1,080 | * 1,550 | 1,060 | 1,320 | 136 |
| 11 | 30 | 977 | b 40 | a 200 | a 75 | 226 | 629 | 1,080 | 1,560 | 1,060 | 1,300 | 119 |
| 12 | 30 | *954 | b 40 | a 130 | a 60 | 202 | 498 | * 1,070 | 1,550 | 1,050 | 1,240 | 163 |
| 13 | 29 | 927 | b 30 | a 110 | a 50 | 160 | 354 | 1,110 | 1,550 | 1,040 | 1,290 | 164 |
| 14 | * 31 | 898 | b 35 | 106 | a 50 | 147 | 728 | 1,150 | 1,550 | * 1,100 | 1,290 | 104 |
| 15 | 34 | 876 | b 35 | 86 | a 60 | 126 | * 489 | 1,160 | 1,550 | 1,230 | 1,270 | * 90 |
| 16 | 34 | 831 | b 35 | 84 | a 60 | 156 | 243 | 1,120 | * 1,540 | 1,200 | 1,270 | 84 |
| 17 | 34 | 675 | b 35 | 81 | * 72 | 133 | 319 | 1,080 | 1,520 | 1,420 | * 1,350 | 76 |
| 18 | 31 | 232 | * b 40 | 78 | 89 | 149 | 610 | 1,100 | 1,510 | 1,120 | 1,230 | 66 |
| 19 | 28 | 125 | b 45 | 77 | 76 | 145 | 962 | 1,140 | 1,560 | 1,190 | 1,270 | 71 |
| 20 | 28 | 93 | b 45 | 75 | 117 | 115 | 983 | 1,200 | 1,580 | 1,390 | 1,240 | 617 |
| 21 | 28 | 80 | b 45 | 84 | 182 | 96 | 1,010 | * 1,230 | 1,550 | 1,680 | 1,230 | a 120 |
| 22 | 28 | 73 | b 45 | 79 | 228 | 133 | 1,050 | 1,250 | 1,490 | 1,450 | 1,200 | 102 |
| 23 | 28 | 64 | b 50 | b 75 | 286 | 147 | 1,070 | 1,200 | 1,420 | 1,430 | 1,190 | 96 |
| 24 | 27 | 62 | 59 | b 75 | 145 | 205 | 1,110 | 1,140 | 1,360 | 1,430 | 1,160 | 91 |
| 25 | 28 | 60 | 88 | b 80 | 106 | 189 | 1,140 | 1,120 | 1,340 | 1,470 | 1,130 | 124 |
| 26 | 28 | 59 | 75 | * b 50 | 112 | 149 | 1,160 | * 1,090 | 1,290 | 1,550 | 1,100 | 134 |
| 27 | 28 | 58 | 74 | b 40 | 238 | 183 | 1,160 | 1,080 | 1,230 | a 1,450 | 1,080 | 153 |
| 28 | 31 | 56 | 190 | b 40 | 340 | 400 | * 1,130 | 1,060 | * 1,180 | * 1,450 | 1,060 | * 151 |
| 29 | * 31 | 55 | 128 | b 50 | ------- | 545 | 1,090 | 1,050 | 1,130 | 1,420 | 1,040 | 149 |
| 30 | 31 | *54 | 75 | b 75 | ------- | 615 | 1,090 | 1,060 | 1,100 | 1,410 | 1,040 | 271 |
| 31 | 31 | ------- | * 87 | 178 | ------- | 720 | ------- | 1,080 | ------- | 1,490 | 996 | ------- |
| TOTAL | 896 | 8,196 | 1,776 | 5,195 | 3,981 | 6,325 | 23,469 | 34,740 | 41,470 | 38,710 | 40,626 | 9,070 |
| MEAN | 28.9 | 273 | 57.3 | 168 | 142 | 204 | 782 | 1,121 | 1,382 | 1,249 | 1,311 | 302 |
| AC-FT | 1,780 | 16,260 | 3,520 | 10,300 | 7,900 | 12,550 | 46,550 | 68,910 | 82,250 | 76,780 | 80,580 | 17,990 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| CALENDAR YEAR | 1964 | MAX | 1,130 | MIN | 18 | MEAN | 188 | AC-FT 136,200 |
| WATER YEAR | 1964-65 | MAX | 2,300 | MIN | 23 | MEAN | 588 | AC-FT 425,400 |

* Discharge measurement made on this day.
a No gage-height record.
b Stage-discharge relation affected by ice.

8-2869. Abiquiu Reservoir near Abiquiu, N. Mex.

Location.--Lat 36°14'15", long 106°25'35", in SW¼ sec.8, T.23 N., R.5 E., in Abiquiu Dam on Rio Chama, 6½ miles northwest of Abiquiu.

Drainage area.--2,146 sq mi, of which about 100 sq mi is probably noncontributing.

Records available.--February 1963 to September 1965.

Gage.--Water-stage recorder. Datum of gage is at mean sea level, datum of 1929.

Extremes.--Maximum contents during year, 99,580 acre-ft Sept. 13 (elevation, 6,186.61 ft); no contents most of period October to January.
1963-65: Maximum contents, that of Sept. 13, 1965; no contents at times.

Remarks.--Reservoir is formed by earth-fill dam, completed Feb. 5, 1963. Capacity, 1,225,400 acre-ft between elevations 6,060 (invert of outlet tunnel) and 6,350 ft (crest of spillway). No dead storage. Original plan for reservoir was to hold water for one day to desilt before release, and for flood control as needed. Reserve capacity for flood control will usually be more than adequate. Capacity table adopted Oct. 1, 1963 accounts for material borrowed from reservoir area during construction.

Cooperation.--Records furnished by Corps of Engineers.

Month-end elevations and contents, water year October 1964 to September 1965

| Date | Elevation (feet) | Contents (acre-feet) | Change in contents (acre-feet) |
|---|---|---|---|
| Sept. 30 | 0 | 0 | - |
| Oct. 31 | 0 | 0 | 0 |
| Nov. 30 | 0 | 0 | 0 |
| Dec. 31 | 0 | 0 | 0 |
| Calendar year 1964 | - | - | 0 |
| Jan. 31 | 0 | 0 | 0 |
| Feb. 28 | 6,081.40 | 1,230 | + 1,230 |
| Mar. 31 | 6,090.00 | 2,390 | + 1,160 |
| Apr. 30 | 6,089.32 | 2,280 | - 110 |
| May 31 | 6,118.80 | 11,070 | + 8,790 |
| June 30 | 6,147.80 | 31,730 | + 20,660 |
| July 31 | 6,145.40 | 29,380 | - 2,350 |
| Aug. 31 | 6,182.75 | 89,660 | + 60,280 |
| Sept. 30 | 6,186.04 | 98,070 | + 8,410 |
| Water year 1964-65 | - | - | + 98,070 |

8-2870. Rio Chama below Abiquiu Dam, N. Mex.

Location.--Lat 36°14'10", long 106°25'00", in SE¼SE¼ sec.8, T.23 N., R.5 E., on right bank half a mile downstream from Abiquiu Dam and 6 miles northwest of Abiquiu.

Drainage area.--2,147 sq mi, of which about 100 sq mi is probably noncontributing.

Records available.--November 1961 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 6,040 ft (from river-profile map and topographic map).

Extremes.--Maximum discharge during year, 2,990 cfs July 1 (gage height, 6.69 ft); minimum, about 1 cfs Dec. 22.
1961-65: Maximum discharge, that of July 1, 1965; minimum, that of Dec. 22, 1964.

Remarks.--Records fair except those for periods of ice effect or doubtful or no gage-height record, which are poor. Discharge measurements generally made at least twice a month. Flow largely controlled by El Vado Reservoir (see 8-2850.) about 46 miles upstream, and Abiquiu Reservoir (see 8-2869.) ½ mile upstream. Diversions for irrigation of about 17,600 acres above station. Records of suspended sediment loads and water temperatures for the water year 1965 are published in part 2 of this report.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 8 to Nov. 19, Dec. 3-29, Aug. 2-17)

| | | | | | |
|---|---|---|---|---|---|
| 1.1 | 19 | 2.3 | 197 | 4.5 | 1,140 |
| 1.3 | 34 | 2.6 | 277 | 5.0 | 1,480 |
| 1.5 | 55 | 3.0 | 408 | 5.5 | 1,870 |
| 1.7 | 80 | 3.5 | 608 | 6.0 | 2,310 |
| 2.0 | 131 | 4.0 | 851 | 6.5 | 2,800 |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 26 | 34 | 70 | b75 | 139 | 264 | 772 | 1,310 | 1,520 | 2,320 | 394 | 59 |
| 2 | 26 | 35 | 71 | b50 | 225 | 286 | 1,010 | 1,310 | 2,540 | 2,350 | 1,350 | 39 |
| 3 | 26 | d32 | 81 | b25 | 230 | b170 | 1,000 | 1,340 | 2,630 | 2,640 | 1,950 | 55 |
| 4 | 31 | d32 | 77 | b30 | 227 | b95 | 996 | 1,270 | 1,720 | 2,780 | 1,120 | 65 |
| 5 | 33 | d35 | 60 | b45 | 222 | 89 | 955 | 1,130 | 1,350 | 2,680 | 322 | 57 |
| 6 | 29 | d35 | 53 | b70 | 220 | 94 | 900 | 1,170 | 1,350 | 2,570 | 216 | 56 |
| 7 | 32 | d35 | b35 | b350 | 207 | 102 | 584 | 1,200 | 1,440 | 2,400 | 289 | 74 |
| 8 | 34 | 35 | b35 | 846 | 207 | 123 | 488 | 1,200 | 1,610 | 2,290 | 286 | 148 |
| 9 | a34 | 32 | b40 | 1,150 | 202 | 189 | 564 | 1,210 | 1,530 | 2,140 | 172 | 202 |
| 10 | a34 | 38 | b45 | 554 | 186 | 230 | 426 | 1,410 | 1,470 | 1,940 | 81 | 204 |
| 11 | a34 | 655 | b45 | b200 | b100 | 204 | 452 | 1,560 | 1,550 | 1,420 | 104 | 112 |
| 12 | a33 | 1,040 | b50 | b150 | b70 | 202 | 760 | 1,250 | 1,510 | 1,100 | 90 | 68 |
| 13 | a32 | 1,020 | b35 | b130 | b60 | 214 | 809 | 1,120 | 1,460 | 1,140 | 82 | 127 |
| 14 | 29 | 978 | b35 | b120 | b65 | 186 | 659 | 1,350 | 1,620 | 1,100 | 82 | 127 |
| 15 | 31 | 967 | b35 | b105 | b75 | 139 | 754 | 1,400 | 1,620 | 1,120 | 80 | 77 |
| 16 | 29 | 955 | a35 | b90 | 77 | 142 | 515 | 1,390 | 1,630 | 1,280 | 86 | 68 |
| 17 | 33 | 933 | a40 | b90 | 77 | 152 | 356 | 1,360 | 1,520 | 1,360 | 116 | 66 |
| 18 | 34 | 720 | a40 | b85 | 101 | 142 | 380 | 1,330 | 686 | 1,350 | 133 | 57 |
| 19 | 31 | 391 | a45 | b85 | 82 | 152 | 953 | 1,260 | 118 | 1,210 | 135 | 88 |
| 20 | 29 | 131 | a50 | b80 | 89 | 135 | 1,400 | 1,270 | 125 | 666 | 123 | 441 |
| 21 | 25 | 100 | a50 | b85 | 105 | 105 | 1,350 | 1,150 | 129 | 461 | 104 | 365 |
| 22 | 31 | 88 | a45 | b90 | 116 | 112 | 1,350 | 643 | 137 | 564 | 100 | 75 |
| 23 | 27 | 85 | 50 | b80 | 127 | 148 | a1,400 | 408 | 144 | 295 | 100 | 68 |
| 24 | 24 | 77 | 66 | b80 | 332 | 204 | a1,450 | 430 | 150 | 116 | 92 | 70 |
| 25 | 27 | 77 | 80 | b80 | 308 | 230 | a1,450 | 440 | 152 | 120 | 79 | 183 |
| 26 | 32 | 77 | 83 | b60 | 118 | 186 | a1,450 | 535 | 150 | 463 | 70 | 225 |
| 27 | 30 | 75 | 84 | b50 | 150 | 174 | a1,420 | 967 | 148 | 846 | 62 | 200 |
| 28 | 29 | 72 | 125 | b55 | 186 | 260 | 1,400 | 1,500 | 275 | 670 | 55 | 163 |
| 29 | 31 | 72 | 170 | b70 | - | 360 | 1,350 | 1,540 | 629 | 356 | 53 | 100 |
| 30 | 32 | 71 | b85 | b100 | ---------- | 426 | 1,320 | 1,210 | 1,260 | 343 | 61 | 248 |
| 31 | 35 | ---------- | b75 | 120 | ---------- | 482 | ---------- | 1,000 | ---------- | 376 | 67 | ---------- |
| Total | 943 | 8,927 | 1,890 | 5,200 | 4,303 | 5,997 | 28,673 | 35,663 | 32,173 | 40,466 | 8,054 | 3,887 |
| Mean | 30.4 | 298 | 61.0 | 168 | 154 | 193 | 956 | 1,150 | 1,072 | 1,305 | 260 | 130 |
| Ac-ft | 1,870 | 17,710 | 3,750 | 10,310 | 8,530 | 11,890 | 56,870 | 70,740 | 63,810 | 80,260 | 15,970 | 7,710 |

Calendar year 1964: Max 1,110 Min 17 Mean 201 Ac-ft 146,200
Water year 1964-65: Max 2,780 Min 24 Mean 483 Ac-ft 349,400

a No gage-height record.
b Stage-discharge relation affected by ice.
d Doubtful gage-height record.

## 8-2875. Rio Chama near Abiquiu, N. Mex.

Location.--Lat 36°13'00", long 106°15'00", in Juan Jose Lobato Grant, at downstream end of bridge pier on State Highway 96, 1¾ miles upstream from El Rito Creek, 5 miles downstream from Abiquiu, Rio Arriba County, and 13.5 miles downstream from Abiquiu Dam.

Drainage area.--2,284 sq mi, of which about 100 sq mi is probably noncontributing.

Records available.--October 1941 to September 1965. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Datum of gage is 5,873.17 ft above mean sea level, datum of 1929.

Average discharge.--24 years, 400 cfs (289,600 acre-ft per year).

Extremes.--Maximum discharge during year, 3,700 cfs June 2 (gage height, 5.41 ft); minimum, 14 cfs Dec. 13.
1941-65: Maximum discharge, 7,870 cfs July 28, 1952, from rating curve extended above 2,900 cfs; maximum gage height, 6.38 ft Aug. 5, 1959; minimum daily discharge, 1 cfs June 11, 1947.

Remarks.--Records good except those for periods of ice effect, which are poor. Discharge measurements generally made two or more times a month. Flow regulated by El Vado Reservoir (see 8-2850) and Abiquiu (flood-control and silt detention) Reservoir (see 8-2869). Diversions for irrigation of about 19,100 acres above station.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Nov. 11-19, Jan. 9, Mar. 31 to May 21, July 1-11, Aug. 2-9, Sept. 2-11)

| | | | |
|---|---|---|---|
| 2.0 | 16 | 3.3 | 400 |
| 2.2 | 38 | 3.7 | 700 |
| 2.4 | 70 | 4.1 | 1,120 |
| 2.7 | 137 | 4.6 | 1,920 |
| 3.0 | 245 | 5.1 | 2,980 |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 30 | 33 | 68 | b80 | 134 | 213 | 669 | 1,390 | 1,490 | 2,110 | 388 | 60 |
| 2 | 29 | 36 | 67 | b60 | 215 | 300 | 1,040 | 1,390 | 2,800 | 2,460 | 1,040 | 77 |
| 3 | 27 | 34 | 79 | b35 | 245 | 221 | 1,050 | 1,420 | 2,980 | 2,500 | 1,810 | 88 |
| 4 | 26 | 34 | 74 | b25 | 241 | 99 | 1,060 | 1,370 | 1,880 | 2,860 | 1,090 | 126 |
| 5 | 27 | 36 | 65 | b35 | 225 | 97 | 1,000 | 1,150 | 1,330 | 2,710 | 335 | 113 |
| 6 | 27 | 36 | 59 | b50 | 221 | 90 | 934 | 1,190 | 1,340 | 2,570 | 130 | 101 |
| 7 | 29 | 36 | b40 | 110 | 221 | 88 | 698 | 1,230 | 1,420 | 2,400 | 213 | 106 |
| 8 | 29 | 34 | b40 | 780 | 221 | 110 | 366 | 1,250 | 1,610 | 2,260 | 217 | 148 |
| 9 | 30 | 34 | b45 | 1,690 | 221 | 160 | 596 | 1,260 | 1,580 | 2,120 | 186 | 213 |
| 10 | 30 | 28 | b50 | 777 | 205 | 245 | 382 | 1,420 | 1,400 | 1,900 | 64 | 221 |
| 11 | 30 | 451 | b50 | 221 | b130 | 221 | 414 | 1,700 | 1,530 | 1,440 | 108 | 178 |
| 12 | 30 | 1,020 | b60 | 177 | b80 | 205 | 678 | 1,340 | 1,560 | 1,050 | 95 | 75 |
| 13 | 28 | 1,010 | b35 | 137 | b60 | 229 | 915 | 1,120 | 1,400 | 1,130 | 77 | 86 |
| 14 | 30 | 945 | b35 | 132 | b60 | 201 | 620 | 1,300 | 1,600 | 1,070 | 75 | 167 |
| 15 | 33 | 945 | b35 | 113 | b70 | 144 | 763 | 1,510 | 1,580 | 1,070 | 75 | 88 |
| 16 | 37 | 956 | b40 | 101 | b80 | 140 | 580 | 1,510 | 1,580 | 1,220 | 75 | 68 |
| 17 | 38 | 934 | b45 | 97 | b90 | 160 | 330 | 1,450 | 1,480 | 1,340 | 101 | 68 |
| 18 | 37 | 742 | b45 | 95 | b120 | 140 | 358 | 1,400 | 920 | 1,330 | 150 | 67 |
| 19 | 33 | 518 | b50 | 90 | 99 | 157 | 944 | 1,320 | 137 | 1,230 | 110 | 75 |
| 20 | 30 | 137 | b55 | 88 | 97 | 147 | 1,600 | 1,260 | 132 | 781 | 99 | 330 |
| 21 | 32 | 108 | b55 | 92 | 106 | 115 | 1,510 | 1,180 | 134 | 359 | 86 | 586 |
| 22 | 33 | 95 | b55 | 103 | 121 | 113 | 1,500 | 786 | 137 | 533 | 81 | 86 |
| 23 | 29 | 86 | b60 | 88 | 132 | 147 | 1,560 | 382 | 137 | 393 | 79 | 74 |
| 24 | 26 | 81 | 62 | 90 | 314 | 170 | 1,580 | 400 | 144 | 115 | 81 | 72 |
| 25 | 29 | 75 | 72 | b90 | 489 | 254 | 1,580 | 421 | 144 | 108 | 72 | 122 |
| 26 | 30 | 74 | 83 | b65 | 163 | 198 | 1,560 | 477 | 140 | 263 | 64 | 229 |
| 27 | 32 | 75 | 84 | b50 | 137 | 167 | 1,500 | 939 | 134 | 718 | 56 | 188 |
| 28 | 33 | 70 | 97 | b50 | 177 | 245 | 1,460 | 1,570 | 198 | 678 | 51 | 163 |
| 29 | 36 | 68 | 221 | b60 | -- | 358 | 1,420 | 1,850 | 501 | 352 | 49 | 97 |
| 30 | 36 | 68 | b90 | b90 | ---------- | 407 | 1,400 | 1,390 | 1,090 | 300 | 51 | 163 |
| 31 | 37 | ---------- | b80 | 121 | ---------- | 449 | ---------- | 1,110 | ---------- | 358 | 60 | ---------- |
| Total | 963 | 8,799 | 1,996 | 5,792 | 4,674 | 5,990 | 30,067 | 37,485 | 32,508 | 39,728 | 7,168 | 4,235 |
| Mean | 31.1 | 293 | 64.4 | 187 | 167 | 193 | 1,002 | 1,209 | 1,084 | 1,282 | 231 | 141 |
| Ac-ft | 1,910 | 17,450 | 3,960 | 11,490 | 9,270 | 11,880 | 59,640 | 74,350 | 64,480 | 78,800 | 14,220 | 8,400 |

Calendar year 1964: Max 1,100 Min 4.8 Mean 207 Ac-ft 150,000
Water year 1964-65: Max 2,980 Min 25 Mean 492 Ac-ft 355,800

b Stage-discharge relation affected by ice.

## 8-2890. Rio Ojo Caliente at La Madera, N. Mex.

Location.--Lat 36°20'59", long 106°02"38", in NW¼NE¼ sec.1, T.24 N., R.8 E., on left bank 400 ft upstream from bridge on State Highway 111, 2¼ miles south of La Madera, 2¾ miles downstream from confluence of Rio Vallecitos and Rio Tusas, and 3¼ miles north of Ojo Caliente.

Drainage area.--419 sq mi.

Records available.--April 1932 to September 1965.

Gage.--Water-stage recorder (digital, and crest-stage indicator). Datum of gage is 6,358.84 ft above mean sea level, datum of 1929. Prior to Apr. 23, 1934, at site about 2¾ miles upstream at different datum. Apr. 23, 1934, to June 22, 1936, at datum 12.58 ft lower and June 23, 1936, to Oct. 27, 1956, at datum 13.84 ft lower, both at site 1,400 ft downstream.

Average discharge.--33 years, 71.5 cfs (51,760 acre-ft per year).

Extremes.--Maximum discharge during year, 1,730 cfs May 3 (gage height, 5.90 ft); minimum, 4.7 cfs Oct. 16.
1932-65: Maximum discharge, 3,140 cfs Apr. 21, 1958, from rating curve extended above 1,300 cfs by logarithmic plotting; maximum gage height, 7.60 ft July 15, 1933, site and datum then in use; minimum daily discharge, 0.6 cfs Aug. 18, Sept. 17, 1956.
A flood which occurred in May 1920 may have exceeded 3,200 cfs, from information by local resident.

Remarks.--Records good. Diversions above station for irrigation of about 3,500 acres (1962 determination).

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1 to Apr. 15, Sept. 25-30)

| | | | | | |
|---|---|---|---|---|---|
| 2.5 | 3.3 | 3.1 | 35 | 4.0 | 209 |
| 2.6 | 5.7 | 3.4 | 72 | 4.5 | 415 |
| 2.7 | 9.1 | 3.7 | 128 | 5.0 | 740 |
| 2.9 | 19 | | | 5.7 | 1,470 |

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1964 TO SEPTEMBER 1965

| DAY | OCT. | NOV. | DEC. | JAN. | FEB. | MAR. | APR. | MAY | JUNE | JULY | AUG. | SEPT. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 6.1 | 7.7 | 12 | 20 | 22 | 23 | 118 | 802 | 200 | 26 | 70 | 8.0 |
| 2 | 6.4 | 7.1 | 13 | 16 | 20 | 20 | 117 | 1,220 | 173 | 24 | 54 | 12 |
| 3 | 6.2 | 7.6 | 14 | 17 | 20 | 22 | 127 | 1,390 | 148 | 20 | * 48 | 10 |
| 4 | 6.0 | 6.7 | 13 | 19 | 21 | 23 | 136 | 1,220 | 127 | 18 | 33 | 8.7 |
| 5 | 6.4 | 7.2 | 12 | 20 | 22 | 26 | 132 | * 911 | 123 | 16 | 25 | 8.2 |
| 6 | 6.5 | 7.1 | 12 | 21 | 23 | 28 | 116 | 826 | 124 | 15 | 20 | 8.3 |
| 7 | 6.6 | 7.0 | 11 | 40 | 24 | 28 | 141 | 806 | 116 | 13 | 17 | 7.9 |
| 8 | 6.4 | 7.1 | 12 | 51 | 22 | 29 | * 127 | 744 | *108 | * 12 | 15 | 10 |
| 9 | 6.5 | * 7.1 | * 12 | 31 | * 19 | 30 | 138 | 454 | 121 | 12 | 13 | 12 |
| 10 | 6.1 | 7.4 | 13 | 30 | 20 | 30 | 125 | 456 | 135 | 12 | 11 | 11 |
| 11 | 6.2 | 8.0 | 13 | * 29 | 17 | 32 | 100 | 344 | 109 | 11 | 9.7 | 18 |
| 12 | 5.8 | 8.8 | 14 | 26 | 16 | 31 | 94 | 397 | 120 | 10 | 8.9 | 20 |
| 13 | 5.5 | 8.8 | 12 | 24 | 18 | * 29 | 115 | 887 | 136 | 9.4 | 7.6 | * 22 |
| 14 | 5.7 | 9.6 | 13 | 21 | 18 | 28 | 135 | 691 | 100 | 7.2 | 27 | 18 |
| 15 | * 5.6 | 10 | 14 | 22 | 20 | 29 | 130 | 518 | 86 | 6.9 | 11 | 14 |
| 16 | 5.7 | 11 | 14 | 21 | 19 | 32 | 162 | 412 | 78 | 8.0 | 8.2 | 13 |
| 17 | 5.5 | 12 | 15 | 21 | 21 | 30 | 161 | 459 | 70 | 9.3 | 11 | 17 |
| 18 | 6.0 | 13 | 14 | 20 | 20 | 29 | 210 | 640 | 65 | 9.8 | 13 | 16 |
| 19 | 6.4 | 13 | 15 | 20 | 23 | 28 | 290 | 684 | 126 | 10 | 14 | 17 |
| 20 | 7.2 | 11 | 15 | 19 | 26 | 25 | 329 | * 757 | 83 | * 8.5 | 13 | 20 |
| 21 | 8.1 | 11 | 16 | 20 | 25 | 26 | 429 | 668 | 60 | 6.8 | 12 | 24 |
| 22 | 7.9 | 11 | 16 | 19 | 25 | 30 | 492 | 574 | 48 | 5.7 | 12 | 21 |
| 23 | 7.9 | 12 | 17 | * 16 | 23 | 32 | 763 | 491 | * 40 | 5.4 | 16 | * 20 |
| 24 | * 7.3 | 12 | * 19 | 20 | 22 | 35 | 834 | 476 | 40 | 5.2 | 13 | 19 |
| 25 | 7.2 | * 12 | 20 | 21 | 24 | 34 | 696 | 311 | 45 | 6.4 | 11 | 17 |
| 26 | 7.5 | 13 | 21 | 16 | 23 | 30 | 683 | * 228 | 49 | 5.5 | 10 | 16 |
| 27 | 7.7 | 13 | 20 | 16 | 24 | 34 | 504 | 196 | 38 | 13 | 10 | 15 |
| 28 | 7.6 | 12 | 24 | 18 | 25 | 41 | 440 | 184 | 32 | 13 | 9.5 | 15 |
| 29 | 7.6 | 11 | 21 | 20 | ------ | 59 | 475 | 198 | 26 | 7.9 | 9.5 | 14 |
| 30 | 7.5 | 12 | 16 | 19 | ------ | 71 | 561 | 206 | 24 | 8.3 | * 9.4 | 13 |
| 31 | 7.7 | ------ | 19 | 21 | ------ | 100 | ------ | 210 | ------ | 14 | 8.8 | ------ |
| TOTAL | 206.8 | 296.2 | 472 | 694 | 600 | 1,046 | 8,880 | 18,360 | 2,750 | 349.3 | 550.5 | 445.1 |
| MEAN | 6.67 | 9.87 | 15.2 | 22.4 | 21.4 | 33.7 | 296 | 592 | 91.7 | 11.3 | 17.8 | 14.8 |
| AC-FT | 410 | 588 | 936 | 1,380 | 1,190 | 2,070 | 17,610 | 36,420 | 5,450 | 693 | 1,090 | 883 |

CALENDAR YEAR 1964 MAX 251 MIN 3.9 MEAN 25.8 AC-FT 18,710
WATER YEAR 1964-65 MAX 1,390 MIN 5.2 MEAN 94.9 AC-FT 68,720

Peak discharge (base, 600 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 4-24 | 0400 | 5.41 | 1,060 | 5-20 | 0215 | 5.44 | 1,090 |
| 5- 3 | 0115 | 5.90 | 1,730 | 8- 1 | 1645 | 5.01 | 756 |
| 5-13 | 0900 | 5.48 | 1,150 | | | | |

* Discharge measurement made on this day.

8-2895. Chamita ditch near Chamita, N. Mex.

Location.--Lat 36°04'45", long 106°06'40", in NE¼SE¼ sec.5, T.21 N., R.8 E., on left bank at head of flume over Arroyo de la Presa, 1 mile downstream from heading from Rio Chama, 1 mile northwest of Chamita, 1 1/8 miles northeast of Hernandez, and 6½ miles north of Espanola.

Records available.--February 1963 to September 1965. Prior to April 1941 at site ½ mile upstream at different datum.

Gage.--Water-stage recorder (digital, and crest-stage indicator) at head of half round metal flume control. Altitude of gage is 5,690 ft (from topographic map).

Extremes.--1936-41, 1963-65: Maximum daily discharge, 40 cfs Aug. 3, 1938; no flow at times.

Remarks.--Records fair. This is one of two ditches gaged to determine flow bypassing station "Rio Chama near Chamita, N. Mex." Turnouts from ditch irrigate land above and below gage or wastes back to Rio Chama.

Monthly discharge, in cubic feet per second, water year October 1964 to September 1965

| Month | Discharge, in cubic feet per second | | | Diversion in acre-feet |
|---|---|---|---|---|
| | Maximum | Minimum | Mean | |
| October | 16 | 12 | 14.5 | 895 |
| November | 17 | 0 | 7.33 | 436 |
| December | 4.8 | 0 | .82 | 50 |
| Calendar year 1964 | 22 | 0 | 6.32 | 4,590 |
| January | 5.3 | 0 | .27 | 17 |
| February | 0 | 0 | 0 | 0 |
| March | 0 | 0 | 0 | 0 |
| April | 19 | 0 | 5.18 | 308 |
| May | 19 | 0 | 9.41 | 579 |
| June | 19 | 0 | 10.0 | 597 |
| July | 18 | 0 | 10.2 | 626 |
| August | 15 | 0 | 6.83 | 420 |
| September | 12 | 0 | 3.19 | 190 |
| Water year 1964-65 | 19 | 0 | 5.69 | 4,120 |

8-2898. Hernandez ditch at Hernandez, N. Mex.

Location.--Lat 36°04'20", long 106°07'10", in NE¼NW¼ sec.8, T.21 N., R.8 E., on right bank 75 feet upstream from culvert under U. S. Highway 285, 0.6 mile north of Hernandez, 1 mile downstream from heading on Rio Chama, 3 miles northwest of San Juan Pueblo and 6 miles northwest of Espanola.

Records available.--March 1963 to September 1965.

Gage.--Water-stage recorder (digital) and Parshall flume. Altitude of gage is 5,670 ft (from topographic map). Prior to Mar. 5, 1965, at datum 1.01 ft higher.

Extremes.--1963-65: Maximum daily discharge, 46 cfs July 3, 1964; no flow at times.

Remarks.--Records fair. This is one of the two ditches gaged to determine flow bypassing station Rio Chama near Chamita, N. Mex. (see 8-2900). Takeouts from ditch irrigate land above and below gage, or waste back to Rio Chama.

Monthly discharge, in cubic feet per second, water year October 1964 to September 1965

| Month | Discharge, in cubic feet per second | | | Diversion in acre-feet |
|---|---|---|---|---|
| | Maximum | Minimum | Mean | |
| October | 13 | 8.4 | 10.8 | 662 |
| November | 17 | 0 | 7.95 | 473 |
| December | 9.5 | 0 | 1.07 | 65 |
| Calendar year 1964 | 46 | 0 | 9.79 | 7,100 |
| January | 0 | 0 | 0 | 0 |
| February | 0 | 0 | 0 | 0 |
| March | 15 | 0 | 1.65 | 101 |
| April | 33 | 2.8 | 18.9 | 1,120 |
| May | 25 | 0 | 13.2 | 810 |
| June | 27 | 0 | 13.4 | 799 |
| July | 26 | 1.9 | 15.0 | 925 |
| August | 18 | 0 | 5.41 | 333 |
| September | 12 | 0 | 1.86 | 110 |
| Water year 1964-65 | 33 | 0 | 7.46 | 5,400 |

8-2900. Rio Chama near Chamita, N. Mex.

Location.--Lat 36°04'25", long 106°06'39", in NE¼NE¼ sec.8, T.21 N., R.8 E., at downstream end of pier nearest left bank of bridge on U. S. Highway 285, half a mile west of Chamita, 2½ miles northwest of San Juan Pueblo, and 3 miles upstream from mouth.

Drainage area.--3,144 sq mi, of which at least 100 sq mi is probably noncontributing.

Records available.--October 1912 to September 1965. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Datum of gage is 5,653.61 ft above mean sea level, datum of 1929. Prior to Oct. 4, 1933, at railroad bridge 2 miles downstream at different datums. Oct. 4, 1933, to Mar. 1, 1942, at site 50 ft downstream at datum 0.22 ft higher. March 2, 1942, to Dec. 31, 1963, at site 200 ft downstream, present datum.

Average discharge.--53 years, 551 cfs (398,900 acre-ft per year).

Extremes.--Maximum discharge during year, 5,730 cfs June 17 (gage height, 6.93 ft); minimum, 6.4 cfs Oct. 13.
1912-65: Maximum discharge, 15,000 cfs May 22, 1920; maximum gage height, 10.45 ft Aug. 22, 1961; no flow at times. The floods of Sept. 29, 1904, and Oct. 4 or 5, 1911, probably exceeded 15,000 cfs. Another major flood occurred in 1884, from newspaper accounts.

Remarks.--Records good except those for periods of ice effect or doubtful or no gage-height record, which are poor. Discharge measurements generally made 2 or 3 times a month. Diversions above station for irrigation of about 27,600 acres, a few hundred of which is below station. Flow partly regulated by El Vado Reservoir (see 8-2850.) and Abiquiu Reservoir (see 8-2869.), 75 and 29 miles upstream, respectively. Records of chemical analyses, suspended sediment loads, and water temperatures for the water year 1965 are published in part 2 of this report.

Discharge, in cubic feet per second, water year October 1964 to September 1965.

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 13 | 11 | 68 | 102 | 145 | 288 | 769 | 1,880 | 1,220 | 1,940 | 970 | 53 |
| 2 | 10 | 12 | 68 | 90 | 198 | 346 | 1,110 | 2,260 | 2,510 | 2,850 | 1,120 | 416 |
| 3 | 10 | 16 | 73 | 73 | 229 | 265 | 1,170 | 2,570 | 3,190 | 2,450 | 1,970 | 160 |
| 4 | 9.1 | 16 | 73 | 80 | 217 | 192 | 1,200 | 2,570 | 2,340 | 3,010 | 1,500 | 145 |
| 5 | 9.1 | 15 | 65 | 95 | 211 | b120 | 1,160 | 1,990 | 1,420 | 2,920 | 646 | 145 |
| 6 | 9.1 | 15 | 65 | 109 | 229 | b120 | 1,080 | 1,930 | 1,370 | 2,700 | 198 | 112 |
| 7 | 7.9 | 14 | 58 | 126 | 242 | b120 | 958 | 1,920 | 1,390 | 2,500 | 337 | 112 |
| 8 | 8.5 | 15 | 63 | 385 | 223 | 160 | 610 | 1,900 | 1,600 | 2,370 | 346 | 217 |
| 9 | 8.8 | 14 | 63 | 1,450 | 229 | 186 | 808 | 1,670 | 1,620 | 2,120 | 337 | 198 |
| 10 | 9.1 | 20 | 73 | d970 | 242 | 265 | 646 | 1,700 | 1,570 | 1,930 | 123 | 229 |
| 11 | 7.9 | 223 | 87 | d390 | 180 | 242 | 634 | 1,860 | 1,590 | 1,600 | a90 | 192 |
| 12 | 8.5 | 902 | 106 | d250 | b100 | 211 | 718 | 1,670 | 1,690 | 1,070 | a80 | 95 |
| 13 | 7.9 | 916 | 75 | d210 | b80 | a220 | 1,010 | 1,810 | 1,450 | 1,100 | a80 | 116 |
| 14 | 8.2 | 916 | 49 | b190 | b80 | a230 | 795 | 1,930 | 1,640 | 1,040 | a80 | 169 |
| 15 | 8.5 | 930 | 70 | b170 | b90 | a190 | 944 | 1,950 | 1,600 | 1,030 | a70 | 112 |
| 16 | 8.5 | 930 | 75 | b150 | b100 | a160 | 902 | 1,860 | 1,620 | 1,130 | a50 | 102 |
| 17 | 9.4 | 888 | 85 | b140 | 119 | a180 | 682 | 1,840 | 2,200 | 1,260 | 44 | 80 |
| 18 | 9.4 | 784 | 90 | b135 | 150 | a170 | 743 | 1,950 | 1,520 | 1,280 | 213 | 106 |
| 19 | 16 | 528 | 106 | b140 | 145 | 198 | 993 | 1,970 | a300 | 1,260 | 116 | 119 |
| 20 | 16 | d192 | 102 | 145 | 140 | 186 | 1,920 | 1,970 | a200 | 947 | 87 | 136 |
| 21 | 12 | d140 | 92 | 140 | 145 | 174 | 2,030 | 1,830 | a160 | 364 | 66 | 657 |
| 22 | 12 | d112 | 90 | 160 | 169 | 150 | 2,120 | 1,430 | 180 | 588 | 70 | 85 |
| 23 | 12 | d92 | 87 | 119 | 180 | 180 | 2,240 | 898 | 155 | 500 | 58 | 90 |
| 24 | 10 | d90 | 112 | 106 | 242 | 186 | 2,440 | 1,060 | 174 | 116 | 50 | 68 |
| 25 | 9.8 | d85 | 119 | b120 | 430 | 250 | 2,520 | 916 | 186 | 102 | 51 | 70 |
| 26 | 11 | d85 | 123 | b85 | 217 | 217 | 2,240 | 756 | 164 | 162 | 47 | 192 |
| 27 | 9.8 | 87 | 112 | b60 | d180 | 186 | 1,990 | 902 | 145 | 808 | 44 | 229 |
| 28 | 10 | 85 | 131 | b60 | d200 | 265 | 1,830 | 1,290 | 145 | 834 | 43 | 242 |
| 29 | 9.1 | 78 | 211 | b70 | - | 364 | 1,790 | 1,740 | 404 | 460 | 103 | 131 |
| 30 | 10 | 73 | 92 | b120 | ---------- | 450 | 1,790 | 1,430 | 916 | 375 | 48 | 145 |
| 31 | 11 | ---------- | 87 | 150 | ---------- | 533 | ---------- | 1,200 | ---------- | 664 | 38 | ---------- |
| Total | 311.6 | 3,284 | 2,770 | 6,590 | 5,112 | 7,004 | 39,842 | 52,652 | 34,669 | 41,480 | 9,075 | 4,923 |
| Mean | 10.1 | 276 | 89.4 | 213 | 183 | 226 | 1,328 | 1,698 | 1,156 | 1,338 | 293 | 164 |
| Ac-ft | 618 | 16,430 | 5,490 | 13,070 | 10,140 | 13,890 | 79,030 | 104,400 | 68,760 | 82,270 | 18,000 | 9,760 |

Calendar year 1964: Max 1,170 Min 2.0 Mean 206 Ac-ft 149,300
Water year 1964-65: Max 3,190 Min 7.9 Mean 583 Ac-ft 421,900

a No gage-height record.
b Stage-discharge relation affected by ice.
d Doubtful gage-height record.

## 8-2910. Santa Cruz River at Cundiyo, N. Mex.

Location.--Lat 35°57'40", long 105°54'10", in SE¼NW¼ sec.17, T.20 N., R.10 E., on left bank 135 ft downstream from highway bridge at confluence of Rio Medio and Rio Frijoles, and 0.6 mile northwest of Cundiyo.

Drainage area.--86 sq mi, approximately.

Records available.--October 1930 to September 1965. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Concrete control since Jan. 3, 1954. Altitude of gage is 6,460 ft (from topographic map). Sept. 1, 1930, to Aug. 12, 1932, water-stage recorder at site about 1 mile downstream at different datum. Aug. 13, 1932, to Oct. 29, 1934, water-stage recorder at site 35 ft upstream at datum 0.42 ft higher. Oct. 30, 1934, to Jan. 2, 1954, water-stage recorder at present site at datum 0.64 ft lower.

Average discharge.--35 years, 29.7 cfs (21,500 acre-ft per year).

Extremes.--Maximum discharge during year, 356 cfs Aug. 14 (gage height, 3.01 ft); minimum, 2.6 cfs Nov. 20.
1930-65: Maximum discharge, 2,420 cfs Sept. 24, 1931 (gage height, 7.8 ft), from rating curve extended above 170 cfs by logarithmic plotting; minimum daily, 1.1 cfs Dec. 3, 1950.

Remarks.--Records good except those for periods of ice effect, which are fair. Diversions for irrigation of about 1,000 acres above station.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

| | | | |
|---|---|---|---|
| 1.4 | 3.2 | 2.0 | 35 |
| 1.5 | 5.6 | 2.2 | 63 |
| 1.6 | 8.9 | 2.4 | 107 |
| 1.8 | 19 | 2.6 | 170 |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 12 | 8.2 | 8.9 | 8.9 | 8.9 | 13 | 52 | 69 | 102 | 73 | 71 | 28 |
| 2 | 11 | 8.6 | 9.8 | b6 | 8.6 | b12 | 55 | 81 | 100 | 67 | 88 | 34 |
| 3 | 11 | 8.9 | 9.3 | b6 | 8.6 | b11 | 55 | 85 | 100 | 61 | 71 | 31 |
| 4 | 9.8 | 7.9 | 9.8 | b8 | 8.9 | b10 | 57 | 95 | 100 | 58 | 65 | 28 |
| 5 | 9.8 | 9.8 | *b8 | 12 | 9.3 | b10 | 50 | 93 | 97 | 53 | 60 | 27 |
| 6 | 11 | 8.6 | b7 | 11 | 9.8 | b11 | 40 | 88 | 90 | 50 | 55 | 30 |
| 7 | 11 | 8.9 | b6 | 12 | 10 | b11 | 41 | 85 | 81 | 53 | 52 | 30 |
| 8 | 10 | 9.3 | b6 | 12 | 9.3 | b10 | 41 | 83 | 81 | 60 | 49 | 58 |
| 9 | 9.3 | 9.8 | b6 | b9 | *8.9 | b11 | 46 | 77 | 90 | 49 | 49 | *50 |
| 10 | 8.6 | 10 | b6 | b9 | 7.9 | 12 | 42 | 75 | 93 | 46 | *46 | 41 |
| 11 | 8.9 | *9.3 | b7 | *b9.5 | b7 | 12 | 35 | 71 | 97 | 45 | 42 | 42 |
| 12 | 8.9 | 4.6 | 10 | b10 | b6 | 12 | *32 | 73 | 90 | 43 | 41 | 43 |
| 13 | 9.3 | 8.2 | b5 | b10 | b5 | *12 | 35 | 105 | 79 | 50 | 41 | 39 |
| 14 | 9.8 | 9.8 | b6 | b10 | b6 | 12 | 36 | *100 | 75 | 81 | 49 | 36 |
| 15 | 9.8 | 11 | b7 | b10 | 11 | b11 | 33 | 93 | *79 | 69 | 40 | 33 |
| 16 | 9.8 | 10 | b8 | b9.5 | b10 | 14 | 41 | 85 | 89 | 85 | 35 | 30 |
| 17 | 9.3 | 9.8 | 8.9 | b9 | b9 | 14 | 53 | 85 | 85 | 69 | 36 | 32 |
| 18 | 9.8 | 9.3 | b7 | b10 | b8 | b15 | 60 | 93 | 90 | 63 | 43 | 47 |
| 19 | 9.8 | 7.6 | 9.3 | b9.5 | b8 | b13 | 58 | 105 | 162 | 55 | 42 | 40 |
| 20 | *9.8 | 5.1 | 9.8 | b9 | b8.5 | b10 | 67 | 116 | 136 | 53 | 37 | 49 |
| 21 | 9.8 | b5 | 8.9 | 9.3 | b9 | b12 | 73 | 113 | 122 | 52 | 35 | 46 |
| 22 | 8.9 | b6 | 8.9 | 8.2 | b10 | 14 | 88 | 124 | 119 | 47 | 43 | *41 |
| 23 | 8.9 | *b7 | 9.3 | b8 | b9.5 | 14 | 95 | 139 | *119 | 46 | 37 | 39 |
| 24 | 9.3 | b8 | 9.8 | b9 | b8 | 15 | 105 | 143 | 122 | 45 | 34 | 36 |
| 25 | 8.6 | 9.8 | 9.8 | 7.9 | b9 | 14 | 93 | *139 | 124 | 47 | 30 | 36 |
| 26 | 8.6 | 12 | 9.3 | b7 | b10 | 14 | 81 | 133 | 107 | 42 | 29 | 35 |
| 27 | 8.6 | 10 | 9.3 | b7 | b12 | 16 | 71 | 130 | 95 | *42 | *28 | 34 |
| 28 | 8.6 | 8.2 | 9.8 | b8 | 14 | 20 | 60 | 116 | 90 | 45 | 28 | 33 |
| 29 | 8.9 | 8.6 | 7.9 | b8 | - | 25 | *53 | 105 | 83 | 46 | 33 | 33 |
| 30 | 8.6 | 8.6 | 9.3 | *8.6 | ---------- | 30 | 58 | 105 | 77 | 40 | 33 | 32 |
| 31 | 8.6 | ---------- | 11 | 8.6 | ---------- | 39 | ---------- | 107 | ---------- | 41 | 30 | ---------- |
| Total | 296.1 | 257.9 | 258.1 | 280.0 | 250.2 | 449 | 1,706 | 3,111 | 2,974 | 1,676 | 1,372 | 1,113 |
| Mean | 9.55 | 8.60 | 8.33 | 9.03 | 8.94 | 14.5 | 56.9 | 100 | 99.1 | 54.1 | 44.3 | 37.1 |
| Ac-ft | 587 | 512 | 512 | 555 | 496 | 891 | 3,380 | 6,170 | 5,900 | 3,320 | 2,720 | 2,210 |

Calendar year 1964: Max 78 Min 4.6 Mean 17.4 Ac-ft 12,600
Water year 1964-65: Max 162 Min 4.6 Mean 37.7 Ac-ft 27,250

Peak discharge (base 200 cfs).--June 19 (0215) 218 cfs (2.72 ft); Aug. 14 (1345) 356 cfs (3.01 ft).

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

8-2943. Rio Nambe at Nambe Falls, near Nambe, N. Mex.

Location.--Lat 35°51'15", long 105°54'30", in SW¼ sec.29, T.19 N., R.10 E., on left bank at Nambe Falls, 4.4 miles southeast of Nambe Pueblo, 5.1 miles southeast of Nambe, and 8.4 miles upstream from Rio Tesuque.

Drainage area.--25.1 sq mi.

Records available.--May to December 1911, miscellaneous discharge measurements only. March 1963 to September 1965.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 6,550 ft (from topographic map).

Extremes.--Maximum discharge during year, 99 cfs June 18 (gage height, 1.27 ft); maximum gage height, 2.11 ft Jan. 2 (ice jam); minimum discharge, 1.2 cfs Nov. 12.
1963-65. Maximum discharge, and gage height, those of June 18 and Jan. 2, 1965; minumum discharge, 1.2 cfs Apr. 8 and Nov. 12, 1964, but may have been less during periods of ice effect.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Records of suspended sediment loads and water temperatures for the water year 1965 are published in part 2 of this report.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

| | | | |
|---|---|---|---|
| 0.4 | 1.7 | 0.8 | 17 |
| .5 | 3.4 | .9 | 26 |
| .6 | 6.2 | 1.0 | 37 |
| .7 | 10 | 1.1 | 53 |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 6.1 | 4.0 | 5.4 | 3.1 | 3.8 | 4.2 | 8.0 | 23 | 37 | 31 | 18 | 14 |
| 2 | 6.1 | 4.0 | 4.0 | b 3 | 3.8 | 4.2 | 8.9 | 24 | 37 | 29 | 19 | 14 |
| 3 | 6.1 | 4.2 | 4.0 | b 3 | 3.8 | b 3.5 | 8.4 | * 25 | 36 | 29 | 17 | 14 |
| 4 | 6.1 | 4.2 | b 4 | b 3.5 | 4.0 | b 3 | 8.9 | 25 | 36 | 28 | 17 | 13 |
| 5 | 6.1 | 4.5 | * b 3.5 | b 4 | 4.0 | b 3.5 | 8.9 | 25 | 36 | 26 | 15 | 13 |
| 6 | 5.8 | 4.5 | b 3 | b 4.8 | 4.0 | b 3.5 | 8.4 | 25 | 34 | 26 | 14 | 14 |
| 7 | 5.4 | 4.5 | b 3 | .5 | 4.0 | 4.0 | 8.4 | 25 | *35 | 25 | 14 | 14 |
| 8 | 5.4 | 4.5 | b 3 | 3.8 | 4.0 | 4.0 | 8.0 | 25 | 35 | 26 | 13 | 21 |
| 9 | 5.4 | * 4.5 | b 3.5 | 3.5 | 4.0 | 4.0 | 8.4 | 24 | 37 | 22 | * 14 | * 18 |
| 10 | 5.1 | 4.5 | b 3.5 | 3.1 | *3.5 | * 4.0 | 8.4 | 24 | 39 | 21 | 14 | 17 |
| 11 | 5.1 | 4.5 | b 3.5 | * 4.5 | b 3 | 4.0 | 7.6 | 24 | 37 | 20 | 14 | 18 |
| 12 | 4.8 | 3.3 | b 4 | b 4.6 | b 2.5 | 4.2 | * 8.0 | 26 | 36 | 19 | 13 | 19 |
| 13 | 4.8 | 4.8 | b 3 | 4.8 | b 2.5 | 4.5 | 8.4 | 34 | 35 | 21 | 16 | 16 |
| 14 | 4.8 | 4.8 | b 3 | 4.8 | a 3 | 4.5 | 8.0 | * 30 | 36 | 22 | 16 | 14 |
| 15 | 4.8 | 4.8 | b 3.5 | 4.8 | a 3 | 4.5 | 8.9 | 29 | 40 | 20 | 16 | 14 |
| 16 | *4.8 | 4.8 | b 4 | 4.8 | a 3 | 4.5 | 9.4 | 29 | 48 | 20 | 15 | 13 |
| 17 | 4.5 | 4.5 | b 4 | b 5 | a 3 | 4.5 | 11 | 30 | 43 | 18 | 15 | 13 |
| 18 | 4.8 | 4.5 | b 3.5 | b 5 | 2.9 | 4.8 | 13 | 31 | 43 | 17 | 20 | 14 |
| 19 | 4.8 | 3.8 | b 3.5 | b 5 | 2.9 | * 4.5 | 13 | 34 | 51 | a 16 | 20 | 13 |
| 20 | 4.5 | 3.3 | b 3.5 | 4.8 | 3.3 | 4.5 | 16 | 35 | 41 | a 15 | 19 | 14 |
| 21 | 4.5 | 4.8 | 3.5 | 4.8 | b 4.5 | 5.4 | 19 | 36 | 37 | a 13 | 18 | 13 |
| 22 | 4.5 | 5.4 | 3.5 | b 4.8 | 3.8 | 5.1 | 24 | 39 | 37 | a 12 | 20 | * 12 |
| 23 | 4.5 | 5.1 | * 3.8 | * b 4.8 | 4.0 | 5.1 | 24 | 43 | 36 | a 11 | 18 | 12 |
| 24 | 4.2 | 5.4 | 3.8 | b 4.5 | 5.1 | 5.1 | 23 | 44 | 39 | a 12 | 17 | 12 |
| 25 | 4.0 | * 6.4 | 3.5 | b 3.5 | 5.1 | 4.8 | 22 | *43 | 39 | a 11 | 16 | 11 |
| 26 | 4.0 | 5.1 | 3.1 | b 3.5 | 4.5 | 4.8 | 23 | 39 | 35 | a 10 | 15 | 11 |
| 27 | 4.2 | 4.2 | 3.3 | b 3 | 4.0 | 5.1 | 21 | 36 | 34 | * 13 | * 14 | 10 |
| 28 | *4.0 | 4.5 | 3.3 | b 3 | 4.0 | 5.4 | 20 | 35 | * 32 | 14 | 14 | 10 |
| 29 | 4.0 | 4.2 | 2.9 | b 3.5 | - | 5.8 | 20 | 35 | 32 | 14 | 16 | 10 |
| 30 | 4.0 | 4.5 | 4.2 | 3.8 | ---------- | 6.1 | 20 | 37 | 31 | 13 | 16 | 10 |
| 31 | 4.0 | ---------- | 5.1 | 3.8 | ---------- | 6.8 | ---------- | 35 | ---------- | 15 | 14 | ---------- |
| Total | 151.2 | 136.1 | 112.4 | 126.4 | 103.0 | 141.9 | 404.0 | 969 | 1,124 | 589 | 497 | 411 |
| Mean | 4.88 | 4.54 | 3.63 | 4.08 | 3.68 | 4.58 | 13.5 | 31.3 | 37.5 | 19.0 | 16.0 | 13.7 |
| Ac-ft | 300 | 270 | 223 | 251 | 204 | 281 | 801 | 1,920 | 2,230 | 1,170 | 986 | 815 |

Calendar year 1964: Max 29 Min 2.5 Mean 6.95 Ac-ft 5,050
Water year 1964-65: Max 51 Min 2.5 Mean 13.1 Ac-ft 9,450

Peak discharge (base, 40 cfs).--May 30 (1430) 75 cfs (1.13 ft); June 18 (2230) 99 cfs (1.27 ft).

* Discharge measurement made on this day.
a No gage-height record.
b Stage-discharge relation affected by ice.

8-2952. Rio En Medio near Santa Fe, N. Mex.

Location.--Lat 35°47'30", long 105°47'38", in Santa Fe National Forest, on right bank 300 ft east of Ski Basin parking area and 16½ miles northeast of Santa Fe.

Drainage area.--0.63 sq mi.

Records available.--October 1963 to September 1965.

Gage.--Water-stage recorder and V-notch sharp-crested weir. Altitude of gage is 10,600 ft (from topographic map).

Extremes.--Maximum discharge during year, 16.3 cfs July 16 (gage height, 1.70 ft); minimum, 0.20 cfs Dec. 24, result of freezeup.
1963-65: Maximum discharge, that of July 16, 1965; minimum, that of Dec. 24, 1964.

Remarks.--Records good except those for periods of no gage-height record, which are fair.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

| | | | | | |
|---|---|---|---|---|---|
| 0.3 | 0.21 | 0.6 | 1.21 | 0.9 | 3.33 |
| .4 | .44 | .7 | 1.78 | 1.0 | 4.33 |
| .5 | .77 | .8 | 2.48 | 1.2 | 6.83 |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.77 | 0.47 | 0.38 | 0.36 | 0.31 | 0.29 | 0.31 | 1.62 | 2.88 | 2.80 | 2.28 | 1.26 |
| 2 | .77 | .47 | .38 | .34 | .29 | .29 | .31 | 1.86 | 2.88 | 2.56 | 2.40 | 1.31 |
| 3 | .73 | .50 | .41 | .34 | .29 | .29 | .34 | 2.26 | 2.88 | 2.48 | 2.33 | 1.21 |
| 4 | .73 | .47 | .41 | .34 | .29 | .29 | .34 | * 2.33 | *2.88 | 2.33 | 2.18 | 1.16 |
| 5 | .73 | .47 | .41 | .34 | .29 | .29 | .34 | 2.25 | 2.88 | 2.18 | 1.97 | 1.16 |
| 6 | .66 | .47 | .41 | .34 | .29 | .27 | .34 | 2.25 | 2.80 | 2.11 | 1.84 | 1.21 |
| 7 | .66 | .44 | .38 | .34 | .29 | .27 | .34 | 2.40 | 2.80 | 2.04 | 1.71 | 1.22 |
| 8 | .62 | .44 | .38 | .34 | .27 | .27 | .36 | 2.33 | 2.88 | * 2.11 | 1.65 | 1.88 |
| 9 | .62 | .44 | .38 | .34 | .27 | .27 | .38 | 2.25 | 2.97 | 1.90 | 1.71 | 1.53 |
| 10 | .62 | .44 | .38 | .34 | .27 | .27 | .38 | 2.11 | 2.88 | 1.78 | 1.87 | 1.42 |
| 11 | .59 | .44 | .38 | .34 | .29 | .27 | .38 | 2.11 | 2.88 | 1.78 | 1.71 | 1.49 |
| 12 | .62 | a .40 | .38 | .34 | .27 | .27 | .38 | 2.36 | 2.80 | 1.78 | 1.59 | 1.42 |
| 13 | .59 | a .40 | .38 | .31 | .27 | .27 | .38 | 2.56 | 2.80 | 1.87 | 1.78 | 1.31 |
| 14 | * .56 | a .44 | .36 | .31 | .27 | .27 | .38 | 2.40 | 2.88 | 1.78 | 1.86 | 1.16 |
| 15 | .56 | a .44 | * .36 | .31 | .27 | .27 | .41 | 2.18 | 3.24 | 1.71 | 1.78 | 1.16 |
| 16 | .56 | .44 | .36 | .31 | .29 | .27 | .47 | 2.04 | 4.01 | 2.44 | 1.65 | * 1.11 |
| 17 | .56 | .44 | .36 | .31 | .29 | .27 | .62 | 2.22 | 4.78 | 2.18 | 1.78 | 1.16 |
| 18 | .56 | .44 | .36 | .31 | .27 | * .27 | .77 | 2.56 | 5.84 | 2.04 | 2.09 | 1.16 |
| 19 | .56 | .44 | .36 | .31 | .27 | .27 | 1.00 | 2.88 | 6.72 | 1.90 | 2.04 | 1.16 |
| 20 | .56 | .44 | .36 | .31 | .27 | .25 | 1.26 | 3.24 | 6.14 | 1.84 | 1.90 | 1.16 |
| 21 | .52 | .41 | .36 | *.31 | .27 | .27 | 1.71 | 3.61 | 5.37 | 1.71 | 1.87 | 1.21 |
| 22 | .52 | .41 | .36 | .31 | .27 | .27 | 2.03 | 3.81 | 4.89 | 1.59 | 1.92 | 1.11 |
| 23 | .52 | .41 | .36 | .31 | .27 | .27 | 2.15 | 4.40 | 4.44 | 1.63 | 1.71 | 1.06 |
| 24 | .50 | .41 | .34 | .31 | .27 | .27 | 2.18 | 4.12 | * 4.65 | 1.48 | 1.65 | 1.02 |
| 25 | .50 | .41 | .36 | .31 | .29 | .27 | 2.04 | 3.61 | 4.44 | 1.48 | 1.53 | 1.06 |
| 26 | .50 | .41 | .34 | .31 | .29 | .27 | 1.84 | 3.15 | 3.81 | 1.36 | 1.42 | 1.02 |
| 27 | .50 | .41 | .34 | .31 | .29 | .27 | 1.48 | 2.88 | 3.52 | 1.42 | 1.36 | .97 |
| 28 | .50 | .38 | .34 | .31 | .29 | .27 | 1.21 | 2.72 | 3.24 | * 1.49 | 1.36 | 1.02 |
| 29 | .50 | .38 | .34 | .31 | | .29 | 1.21 | 2.72 | 3.06 | 1.48 | 1.36 | * .97 |
| 30 | .50 | .38 | .36 | .31 | | .29 | 1.26 | 2.88 | 2.97 | 1.47 | 1.31 | .97 |
| 31 | .50 | | .36 | .31 | | .29 | | 2.88 | | 1.91 | 1.26 | |
| Total | 18.19 | 12.94 | 11.44 | 9.99 | 7.86 | 8.51 | 26.60 | 82.99 | 111.21 | 58.63 | 54.87 | 36.06 |
| Mean | 0.587 | 0.431 | 0.369 | 0.322 | 0.281 | 0.275 | 0.887 | 2.677 | 3.707 | 1.891 | 1.770 | 1.202 |
| Ac-ft | 36.1 | 25.7 | 22.7 | 19.8 | 15.6 | 16.9 | 52.8 | 165 | 221 | 116 | 109 | 71.5 |

Calendar year 1964: Max 2.11 Min 0.24 Mean 0.665 Ac-ft 483
Water year 1964-65: Max 6.72 Min 0.25 Mean 1.20 Ac-ft 872

* Discharge measurement made on this day.
a No gage-height record.

## 8-3022. North Fork Tesuque Creek near Santa Fe, N. Mex.

Location.--Lat 35°46'12", long 105°48'31", in Santa Fe National Forest, on left bank 75 ft upstream from culvert on State Highway No. 475, 250 ft upstream from Middle Fork Tesuque Creek, and 13 miles northeast of Santa Fe.

Drainage area.--1.60 sq mi.

Records available.--October 1962 to September 1965.

Gage.--Water-stage recorder (digital, and crest-stage indicator) and V-notch sharp-crested weir. Altitude of gage is 9,670 ft (from topographic map).

Extremes.--Maximum discharge during year, 12.7 cfs May 23 (gage height, 1.54 ft); minimum, 0.23 cfs Jan. 8.
1962-65: Maximum discharge, that of May 23, 1965; minimum determined, 0.09 cfs Nov. 16, 1962.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

| | | | |
|---|---|---|---|
| 0.3 | 0.21 | 0.7 | 1.78 |
| .4 | .44 | .9 | 3.33 |
| .5 | .77 | 1.2 | 6.83 |
| .6 | 1.21 | 1.5 | 11.9 |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.67 | 0.56 | 0.46 | 0.42 | 0.40 | 0.50 | 1.00 | 3.61 | 6.73 | 4.86 | 2.14 | 2.22 |
| 2 | .66 | .57 | .40 | b.40 | .40 | b.45 | .98 | 4.14 | 6.66 | 4.52 | 2.26 | 2.19 |
| 3 | .66 | .56 | b.40 | b.40 | .40 | b.40 | 1.04 | 4.69 | 6.58 | 4.28 | 2.17 | 2.03 |
| 4 | .69 | b.54 | b.42 | .38 | .40 | b.40 | 1.10 | *5.01 | *6.55 | 3.97 | 2.19 | 1.94 |
| 5 | .69 | b.53 | b.44 | .38 | .40 | .42 | 1.00 | 5.25 | 6.49 | 3.74 | 2.16 | 1.91 |
| 6 | .66 | b.53 | b.46 | .41 | .40 | .44 | .99 | 5.14 | 6.28 | 3.60 | 2.07 | 1.93 |
| 7 | .68 | b.53 | b.47 | .41 | .40 | .41 | .92 | 5.06 | 6.09 | 3.40 | 2.08 | 2.03 |
| 8 | .67 | .54 | .47 | .34 | .40 | .41 | 1.00 | 5.07 | 5.91 | *3.31 | 2.14 | 2.74 |
| 9 | .68 | .55 | .47 | b.36 | .37 | .42 | 1.04 | 5.02 | 5.95 | 2.98 | 2.26 | 2.24 |
| 10 | .67 | .58 | .47 | b.38 | .35 | .44 | .97 | 4.84 | 5.82 | 2.77 | 2.40 | 2.19 |
| 11 | .66 | b.52 | .47 | .41 | .33 | .45 | b.90 | 4.69 | 5.81 | 2.68 | 2.36 | 2.29 |
| 12 | .66 | .45 | .47 | .41 | .32 | .44 | .91 | 5.00 | 5.58 | 2.54 | 2.42 | 2.29 |
| 13 | .67 | .48 | .46 | .41 | .31 | .43 | .89 | 5.42 | 5.29 | 2.66 | 2.37 | 2.28 |
| 14 | *.66 | .50 | *.46 | .41 | .33 | .41 | .91 | 5.67 | 5.19 | 2.54 | 2.56 | 2.27 |
| 15 | .64 | .52 | .44 | .41 | .35 | .41 | b1.10 | 5.80 | 5.27 | 2.32 | 2.31 | 2.26 |
| 16 | .64 | .54 | .44 | .41 | .36 | .41 | 1.48 | 5.83 | 5.71 | 2.28 | 2.23 | *2.25 |
| 17 | .64 | .54 | .44 | .41 | .37 | .41 | 1.97 | 5.91 | 6.42 | 2.11 | 2.37 | 2.29 |
| 18 | .65 | .50 | .43 | .41 | .40 | *.41 | 2.22 | 6.27 | 7.46 | 1.99 | 2.85 | 2.29 |
| 19 | .62 | .52 | .44 | .41 | .43 | .40 | 2.54 | 6.91 | 9.38 | 1.91 | 2.72 | 2.26 |
| 20 | .62 | b.50 | .44 | *.41 | .45 | .39 | 2.98 | 7.89 | 9.92 | 1.90 | 2.72 | 2.28 |
| 21 | .61 | .50 | .44 | .41 | .48 | .39 | 3.55 | 8.76 | 10.0 | 1.81 | 2.79 | 2.09 |
| 22 | .61 | .50 | .46 | .38 | .50 | .41 | 4.44 | 9.68 | 9.25 | 1.75 | 3.07 | 2.01 |
| 23 | .61 | .49 | .47 | .41 | .51 | .41 | 5.09 | 10.6 | 8.80 | 1.93 | 2.88 | 1.93 |
| 24 | .60 | .49 | .47 | .38 | .51 | .40 | 5.05 | 10.8 | *8.52 | 1.78 | 2.88 | 1.87 |
| 25 | .59 | .48 | .44 | .38 | .47 | .38 | 4.99 | 10.6 | 7.84 | 1.71 | 2.82 | 1.81 |
| 26 | .59 | .48 | .43 | b.35 | .48 | .38 | 4.66 | 10.1 | 7.11 | 1.65 | 2.78 | 1.74 |
| 27 | .59 | .47 | .44 | .35 | .51 | .43 | 4.04 | 9.25 | 6.54 | 1.67 | 2.70 | 1.70 |
| 28 | .59 | .47 | .43 | .36 | .52 | .44 | 3.55 | 8.35 | 6.06 | *1.72 | 2.67 | *1.68 |
| 29 | .58 | .48 | .45 | .38 | -- | .54 | 3.31 | 7.66 | 5.55 | 1.65 | 2.65 | 1.63 |
| 30 | .58 | .47 | .41 | .40 | ---------- | .64 | 3.29 | 7.35 | 5.27 | 1.64 | 2.52 | 1.56 |
| 31 | .57 | ---------- | .42 | .40 | ---------- | .85 | ---------- | 6.97 | ---------- | 1.82 | 2.39 | ---------- |
| Total | 19.71 | 15.39 | 13.81 | 12.18 | 11.55 | 13.72 | 67.91 | 207.34 | 204.03 | 79.49 | 76.93 | 62.20 |
| Mean | .636 | .513 | .446 | .393 | .413 | .443 | 2.26 | 6.69 | 6.80 | 2.56 | 2.48 | 2.07 |
| Ac-ft | 39 | 31 | 27 | 24 | 23 | 27 | 135 | 411 | 405 | 158 | 153 | 123 |

Calendar year 1964: Max 4.88 Min .35 Mean 1.16 Ac-ft 841
Water year 1964-65: Max 10.8 Min .31 Mean 2.15 Ac-ft 1,560

Peak discharge (base, not determined)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 5-23 | 1300 | 1.54 | 12.7 | 8-14 | 1300 | 1.16 | 6.28 |
| 6-18 | 2230 | 1.46 | 11.2 | 9- 7 | 2300 | 1.16 | 6.28 |

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.
Note.--No gage-height record Nov. 12-15, Jan. 27 to Feb. 15.

8-3023. Middle Fork Tesuque Creek near Santa Fe, N. Mex.

Location.--Lat 35°46'03", long 105°48'26", in Santa Fe National Forest, on right bank 1,000 ft upstream from road culvert on State Highway No. 475, 1,100 ft upstream from mouth, 13 miles northeast of Santa Fe.

Drainage area.--0.43 sq mi.

Records available.--November 1961 to September 1965.

Gage.--Water-stage recorder (digital) and V-notch sharp-crested weir. Altitude of gage is 9,800 ft (from topographic map).

Extremes.--Maximum discharge during year, 3.95 cfs June 18 (gage height, 1.19 ft); minimum, 0.05 cfs Dec. 2.
1961-65: Maximum discharge, that of June 18, 1965; minimum, that of Dec. 2, 1965.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Aug. 4-18)

| | | | |
|---|---|---|---|
| 0.2 | 0.05 | 0.5 | 0.46 |
| .3 | .13 | .7 | 1.04 |
| .4 | .26 | .9 | 1.94 |
| | | 1.1 | 3.19 |

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1964 TO SEPTEMBER 1965

| DAY | OCT. | NOV. | DEC. | JAN. | FEB. | MAR. | APR. | MAY | JUNE | JULY | AUG. | SEPT. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.13 | 0.10 | 0.07 | 0.08 | a 0.08 | 0.08 | 0.15 | 0.48 | 1.27 | 1.00 | 0.61 | 0.60 |
| 2 | .13 | .10 | .07 | .07 | a .08 | .08 | .15 | .58 | 1.29 | .93 | .58 | .60 |
| 3 | .12 | .10 | .09 | .07 | a .08 | .09 | .15 | .64 | 1.34 | .88 | .54 | .54 |
| 4 | .12 | b .10 | .08 | .07 | a .08 | .09 | .15 | * .65 | 1.42 | .81 | .52 | .53 |
| 5 | .12 | b .10 | .08 | .07 | .08 | .09 | .14 | .65 | 1.46 | .76 | .50 | .52 |
| 6 | .12 | b .10 | .08 | .07 | .08 | .09 | .13 | .65 | 1.47 | .74 | .51 | .53 |
| 7 | .12 | .10 | .08 | .07 | .08 | .09 | .13 | .69 | 1.50 | * .70 | .59 | .56 |
| 8 | .12 | .10 | .08 | .07 | .08 | .09 | .15 | .71 | 1.50 | .67 | .68 | .75 |
| 9 | .12 | .10 | .08 | .08 | .08 | .09 | .17 | .72 | 1.60 | .62 | .74 | .57 |
| 10 | .12 | .10 | .08 | .08 | .08 | .09 | .14 | .69 | 1.67 | .59 | .82 | .51 |
| 11 | .11 | a .09 | .08 | .08 | .08 | .09 | .13 | .67 | 1.76 | .58 | .77 | .51 |
| 12 | .12 | a .08 | .08 | .08 | .08 | .09 | .14 | .75 | 1.83 | .57 | .76 | .51 |
| 13 | .11 | a .08 | .08 | .08 | .08 | .09 | .15 | .88 | 1.83 | .60 | .77 | .52 |
| 14 | * .11 | a .09 | * .08 | .08 | .08 | .09 | .15 | .86 | 1.80 | .57 | .88 | .55 |
| 15 | .11 | a .10 | .08 | .08 | .08 | .08 | .19 | .85 | 1.80 | .51 | .77 | .57 |
| 16 | .11 | a .10 | .08 | .08 | .08 | .08 | .27 | .82 | a 2.00 | .52 | .72 | * .58 |
| 17 | .11 | a .10 | .08 | .08 | .08 | .08 | .34 | .89 | a 2.40 | .49 | .73 | .61 |
| 18 | .11 | .10 | .08 | .08 | .08 | * .08 | .33 | .98 | 2.78 | .46 | .91 | .61 |
| 19 | .11 | .09 | .08 | .08 | .08 | .08 | .35 | 1.11 | 2.82 | .44 | .76 | .61 |
| 20 | .11 | .09 | .08 | .08 | .08 | .08 | .41 | 1.23 | 2.96 | .43 | .73 | .61 |
| 21 | .11 | .09 | .08 | * .08 | .08 | .08 | .43 | 1.37 | 2.98 | .41 | .73 | .58 |
| 22 | .11 | .09 | .08 | .08 | .08 | .08 | .54 | 1.43 | 2.68 | .40 | .74 | .54 |
| 23 | .11 | .09 | .08 | .08 | .08 | .08 | .55 | 1.61 | 2.37 | .47 | .71 | .52 |
| 24 | .10 | .09 | .08 | .08 | .08 | .08 | .52 | 1.72 | * 2.41 | .40 | .71 | .50 |
| 25 | .10 | .09 | .08 | .08 | .08 | .08 | .46 | 1.75 | 1.98 | .39 | .68 | .49 |
| 26 | .11 | .09 | .08 | .08 | .08 | .08 | .37 | 1.73 | 1.67 | .36 | .66 | .47 |
| 27 | .10 | .09 | .08 | .08 | .08 | .09 | .31 | 1.60 | 1.44 | .38 | .66 | .45 |
| 28 | .10 | .09 | .06 | a .08 | .08 | .09 | .28 | * 1.40 | 1.29 | * .40 | .68 | .43 |
| 29 | .11 | .09 | .08 | a .08 | ------ | .10 | .29 | 1.34 | 1.17 | .38 | .66 | .42 |
| 30 | .11 | .09 | .08 | a .08 | ------ | .12 | .35 | 1.33 | 1.09 | .47 | .66 | .41 |
| 31 | .11 | ------ | .08 | a .08 | ------ | .14 | ------ | 1.28 | ------ | .52 | .60 | ------ |
| TOTAL | 3.50 | 2.82 | 2.47 | 2.41 | 2.24 | 2.74 | 8.07 | 32.06 | 55.58 | 17.45 | 21.44 | 16.20 |
| MEAN | .113 | .094 | .079 | .077 | .080 | .088 | .269 | 1.03 | 1.85 | .563 | .692 | .540 |
| AC-FT | 6.9 | 5.6 | 4.9 | 4.8 | 4.4 | 5.4 | 16 | 64 | 110 | 35 | 43 | 32 |

CALENDAR YEAR 1964 MAX .96 MIN .07 MEAN .212 AC-FT 154
WATER YEAR 1964-65 MAX 2.98 MIN .07 MEAN .457 AC-FT 332

Peak discharge (base, 1.7 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 5-23 | 1300 | 0.90 | 2.00 | 7-30 | 1930 | 0.95 | 2.28 |
| 6-18 | 2200 | 1.19 | 3.95 | 9- 7 | 2215 | 1.03 | 2.78 |

* Discharge measurement made on this day.
a No gage-height record.
b Stage-discharge relation affected by ice.

8-3024. South Fork Tesuque Creek near Santa Fe, N. Mex.

Location.--Lat 35°45'37", long 105°48'40", in Santa Fe National Forest, on left bank 150 ft upstream from road culvert on State Highway No. 475, 2,700 ft upstream from mouth, and 12 miles northeast of Santa Fe.

Drainage area.--0.47 sq.mi.

Records available.--October 1962 to September 1965.

Gage.--Water-stage recorder (digital) and V-notch sharp-crested weir. Altitude of gage is 9,740 ft (from topographic map).

Extremes.--Maximum discharge during year, 2.00 cfs May 30 (gage height, 0.91 ft); maximum gage height, 0.97 ft May 25, backwater from debris; minimum discharge, 0.08 cfs at times in March.
1962-65: Maximum discharge and gage height, those of May 1965; minimum discharge, 0.07 cfs Nov. 16, 1962.

Remarks.--Records good.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Apr. 27, May 23, 24)

| | | | |
|---|---|---|---|
| 0.2 | 0.05 | 0.5 | 0.46 |
| .3 | .13 | .6 | .71 |
| .4 | .26 | .7 | 1.04 |
| | | .9 | 1.94 |

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1964 TO SEPTEMBER 1965

| DAY | OCT. | NOV. | DEC. | JAN. | FEB. | MAR. | APR. | MAY | JUNE | JULY | AUG. | SEPT. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.12 | 0.11 | 0.11 | 0.10 | 0.09 | 0.09 | 0.12 | 0.30 | 1.64 | 0.86 | 0.47 | 0.53 |
| 2 | .12 | .11 | .10 | .10 | .09 | .09 | .13 | .36 | 1.69 | .79 | .54 | .53 |
| 3 | .12 | .11 | .11 | .10 | .09 | .09 | .13 | .40 | 1.69 | .74 | .52 | .51 |
| 4 | .12 | .11 | .11 | .10 | .09 | .09 | .13 | * .41 | * 1.66 | .69 | .50 | .49 |
| 5 | .12 | .11 | .11 | .10 | .09 | .09 | .14 | .39 | 1.62 | .65 | .48 | .48 |
| 6 | .12 | .11 | .11 | .09 | .10 | .09 | .14 | .38 | 1.56 | .68 | .49 | .48 |
| 7 | .12 | .11 | .11 | .09 | .10 | .09 | .14 | .37 | 1.54 | ** .64 | .54 | .49 |
| 8 | .12 | .11 | .11 | .10 | .10 | .09 | .14 | .36 | 1.50 | .57 | .60 | .58 |
| 9 | .12 | .11 | .11 | .10 | .10 | .09 | .14 | .34 | 1.48 | .54 | .65 | .51 |
| 10 | .12 | .10 | .11 | .10 | .09 | .09 | .14 | .32 | 1.44 | .51 | .67 | .49 |
| 11 | .12 | .09 | .11 | .10 | .09 | .09 | .14 | .30 | 1.41 | .50 | .70 | .48 |
| 12 | .12 | .09 | .11 | .10 | .09 | .09 | .14 | .35 | 1.34 | .49 | .74 | .46 |
| 13 | .12 | .11 | .11 | .10 | .09 | .09 | .14 | .43 | 1.28 | .51 | .81 | .43 |
| 14 | * .12 | .13 | * .10 | .10 | .09 | .09 | .14 | .39 | 1.23 | .49 | .88 | .43 |
| 15 | .12 | .13 | .10 | .10 | .09 | .09 | .14 | .38 | 1.18 | .47 | .80 | .43 |
| 16 | .12 | .13 | .10 | .10 | .09 | .09 | .16 | .37 | 1.12 | .44 | .74 | * .43 |
| 17 | .11 | .12 | .10 | .10 | .09 | * .09 | .19 | .41 | 1.09 | .44 | .72 | * .43 |
| 18 | .11 | .11 | .10 | .10 | .09 | .09 | .22 | .46 | 1.13 | .44 | .76 | .46 |
| 19 | .11 | .11 | .10 | .10 | .09 | .09 | .23 | .55 | 1.21 | .42 | .70 | .46 |
| 20 | .11 | .11 | .10 | * .10 | .09 | .08 | .27 | .66 | 1.15 | .42 | .67 | .46 |
| 21 | .12 | .11 | .10 | .09 | .09 | .08 | .31 | .77 | 1.19 | .40 | .65 | .46 |
| 22 | .12 | .11 | .10 | .09 | .09 | .08 | .35 | .91 | 1.17 | .41 | .66 | .46 |
| 23 | .11 | .11 | .10 | .09 | .09 | .08 | .39 | 1.22 | 1.21 | .44 | .65 | .43 |
| 24 | .11 | .11 | .10 | .09 | .09 | .08 | .36 | 1.43 | * 1.27 | .36 | .62 | .43 |
| 25 | .11 | .11 | .10 | .09 | .09 | .08 | .33 | 1.72 | 1.26 | .34 | .57 | .43 |
| 26 | .11 | .11 | .10 | .09 | .09 | .08 | .30 | 1.78 | 1.22 | .32 | .55 | .41 |
| 27 | .11 | .11 | .10 | .09 | .09 | .08 | .28 | 1.63 | 1.18 | .33 | .54 | .41 |
| 28 | .11 | .11 | .10 | .09 | .09 | .08 | .26 | 1.52 | 1.11 | .33 | .55 | * .41 |
| 29 | .11 | .11 | .10 | .09 | ------ | .08 | .25 | 1.50 | 1.03 | * .35 | .56 | .39 |
| 30 | .11 | .11 | .10 | .09 | ------ | .09 | .24 | 1.57 | .95 | .38 | .54 | .39 |
| 31 | .11 | ------ | .10 | .09 | ------ | .11 | ------ | 1.60 | ------ | .41 | .53 | ------ |
| TOTAL | 3.59 | 3.32 | 3.22 | 2.97 | 2.56 | 2.71 | 6.19 | 23.58 | 39.55 | 15.36 | 19.40 | 13.78 |
| MEAN | .116 | .111 | .104 | .095 | .091 | .087 | .206 | .761 | 1.32 | .496 | .626 | .459 |
| AC-FT | 7.1 | 6.6 | 6.4 | 5.9 | 5.1 | 5.4 | 12 | 47 | 78 | 30 | 38 | 27 |

CALENDAR YEAR 1964 MAX .80 MIN .09 MEAN .185 AC-FT 133
WATER YEAR 1964-65 MAX 1.78 MIN .08 MEAN .373 AC-FT 269

Peak discharge (base, not determined)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 5-26 | 0600 | 0.88 | 1.84 | 6-18 | 2230 | 0.86 | 1.74 |
| 5-30 | 1530 | .91 | 2.00 | 8-14 | 1320 | .82 | 1.54 |

* Discharge measurement made on this day.

8-3041. Little Tesuque Creek near Santa Fe, N. Mex.

Location.--Lat 35°44'42", long 105°49'39", in SW¼NE¼ sec.36, T.18 N., R.10 E., in Santa Fe National Forest, on right bank 1,200 ft upstream from East Boundary line of Hyde State park, 0.25 mile (by access road) east of State Highway 475, 9 miles northeast of Santa Fe.

Drainage area.--0.37 sq mi.

Records available.--June 1962 to September 1965.

Gage.--Water-stage recorder (digital) and V-notch sharp-crested weir. Altitude of gage is 9,220 ft (from topographic map).

Extremes.--Maximum discharge during year, 2.28 cfs July 30 (gage height, 0.97 ft); minimum, 0.05 cfs Oct. 3, 11, 16, 17, Nov. 18, Dec. 2.
1962-65: Maximum discharge, that of July 30, 1965; minimum, 0.03 cfs Aug. 29, 1962, Aug. 30, Sept. 3, 1964.

Remarks.--Records good.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

| | | | | | |
|---|---|---|---|---|---|
| 0.1 | 0.01 | 0.4 | 0.26 | 0.7 | 1.04 |
| .2 | .05 | .5 | .46 | .8 | 1.45 |
| .3 | .13 | .6 | .71 | | |

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1964 TO SEPTEMBER 1965

| DAY | OCT. | NOV. | DEC. | JAN. | FEB. | MAR. | APR. | MAY | JUNE | JULY | AUG. | SEPT. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.06 | 0.05 | 0.05 | 0.05 | 0.06 | 0.09 | 0.16 | 0.56 | 0.79 | 0.43 | 0.78 | 0.33 |
| 2 | .06 | .06 | .05 | .05 | .06 | .08 | .19 | .69 | .81 | .42 | 1.05 | .35 |
| 3 | .05 | .06 | .06 | .05 | .06 | .05 | .18 | .75 | .85 | .40 | .95 | .32 |
| 4 | .05 | .06 | .06 | .05 | .07 | .05 | .20 | * .72 | .86 | .37 | .91 | .31 |
| 5 | .06 | .07 | .06 | .05 | .07 | .09 | .19 | .64 | .83 | .35 | .89 | .31 |
| 6 | .06 | .06 | .06 | .06 | .07 | .06 | .16 | .56 | .76 | .34 | .88 | .32 |
| 7 | .06 | .06 | .06 | .06 | .07 | .06 | .16 | .51 | .72 | * .33 | .85 | .33 |
| 8 | .06 | .06 | .06 | .06 | .07 | .06 | .18 | .47 | .67 | .33 | .80 | .60 |
| 9 | .06 | .06 | .06 | .05 | .07 | .06 | .19 | .42 | .67 | .30 | .75 | .47 |
| 10 | .06 | .07 | .06 | .05 | .06 | .06 | .16 | .38 | .64 | .28 | .70 | .39 |
| 11 | .05 | .06 | .06 | .06 | .05 | .07 | .14 | .34 | .63 | .27 | .66 | .38 |
| 12 | .06 | .05 | .06 | .06 | .05 | .07 | .15 | .40 | .58 | .28 | .60 | .36 |
| 13 | .06 | .05 | .06 | .06 | .05 | .06 | .16 | .52 | .53 | .32 | .64 | .34 |
| 14 | * .05 | .05 | .06 | .06 | .06 | .06 | .17 | .43 | .51 | .34 | .77 | .32 |
| 15 | .06 | .06 | * .06 | .07 | .06 | .06 | .20 | .39 | .47 | .30 | .74 | .31 |
| 16 | .06 | .06 | .05 | .07 | .06 | .06 | .25 | .37 | .45 | .28 | .62 | * .31 |
| 17 | .06 | .06 | .05 | .07 | .06 | * .06 | .32 | .39 | .44 | .25 | .57 | .32 |
| 18 | .07 | .06 | .05 | .07 | .06 | .06 | .35 | .44 | .58 | .23 | .67 | .32 |
| 19 | .07 | .05 | .05 | .07 | .07 | .06 | .38 | .48 | .82 | .23 | .61 | .32 |
| 20 | .07 | .05 | .05 | .07 | .07 | .07 | .45 | .49 | .65 | .23 | .55 | .34 |
| 21 | .07 | .05 | .05 | * .06 | .08 | .06 | .55 | .48 | .68 | .21 | .51 | .32 |
| 22 | .06 | .05 | .05 | .06 | .08 | .06 | .64 | .51 | .67 | .21 | .58 | .31 |
| 23 | .06 | .05 | .06 | .06 | .09 | .06 | .79 | .67 | .65 | .30 | .50 | .30 |
| 24 | .06 | .05 | .06 | .06 | .08 | .06 | .79 | .71 | .68 | .24 | .47 | .29 |
| 25 | .06 | .06 | .06 | .06 | .07 | .06 | .72 | .76 | * .65 | .22 | .43 | .28 |
| 26 | .06 | .06 | .06 | .06 | .07 | .06 | .63 | * .88 | .59 | .20 | .40 | .27 |
| 27 | .07 | .06 | .06 | .06 | .08 | .07 | .50 | .94 | .55 | .22 | .38 | .26 |
| 28 | .06 | .05 | .06 | .05 | .09 | .07 | .41 | .89 | .50 | .22 | .38 | .25 |
| 29 | .05 | .05 | .05 | .05 | ------ | .07 | .38 | .82 | .48 | * .24 | .38 | .24 |
| 30 | .05 | .05 | .05 | .05 | ------ | .10 | .43 | .84 | .46 | .47 | .36 | .24 |
| 31 | .05 | ------ | .05 | .06 | ------ | .13 | ------ | .79 | ------ | .69 | .33 | ------ |
| TOTAL | 1.84 | 1.69 | 1.74 | 1.82 | 1.89 | 2.09 | 10.18 | 18.24 | 19.17 | 9.50 | 19.71 | 9.81 |
| MEAN | .059 | .056 | .056 | .058 | .067 | .067 | .339 | .588 | .639 | .307 | .636 | .327 |
| AC-FT | 3.6 | 3.4 | 3.5 | 3.6 | 3.7 | 4.1 | 20 | 36 | 38 | 19 | 39 | 19 |

CALENDAR YEAR 1964 MAX .48 MIN .04 MEAN .124 AC-FT 90
WATER YEAR 1964-65 MAX 1.05 MIN .05 MEAN .268 AC-FT 193

Peak discharge (base, 1.00 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 5-30 | 1600 | 0.75 | 1.16 | 8- 1 | 2200 | 0.77 | 1.28 |
| 6-18 | 2300 | .85 | 1.59 | 8-14 | 1330 | 0.77 | 1.28 |
| 7-30 | 1930 | .97 | 2.28 | | | | |

* Discharge measurement made on this day.

8-3042. Little Tesuque Creek tributary No. 4 near Santa Fe, N. Mex.

Location.--Lat 35°44'08", long 105°50'00", on right bank in Hyde State Park, 1000 ft upstream from mouth, and 8 miles northeast of Santa Fe.

Drainage area.--0.69 sq mi.

Records available.--October 1964 to September 1965.

Gage.--Water-stage recorder and V-notch sharp-crested weir. Altitude of gage is 8,600 ft (from topographic map).

Extremes.--Maximum discharge during year, 1.64 cfs June 18 (gage height 1.04 ft); no flow Oct. 1 to Nov. 7.

Remarks.--Records good except those for periods of backwater from debris or no gage-height record, which are fair.

Rating table, except periods of backwater from debris (gage height, in feet, and discharge, in cubic feet per second)

| | | | |
|---|---|---|---|
| 0.2 | 0 | 0.7 | 0.46 |
| .3 | .01 | .8 | .71 |
| .4 | .05 | .9 | 1.04 |
| .6 | .26 | | |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | a 0 | c 0.03 | 0.03 | 0.11 | 0.35 | 0.60 | 0.28 | c 0.15 | 0.45 | 0.14 |
| 2 | | | a 0 | c.02 | .03 | .10 | .35 | .63 | .23 | c .13 | .50 | .13 |
| 3 | | | a 0 | c.02 | .03 | .09 | .33 | *.63 | .20 | c .11 | .39 | .20 |
| 4 | | | a 0 | c.02 | .03 | .08 | .37 | .60 | .20 | c .11 | .41 | .16 |
| 5 | | | a 0 | .02 | .03 | .07 | .33 | .55 | .19 | c .11 | .41 | .15 |
| 6 | | | a 0 | .02 | .03 | .07 | .30 | .48 | c .15 | c .11 | .37 | c .11 |
| 7 | | | a 0 | .02 | .03 | .07 | .30 | .43 | c .15 | * c .11 | .37 | .09 |
| 8 | | | a 0.01 | .05 | .04 | .07 | .31 | .41 | c .15 | .10 | .41 | .18 |
| 9 | | | a .01 | .05 | .04 | .07 | .33 | .37 | c .15 | .09 | .46 | .29 |
| 10 | | | a .01 | .04 | .04 | .07 | .31 | .35 | c .16 | .07 | .41 | .52 |
| 11 | | | a .02 | .05 | .04 | .07 | .26 | .33 | c .18 | .06 | .35 | .37 |
| 12 | | | .02 | .06 | .03 | .07 | .26 | .39 | c .18 | .06 | .30 | .31 |
| 13 | | | .02 | .05 | .03 | .07 | .28 | .46 | c .18 | .07 | .32 | a .25 |
| 14 | | | * .01 | .05 | .03 | .07 | .30 | .37 | .18 | c .10 | .38 | a .20 |
| 15 | | | .01 | .05 | .03 | .07 | .33 | .37 | .20 | c .10 | .31 | a .15 |
| 16 | | | .01 | .04 | .03 | .07 | .39 | .35 | .25 | c .09 | .23 | * .12 |
| 17 | | | .01 | .04 | .03 | .07 | .50 | .35 | .26 | c .07 | .20 | .15 |
| 18 | | | .01 | .05 | .04 | .07 | c.60 | .35 | .54 | c .06 | .25 | .14 |
| 19 | | | .01 | .05 | .04 | * .07 | c.68 | .37 | .55 | c .06 | .23 | .16 |
| 20 | | | .01 | .04 | .06 | .07 | c.80 | .37 | .30 | c .06 | .20 | .19 |
| 21 | | | .01 | * .04 | .07 | .07 | c.90 | .37 | .25 | c .05 | .18 | .14 |
| 22 | | | .01 | .04 | .08 | .07 | c.90 | .39 | .22 | c .05 | .30 | .13 |
| 23 | | | .01 | .04 | .09 | .07 | c.94 | .55 | .20 | c .06 | c .23 | .12 |
| 24 | | | .02 | .04 | .09 | .07 | c.80 | .50 | * .33 | c .05 | c .19 | c .10 |
| 25 | | | .02 | .03 | .09 | .07 | c.66 | .46 | * .22 | c .04 | .20 | c .10 |
| 26 | | | .02 | .03 | .09 | .07 | .55 | .43 | .18 | c .04 | .18 | c .10 |
| 27 | | | c .02 | .03 | .10 | .07 | .43 | *.37 | c .15 | c .04 | c .15 | c .10 |
| 28 | | | c .02 | .02 | .11 | .11 | .41 | .37 | c .15 | c .05 | c .15 | *c .09 |
| 29 | | | c .02 | .02 | .11 | .15 | .41 | .33 | c .15 | * c .06 | c .15 | .09 |
| 30 | | | e .02 | .02 | — | .19 | .46 | .55 | c .15 | .09 | c .15 | .08 |
| 31 | | | c .03 | .02 | ---------- | .26 | ---------- | .37 | ---------- | .22 | .15 | ---------- |
| Total | 0 | 0 | 0.36 | 1.10 | 1.41 | 2.70 | 14.14 | 13.45 | 6.68 | 2.57 | 8.98 | 5.06 |
| Mean | 0 | 0 | 0.012 | 0.035 | 0.050 | 0.087 | 0.471 | 0.434 | 0.223 | 0.083 | 0.290 | 0.169 |
| Ac-ft | 0 | 0 | 0.7 | 2.2 | 2.8 | 5.4 | 28 | 27 | 13 | 5.1 | 18 | 10 |

Calendar year 1964: Max - Min - Mean - Ac-ft -
Water year 1964-65: Max 0.94 Min 0 Mean 0.155 Ac-ft 112

* Discharge measurement made on this day.
a No gage-height record.
c Backwater from debris.

## 8-3043. Little Tesuque Creek tributary No. 3 near Santa Fe, N. Mex.

Location.--Lat 35°43'35", long 105°50'01", in Santa Fe National Forest, on right bank 1,900 ft upstream from mouth, and 8 miles northeast of Santa Fe.

Drainage area.--0.65 sq mi.

Records available.--September 1963 to September 1965.

Gage.--Water-stage recorder and V-notch sharp-crested weir. Altitude of gage is 8,440 ft, corrected (from topographic map).

Extremes.--Maximum discharge during year, 0.77 cfs Apr. 21 (gage height, 0.62 ft); no flow for long periods.
1963-65: Maximum discharge, that of Apr. 21, 1965; no flow for long periods.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

| | |
|---|---|
| 0.0 | 0 |
| .1 | .01 |
| .2 | .05 |
| .3 | .13 |
| .4 | .26 |
| .5 | .46 |
| .6 | .71 |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | 0 | 0 | 0.01 | 0.16 | 0.22 | 0 | | | 0 |
| 2 | | | | 0 | 0 | a 0 | .22 | .25 | 0 | | | 0 |
| 3 | (*) | | | 0 | 0 | a 0 | .25 | * .26 | 0 | | | 0 |
| 4 | | | | 0 | 0 | a 0 | .26 | .26 | 0 | | | 0 |
| 5 | | | | 0 | 0 | a .01 | .26 | .25 | 0 | | | 0 |
| 6 | | | | 0 | 0 | a .01 | .22 | .23 | 0 | | | 0 |
| 7 | | | | 0 | 0 | a .01 | .20 | .19 | 0 | | | 0 |
| 8 | | | | 0 | 0 | a .01 | .19 | .15 | 0 | (*) | | 0 |
| 9 | | | | 0 | 0 | a .01 | .20 | .13 | 0 | | | 0 |
| 10 | | | | 0 | 0 | a .02 | .20 | .11 | 0 | | | 0 |
| 11 | | | | 0 | 0 | a .01 | .22 | .08 | 0 | | | .04 |
| 12 | | | (*) | 0 | 0 | a 0 | .19 | .07 | 0 | | | .04 |
| 13 | | | | a 0 | 0 | a 0 | .18 | .07 | 0 | | | .03 |
| 14 | | | | a 0 | 0 | a 0 | .19 | .06 | 0 | | | .02 |
| 15 | | | | a 0 | 0 | a .01 | .19 | .05 | 0 | | | .01 |
| 16 | | | | a .01 | 0 | a .01 | .20 | .06 | 0 | | | 0 |
| 17 | | | | a .01 | 0 | a .01 | .22 | .04 | 0 | | | * 0 |
| 18 | | | | a .01 | 0 | a 0 | .31 | .03 | 0 | | (*) | 0 |
| 19 | | | | a .01 | 0 | *b 0 | .41 | .02 | 0 | | | 0 |
| 20 | | | | b .01 | 0 | b .01 | .58 | .01 | .01 | | | 0 |
| 21 | | | | b .01 | b 0 | b .02 | .68 | .01 | .06 | | | 0 |
| 22 | | | | b 0 | b 0 | b .03 | .71 | 0 | .07 | | | 0 |
| 23 | | | | b 0 | b 0 | .04 | .68 | 0 | .05 | | | 0 |
| 24 | | | | b 0 | b 0 | .04 | .60 | 0 | * .04 | | | 0 |
| 25 | | | | 0 | b 0 | .04 | .46 | 0 | .04 | | | 0 |
| 26 | | | | 0 | .01 | .03 | .41 | 0 | .02 | | | 0 |
| 27 | | | | 0 | .01 | .03 | .35 | * 0 | .02 | | | 0 |
| 28 | | | | 0 | .01 | .02 | .30 | 0 | .02 | | | * 0 |
| 29 | | | | 0 | – | .02 | .25 | 0 | .01 | (*) | | 0 |
| 30 | | | | 0 | ---------- | .04 | .23 | 0 | 0 | | | 0 |
| 31 | | ---------- | | 0 | ---------- | .08 | ---------- | 0 | ---------- | | | ---------- |
| Total | 0 | 0 | 0 | 0.06 | 0.03 | 0.52 | 9.52 | 2.55 | 0.34 | 0 | 0 | 0.14 |
| Mean | 0 | 0 | 0 | 0.002 | 0.001 | 0.017 | 0.317 | 0.082 | 0.011 | 0 | 0 | 0.005 |
| Ac-ft | 0 | 0 | 0 | 0.12 | 0.06 | 1.03 | 18.9 | 5.06 | 0.67 | 0 | 0 | 0.28 |

Calendar year 1964: Max 0.58 Min 0 Mean 0.034 Ac-ft 24.9
Water year 1964-65: Max 0.71 Min 0 Mean 0.036 Ac-ft 26.1

* Discharge measurement or observation of no flow made on this day.
a No gage-height record.
b Stage-discharge relation affected by ice.

8-3044. Little Tesuque Creek tributary No. 2 near Santa Fe, N. Mex.

Location.--Lat 35°43'34", long 105°51'02", in SW¼SW¼ sec.2, T.17 N., R.10 E., on right bank in Santa Fe National Forest, 300 ft upstream from mouth and State Highway No. 475, 6¼ miles northeast of Santa Fe, N. Mex.

Drainage area.--0.45 sq mi.

Records available.--June 1962 to September 1965.

Gage.--Water-stage recorder and V-notch sharp-crested weir. Altitude of gage is 7,960 ft (from topographic map).

Extremes.--Maximum discharge during year, 0.083 cfs Apr. 22-23 (gage height, 0.25 ft); no flow for many days.
1962-65: Maximum discharge, 0.166 cfs Apr. 1-2, 1963 (gage height, 0.33 ft); no flow at times.

Remarks.--Records fair.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

| | |
|---|---|
| 0.03 | 0.0 |
| .1 | .007 |
| .2 | .041 |
| .3 | .125 |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 0 | 0.002 | 0.004 | 0.006 | 0.009 | 0.032 | .049 | 0.011 | 0.007 | 0.004 | 0.004 |
| 2 | | 0 | .002 | .004 | .006 | .007 | .041 | .049 | .011 | .007 | .006 | .004 |
| 3 | | 0 | .002 | .006 | .006 | .007 | .041 | *.041 | .011 | .007 | .004 | .004 |
| 4 | | 0 | .002 | .006 | .007 | .006 | .041 | .041 | .011 | .007 | .003 | .004 |
| 5 | | 0 | .002 | .006 | .007 | .006 | .049 | .041 | .011 | .007 | .003 | .003 |
| 6 | | 0 | .003 | .006 | .007 | .006 | .049 | .041 | .011 | .007 | .003 | .003 |
| 7 | | 0 | .003 | .007 | .007 | .006 | .049 | .041 | .011 | *.007 | .002 | .003 |
| 8 | | 0 | .003 | .009 | .007 | .006 | .058 | .041 | .011 | .007 | .002 | .011 |
| 9 | | 0 | .003 | .009 | .007 | .004 | .058 | .036 | .009 | .007 | .002 | .020 |
| 10 | | .001 | .002 | .007 | .007 | .004 | .058 | .036 | .009 | .007 | .002 | .014 |
| 11 | | .001 | .002 | .007 | .007 | .004 | .058 | .032 | .011 | .007 | .001 | .011 |
| 12 | | .001 | * .002 | .007 | .007 | .004 | .049 | .036 | .011 | .009 | .001 | .009 |
| 13 | | .001 | .002 | .006 | .007 | .004 | .049 | .036 | .009 | .009 | .002 | .007 |
| 14 | | .001 | .002 | .006 | .006 | .004 | .058 | .036 | .009 | .009 | .004 | .007 |
| 15 | (*) | .001 | .002 | .006 | .006 | .004 | .049 | .032 | .009 | .009 | .004 | .006 |
| 16 | | .001 | .002 | .006 | .006 | * .006 | .049 | .032 | .009 | .007 | .004 | .004 |
| 17 | | .001 | .002 | .006 | .006 | .006 | .049 | .032 | .009 | .007 | .004 | *.006 |
| 18 | | .001 | .002 | .006 | .006 | .006 | .058 | .027 | .011 | .007 | .014 | .006 |
| 19 | | .001 | .002 | .006 | .007 | .006 | .066 | .024 | .024 | .007 | .011 | .006 |
| 20 | | .001 | .002 | *.006 | .007 | .006 | .075 | .024 | .016 | .007 | .011 | .006 |
| 21 | | .001 | .002 | .006 | .009 | .006 | .075 | .024 | .016 | .007 | .009 | .006 |
| 22 | | .001 | .003 | .006 | .009 | .006 | .083 | .020 | .014 | .007 | .032 | .006 |
| 23 | | .001 | .003 | .004 | .009 | .006 | .083 | .020 | .011 | .004 | .024 | .006 |
| 24 | | .001 | .004 | .004 | .007 | .006 | .066 | .020 | .014 | .004 | .014 | .004 |
| 25 | | .001 | .004 | .006 | .007 | .006 | .066 | .016 | *.011 | .003 | .011 | .004 |
| 26 | | .001 | .004 | .006 | .007 | .007 | .058 | .016 | .009 | .003 | .009 | .004 |
| 27 | | .002 | .004 | .006 | .009 | .007 | .049 | *.014 | .009 | .004 | .007 | .004 |
| 28 | | .002 | .004 | .006 | .009 | .011 | .049 | .011 | .009 | .004 | .006 | *.004 |
| 29 | | .002 | .004 | .006 | | .014 | .049 | .011 | .007 | *.002 | .006 | .004 |
| 30 | | .002 | .004 | .006 | ---------- | .016 | .049 | .014 | .007 | .002 | .004 | .004 |
| 31 | | ---------- | .004 | .006 | ---------- | .024 | ---------- | .014 | ---------- | .002 | .004 | ---------- |
| Total | 0 | 0.025 | 0.084 | 0.188 | 0.198 | 0.220 | 1.663 | 0.907 | 0.331 | 0.190 | 0.213 | 0.184 |
| Mean | 0 | 0.001 | 0.003 | 0.006 | 0.007 | 0.007 | 0.055 | 0.029 | 0.011 | 0.006 | 0.007 | 0.006 |
| Ac-ft | 0 | 0.05 | 0.17 | 0.37 | 0.39 | 0.44 | 3.30 | 1.80 | 0.66 | 0.38 | 0.42 | 0.36 |

Calendar year 1964: Max 0.091 Min 0 Mean 0.009 Ac-ft 6.454
Water year 1964-65: Max .083 Min 0 Mean 0.012 Ac-ft 8.34

* Discharge measurement or observation of no flow made on this day.

## 8-3130. Rio Grande at Otowi Bridge, near San Ildefonso, N. Mex.

Location.--Lat 35°52'30", long 106°08'30", near right bank on downstream end of pier of former railway bridge, 400 ft downstream from bridge on State Highway 4, 1-3/4 miles southwest of San Ildefonso Pueblo, 2½ miles downstream from Pojoaque River, and 7 miles west of Pojoaque.

Drainage area.--14,300 sq mi, approximately (includes, 2,940 sq mi in closed basin in San Luis Valley, Colo.).

Records available.--February 1895 to December 1905, June 1909 to September 1965. Monthly discharge only for some periods, published in WSP 1312. In early reports this record was published as Rio Grande at water tank, as "at Rio Grande", and as "near Buckman."

Gage.--Water-stage recorder. Datum of gage is 5,488.48 ft above mean sea level, datum of 1929. Prior to May 19, 1904, and July 25 to Oct. 1, 1904, staff gage at site 180 ft upstream at datum 2.02 ft lower. May 19 to July 24, 1904, Oct. 2, 1904, to Dec. 31, 1905, and June 23, 1909, to May 31, 1910, staff gage or chain gage at same site and datum.

Average discharge.--66 years (1895-1905, 1909-65), 1,555 cfs (1,126,000 acre-ft per year).

Extremes.--Maximum discharge during year, 7,660 cfs June 18 (gage height, 7.37 ft); minimum, 190 cfs Oct. 4-5.
1895-1905, 1909-65: Maximum discharge, 24,400 cfs May 23, 1920; maximum gage height, 14.5 ft Sept. 29, 1904 (present site and datum); minimum daily discharge, 60 cfs July 4, 5, 1902.
The 1920 flood is greatest since at least 1884 and probably since 1741; information from H. W. Yeo's file on floods.

Remarks.--Records good except those for periods of doubtful gage-height record or uncertain stage-discharge relation, which are fair. Discharge measurements made two or more times a month. Flow partly regulated by El Vado and Abiquiu Reservoirs (see 8-2850, 8-2869) on Rio Chama which contributes about 40 percent of total flow. Diversion above station for irrigation of about 619,000 acres in Colorado and 75,000 acres in New Mexico. Records of chemical analyses, suspended sediment loads, and water temperatures for the water year 1965 are published in part 2 of this report.

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 219 | 264 | 398 | 550 | 679 | 822 | 1,350 | 3,080 | 2,750 | 4,210 | 2,490 | 489 |
| 2 | 201 | 264 | 414 | 509 | 691 | 906 | 1,830 | 3,500 | 3,810 | 5,020 | 2,610 | 720 |
| 3 | 192 | 272 | 448 | 443 | e740 | 794 | 1,880 | 3,940 | 4,420 | 4,530 | 3,760 | 613 |
| 4 | 190 | 272 | b440 | 435 | e730 | 560 | 1,920 | 4,300 | 4,020 | 4,930 | 3,620 | 552 |
| 5 | 198 | 269 | b400 | 504 | e720 | 565 | 1,930 | 4,370 | 3,430 | 4,850 | 2,720 | 545 |
| 6 | 226 | 275 | b350 | 545 | e740 | 673 | 1,800 | 4,510 | 3,380 | 4,930 | 2,310 | 575 |
| 7 | 232 | 281 | b320 | 601 | e740 | 667 | 1,680 | 4,600 | 3,310 | 4,860 | 2,150 | 578 |
| 8 | 226 | 272 | 323 | 1,090 | e740 | 667 | 1,160 | 4,400 | 3,570 | 4,670 | 1,940 | 1,040 |
| 9 | 229 | 294 | 341 | 1,700 | e740 | 709 | 1,370 | 3,980 | 3,680 | 4,350 | 1,690 | 971 |
| 10 | 224 | 306 | 382 | 1,360 | e740 | 780 | 1,250 | 3,860 | 4,200 | 4,060 | 1,300 | 751 |
| 11 | 232 | 313 | 435 | d1,100 | e700 | 822 | 1,170 | 4,030 | 4,760 | 3,680 | 1,080 | 812 |
| 12 | 234 | 1,190 | 431 | d850 | 590 | 822 | 1,160 | 3,740 | 5,020 | 3,050 | 943 | 742 |
| 13 | 234 | 1,490 | b350 | d740 | 540 | 843 | 1,520 | 3,960 | 4,350 | 3,220 | 787 | 686 |
| 14 | 236 | 1,540 | b300 | d680 | 545 | 829 | 1,230 | 3,990 | 4,600 | 3,250 | 715 | 690 |
| 15 | 239 | 1,620 | 327 | d650 | 613 | 794 | 1,330 | 4,250 | 4,460 | 3,370 | 709 | 650 |
| 16 | 234 | 1,680 | 374 | d630 | 637 | 794 | 1,330 | 4,230 | 4,550 | 3,380 | 631 | 594 |
| 17 | 239 | 1,730 | 410 | d610 | 619 | 829 | 1,120 | 4,030 | 5,190 | 3,250 | 776 | 545 |
| 18 | 239 | 1,720 | 398 | 601 | 637 | 829 | 1,250 | 4,110 | 5,980 | 2,930 | 795 | 598 |
| 19 | 242 | 1,190 | b410 | 625 | 667 | 836 | 1,500 | 4,180 | 5,270 | 2,710 | 808 | 638 |
| 20 | 247 | 673 | b410 | 625 | 643 | 822 | 2,670 | 4,530 | 5,330 | 2,280 | 756 | 708 |
| 21 | 244 | 514 | 435 | 625 | 655 | 815 | 2,790 | 4,910 | 5,270 | 1,380 | 681 | 1,240 |
| 22 | 239 | 443 | 435 | 649 | 673 | 794 | 3,120 | 5,120 | 5,360 | 1,530 | 699 | 727 |
| 23 | 239 | 427 | 439 | 595 | 722 | 836 | 3,620 | 5,160 | 5,400 | 1,410 | 764 | 776 |
| 24 | 234 | 410 | 456 | 580 | 691 | 871 | 4,060 | 5,000 | 5,350 | 1,010 | 655 | 1,040 |
| 25 | 232 | 414 | 496 | 643 | 1,040 | 951 | 4,210 | 4,800 | 5,440 | 864 | 609 | 1,080 |
| 26 | 247 | 418 | 504 | 575 | 741 | 906 | 4,250 | 4,420 | 5,330 | 857 | 556 | 1,190 |
| 27 | 258 | 418 | 509 | 522 | 722 | 864 | 3,870 | 3,840 | 4,870 | 1,430 | 511 | 1,160 |
| 28 | 264 | 418 | 522 | 527 | 801 | 864 | 3,540 | 3,760 | 4,490 | 2,020 | 483 | 1,160 |
| 29 | 255 | 410 | 679 | 580 | - | 958 | 3,240 | 3,810 | 4,260 | 1,620 | 528 | 1,120 |
| 30 | 261 | 378 | 550 | 613 | ------ | 1,120 | 3,090 | 3,260 | 3,740 | 1,420 | 549 | 1,140 |
| 31 | 258 | ------ | 496 | 649 | ------ | 1,160 | ------ | 3,120 | ------ | 1,940 | 502 | ------ |
| Total | 7,244 | 20,165 | 13,182 | 21,406 | 19,496 | 25,502 | 66,240 | 128,790 | 135,590 | 93,011 | 39,127 | 24,130 |
| Mean | 234 | 672 | 425 | 691 | 696 | 823 | 2,208 | 4,155 | 4,520 | 3,000 | 1,262 | 804 |
| Ac-ft | 14,370 | 40,000 | 26,150 | 42,460 | 38,670 | 50,580 | 131,400 | 255,500 | 268,900 | 184,500 | 77,600 | 47,860 |

Calendar year 1964: Max 2,010 Min 131 Mean 542 Ac-ft 393,800
Water year 1964-65: Max 5,980 Min 190 Mean 1,627 Ac-ft 1,178,000

Peak discharge (base, 5,200 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 5-12 | 2330 | 6.63 | 6,160 | 6-18 | 0300 | 7.37 | 7,660 |
| 5-23 | 1230 | 6.88 | 6,630 | | | | |

b Stage-discharge relation affected by ice.
d Doubtful gage-height record.
e Uncertain stage-discharge relation.

8-3133.5 Rito de los Frijoles in Bandelier National Monument, N. Mex.

Location.--Lat 47°29'08", long 106°16'50", in Bandelier National Monument, 2,000 ft southeast of Ceremonial Cave, 3,600 ft upstream from Monument headquarters, 6 miles south of Los Alamos and 19 miles northwest of Santa Fe.

Drainage area.--17.5 sq mi.

Records available.--July 1963 to September 1965.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 6,140 ft (from topographic map).

Extremes.--Maximum discharge during year, 19 cfs June 18 (gage height, 1.49 ft), from rating curve extended above 1.5 cfs on basis of theoretical rating; minimum discharge, 0.2 cfs Dec. 8.
1963-65: Maximum discharge, that of June 18, 1965; minimum, 0.1 cfs July 27, 1963, June 27, 1964.

Remarks.--Records fair except those for periods of ice effect or doubtful or no gage-height record, which are poor. Pipe line diversion upstream not presently in use.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

| Oct. 1 to June 10 | | June 11 to Sept. 30 | |
|---|---|---|---|
| 1.0 | 0.3 | 0.1 | 0.3 |
| 1.1 | .8 | .2 | .8 |
| 1.3 | 2.2 | .3 | 1.5 |
| 1.5 | 4.2 | .4 | 2.4 |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.6 | a 0.6 | 0.9 | 1.0 | 1.1 | 1.3 | 1.4 | 3.2 | 1.1 | 0.7 | a 1.5 | 0.7 |
| 2 | .6 | a .6 | .9 | d .9 | 1.0 | b .8 | 1.5 | 3.5 | 1.0 | .7 | a 1.7 | .8 |
| 3 | .6 | a .6 | 1.0 | d .7 | 1.0 | b .8 | 1.5 | 3.8 | 1.0 | .8 | a 1.6 | .8 |
| 4 | .6 | a .6 | .9 | d .8 | 1.0 | b .9 | 1.5 | 3.9 | .9 | .9 | a 1.5 | .6 |
| 5 | .7 | a .6 | .7 | d .9 | 1.0 | 1.3 | 1.5 | 3.8 | .9 | .7 | a 1.4 | .6 |
| 6 | .7 | a .6 | .8 | d 1.1 | 1.0 | 1.3 | 1.5 | 3.6 | .9 | .9 | a 1.3 | .8 |
| 7 | .7 | a .6 | .6 | d 1.3 | 1.0 | 1.3 | 1.5 | * 3.5 | .8 | 1.0 | a 1.2 | .8 |
| 8 | d .7 | a .6 | .5 | * 1.6 | 1.0 | 1.3 | 1.5 | 3.4 | * .8 | .8 | a 1.1 | .9 |
| 9 | d .7 | a .7 | .6 | 1.4 | .9 | 1.2 | 1.5 | 3.0 | .9 | * .8 | * 1.4 | .8 |
| 10 | d .7 | * .7 | .8 | 1.3 | b .8 | 1.3 | * 1.6 | 2.8 | 1.1 | .7 | 1.3 | .8 |
| 11 | d .7 | .6 | .9 | 1.3 | a .7 | 1.3 | 1.5 | 2.7 | 1.4 | .7 | 1.2 | 1.1 |
| 12 | d .7 | .6 | 1.0 | 1.3 | a .7 | 1.3 | 1.5 | 2.4 | 1.3 | .7 | 1.0 | 1.0 |
| 13 | * .7 | .7 | .7 | 1.2 | a .6 | 1.3 | 1.5 | 2.4 | 1.0 | .7 | .9 | * 1.1 |
| 14 | .6 | .6 | .6 | 1.1 | a .9 | 1.3 | 1.6 | * 2.1 | .8 | .9 | 1.7 | 1.1 |
| 15 | * .6 | .6 | .7 | 1.2 | * 1.2 | a 1.4 | 1.6 | 2.1 | * .9 | .9 | 1.9 | .9 |
| 16 | .6 | .7 | .8 | 1.1 | 1.1 | a 1.7 | 1.8 | 2.0 | .8 | .8 | * 1.4 | .9 |
| 17 | .6 | .6 | 1.0 | 1.1 | 1.2 | a 1.5 | 1.9 | 1.9 | .8 | .6 | 1.0 | .9 |
| 18 | a.6 | .7 | 1.1 | 1.1 | 1.1 | a 1.1 | 2.1 | 1.8 | 2.1 | .6 | a 1.3 | 1.2 |
| 19 | a.6 | .6 | a .9 | 1.1 | 1.1 | a .9 | 2.2 | 1.8 | 1.9 | *.6 | a 1.6 | 1.1 |
| 20 | a.6 | .5 | a 1.0 | 1.1 | 1.1 | a .9 | 2.3 | 1.8 | 1.2 | .6 | a 1.5 | 1.0 |
| 21 | a.6 | .6 | * 1.1 | 1.1 | 1.1 | a .9 | 2.5 | 1.7 | 1.0 | .5 | a 1.3 | .9 |
| 22 | a.6 | .6 | 1.1 | 1.1 | 1.1 | * 1.3 | 2.8 | 1.6 | *.9 | .5 | a 1.2 | .9 |
| 23 | a.6 | .6 | 1.1 | .9 | 1.0 | 1.3 | 2.9 | 1.7 | .8 | .5 | a 1.1 | .9 |
| 24 | a.6 | .4 | 1.1 | 1.1 | 1.1 | 1.4 | 3.1 | 1.5 | .9 | .6 | *.9 | .8 |
| 25 | a.6 | a .4 | 1.1 | 1.1 | 1.2 | 1.3 | 3.0 | 1.5 | 1.0 | .5 | .8 | .8 |
| 26 | a.6 | a .5 | 1.1 | .6 | 1.3 | 1.3 | 3.7 | 1.4 | .9 | .6 | .7 | .8 |
| 27 | a.6 | a .6 | 1.0 | .8 | 1.2 | 1.3 | 3.4 | 1.4 | .8 | *.6 | .7 | .8 |
| 28 | a.6 | a .7 | 1.1 | 1.0 | 1.3 | 1.5 | 3.2 | 1.3 | .7 | .6 | .7 | .8 |
| 29 | a.6 | a .8 | 1.1 | 1.2 | - | 1.3 | 3.1 | 1.3 | .7 | 1.2 | .8 | .8 |
| 30 | a.6 | * .8 | 1.0 | 1.2 | ------- | 1.4 | 3.0 | 1.3 | .6 | .8 | .8 | .7 |
| 31 | a.6 | ------- | 1.0 | 1.1 | ------- | 1.4 | ------- | *1.33 | ------- | 1.1 | * .8 | ------- |
| Total | 19.5 | 18.4 | 28.2 | 33.8 | 28.8 | 38.6 | 63.7 | 71.5 | 29.9 | 22.6 | 37.3 | 26.1 |
| Mean | 0.63 | 0.61 | 0.91 | 1.09 | 1.03 | 1.25 | 2.12 | 2.31 | 1.00 | 0.73 | 1.20 | 0.87 |
| Ac-ft | 39 | 36 | 56 | 67 | 57 | 77 | 126 | 142 | 59 | 45 | 74 | 52 |

Calendar year 1964: Max 1.5 Min 0.2 Mean 0.81 Ac-ft 586
Water year 1964-65: Max 3.9 Min 0.4 Mean 1.15 Ac-ft 830

Peak discharge (base, 4.0 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 4-26 | 1430 | 1.45 | 4.0 | 7-31 | 1615 | 0.97 | 9.6 |
| 6-18 | 1930 | 1.49 | 19 | 8-14 | 1845 | 0.70 | 5.5 |

* Discharge measurement made on this day.
a No gage-height record.
b Stage-discharge relation affected by ice.
d Doubtful gage-height record.

## 8-3145. Rio Grande at Cochiti, N. Mex.

Location.--Lat 35°37'10", long 106°19'20", in SE¼NE¼ sec.17, T.16 N., R.6 E., on downstream end of concrete pier near left end of highway bridge, 1½ miles northeast of Cochiti, 3¾ miles north of Pena Blanca, and 8 miles upstream from Galisteo Creek.

Drainage area.--14,600 sq mi, approximately (includes 2,940 sq mi in closed basin in San Luis Valley, Colo.).

Records available.--October 1924 to September 1965. Published as "near Cochiti" prior to 1928. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder (digital). Datum of gage is 5,224.70 ft above mean sea level, datum of 1929. Prior to July 16, 1925, staff gage 1 mile upstream at different datum. July 16, 1925, to Jan. 28, 1947, at or near right abutment of bridge at same datum. Jan. 28 to May 15, 1947, 600 ft upstream at same datum.

Average discharge.--41 years, 1,322 cfs (957,100 acre-ft per year).

Extremes.--Maximum discharge during year, 10,900 cfs June 18 (gage height, 8.30 ft ); minimum, 58 cfs Oct. 5.
1924-65: Maximum discharge, 23,400 cfs May 15, 1941 (gage height, 10.93 ft); minimum, 0.7 cfs Aug. 10-11, 1934.
The flood of May 23, 1920, probably exceeded 23,400 cfs, and is likely the highest since 1905.

Remarks.--Records good except those for periods of ice effect or indefinite stage-discharge relationship, which are poor. Discharge measurements generally made 2 to 3 times a month. Diversions above station for irrigation of about 700,000 acres, 6,000 of which are irrigated below by Cochiti eastside and Sili main canals which bypass station. Possible regulation by two reservoirs on Rio Chama.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 13-30, Nov. 20, Jan. 6, Apr. 1-8, 14-25, May 4, 5, 12, 24-27, 29, 30, June 2-4, 19-27, July 2-6).

| Oct. 1 to June 18 | | | | | | June 18 to Sept. 30 | | | |
|---|---|---|---|---|---|---|---|---|---|
| 3.1 | 63 | 3.8 | 350 | 5.3 | 2,360 | 3.4 | 275 | 5.0 | 2,120 |
| 3.2 | 90 | 4.3 | 770 | 5.7 | 3,160 | 3.7 | 495 | 5.5 | 2,920 |
| 3.5 | 195 | 4.9 | 1,620 | 6.1 | 4,150 | 4.0 | 770 | 6.0 | 4,020 |
| | | | | 6.5 | 5,350 | 4.5 | 1,440 | 7.0 | 7,000 |

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1964 TO SEPTEMBER 1965

| DAY | OCT. | NOV. | DEC. | JAN. | FEB. | MAR. | APR. | MAY | JUNE | JULY | AUG. | SEPT. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 114 | 270 | 392 | 524 | 651 | 750 | 1,180 | 2,850 | 2,550 | 3,990 | 2,450 | 343 |
| 2 | 96 | 275 | 392 | 532 | 684 | 789 | 1,710 | 3,310 | 3,430 | 4,870 | 2,820 | 376 |
| 3 | 119 | 265 | 406 | 532 | 737 | 725 | 1,760 | 3,700 | 4,390 | 4,510 | 3,690 | 721 |
| 4 | 204 | 265 | 436 | 460 | 740 | 606 | 1,780 | 3,990 | 4,150 | 4,900 | 3,700 | 546 |
| 5 | 124 | 260 | 428 | 524 | 735 | 470 | 1,800 | 4,300 | 3,250 | 4,810 | 2,620 | 542 |
| 6 | 74 | 250 | 364 | 589 | 714 | 564 | 1,670 | 4,360 | 3,360 | 4,840 | 2,050 | 456 |
| 7 | 96 | 260 | b340 | e600 | 727 | 574 | 1,600 | 4,480 | 3,290 | 4,900 | 1,800 | 430 |
| 8 | 99 | 260 | b320 | e1,000 | 719 | 555 | 1,140 | 4,390 | 3,360 | 4,810 | 1,710 | 926 |
| 9 | 99 | 280 | b310 | e1,650 | 713 | 572 | 1,140 | 4,040 | 3,500 | 4,390 | 1,470 | 800 |
| 10 | 137 | 302 | b350 | e1,450 | 714 | 643 | 1,200 | 3,620 | 4,020 | 3,920 | 1,150 | 636 |
| 11 | 231 | 308 | b380 | e1,150 | 670 | 710 | 1,040 | 3,880 | 4,570 | 3,670 | 900 | 671 |
| 12 | 162 | 713 | b420 | e850 | b620 | 730 | 964 | 3,520 | 5,060 | 2,900 | 766 | 781 |
| 13 | 105 | 1,350 | b400 | 750 | b550 | 720 | 1,450 | 4,390 | 4,490 | 2,760 | 660 | 611 |
| 14 | 105 | 1,590 | 326 | 680 | b530 | 730 | 1,230 | 3,880 | 4,580 | 2,910 | 698 | 520 |
| 15 | 117 | 1,620 | 302 | 652 | 566 | 720 | 1,200 | 4,210 | 4,370 | 3,070 | 685 | 535 |
| 16 | 120 | 1,710 | 344 | 634 | 606 | 710 | 1,220 | 4,330 | 4,300 | 3,170 | 591 | 469 |
| 17 | 153 | 1,760 | b370 | 652 | 619 | 710 | 1,040 | 3,910 | 5,110 | 3,220 | 645 | 422 |
| 18 | 250 | 1,760 | b380 | 643 | 612 | 720 | 1,170 | 3,800 | 6,780 | 3,030 | 543 | 492 |
| 19 | 182 | 1,300 | b390 | 634 | 649 | 710 | 1,260 | 3,910 | 5,320 | 2,720 | 717 | 621 |
| 20 | 134 | 855 | 392 | 625 | 629 | 710 | 2,080 | 4,240 | 5,350 | 2,290 | 608 | 588 |
| 21 | 130 | 580 | b400 | 625 | 635 | 700 | 2,550 | 4,600 | 5,260 | 1,500 | 592 | 946 |
| 22 | 120 | 460 | b440 | 634 | 651 | 680 | 2,850 | 4,900 | 5,290 | 1,340 | 673 | 695 |
| 23 | 124 | 420 | 428 | 634 | 686 | 690 | 3,340 | 5,270 | 5,290 | 1,280 | 691 | 566 |
| 24 | 149 | 399 | 436 | 607 | 684 | 730 | 4,040 | 4,900 | 5,140 | 1,020 | 517 | 819 |
| 25 | 240 | 392 | 468 | 634 | 904 | 792 | 4,360 | 4,270 | 5,350 | 874 | 460 | 921 |
| 26 | 185 | 406 | 500 | 598 | 809 | 825 | 4,390 | 3,850 | 5,260 | 767 | 429 | 1,050 |
| 27 | 124 | 413 | 516 | b550 | 679 | 814 | 3,780 | 3,620 | 4,900 | 1,020 | 399 | 1,050 |
| 28 | 127 | 420 | 516 | b520 | 734 | 792 | 3,290 | 3,620 | 4,450 | 1,770 | 418 | 1,000 |
| 29 | 130 | 428 | 580 | 574 | -- | 869 | 3,050 | 3,830 | 4,260 | 1,630 | 520 | 988 |
| 30 | 124 | 399 | 598 | 618 | -------- | 1,000 | 2,830 | 3,250 | 3,710 | 1,350 | 507 | 976 |
| 31 | 207 | -------- | 500 | 633 | -------- | 1,080 | -------- | 2,950 | -------- | 1,670 | 369 | -------- |
| TOTAL | 4,381 | 19,970 | 12,824 | 21,758 | 18,967 | 22,390 | 62,114 | 124,170 | 134,140 | 89,901 | 35,848 | 20,497 |
| MEAN | 141 | 666 | 414 | 702 | 677 | 722 | 2,070 | 4,005 | 4,471 | 2,900 | 1,156 | 683 |
| AC-FT | 8,690 | 39,610 | 25,440 | 43,160 | 37,620 | 44,410 | 123,200 | 246,300 | 266,100 | 178,300 | 71,100 | 40,660 |
| (†) | 5,850 | 0 | 0 | 0 | 0 | 6,540 | 6,250 | 6,060 | 6,210 | 7,320 | 6,240 | 5,870 |

CALENDAR YEAR 1964 MAX 2,130 MIN 22 MEAN 479 AC-FT 348,000
WATER YEAR 1964-65 MAX 6,780 MIN 74 MEAN 1,553 AC-FT 1,125,000

Peak discharge (base, 4,500 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 5-13 | 0230 | 7.25 | 7,570 | 6-18 | 2000 | 8.30 | 10,900 |
| 5-23 | 1550 | 7.00 | 6,460 | 7-2 | 2200 | 6.61 | 5,230 |
| 6-12 | 1200 | 6.50 | 5,230 | 8-1 | 0200 | 6.44 | 5,320 |

† Combined monthly diversion, in acre-ft, of Sili main and Cochiti eastside canals; records of this flow are furnished by Bureau of Reclamation.
b Stage-discharge relation affected by ice.
e Stage-discharge relation indefinite.

8-3155. McClure Reservoir near Santa Fe, N. Mex.

Location.--Lat 35°41'20", long 105°50'10", in NE¼SW¼ sec.24, T.17 N., R.10 E., on outlet tower at McClure Dam on Santa Fe River, 2½ miles upstream from Nichols Reservoir, and 6 miles east of Santa Fe.

Drainage area.--17.4 sq mi.

Records available.--September 1929, July to October 1930, April 1931 to June 1946, September 1947 to September 1965 (see WSP 1312, 1732).

Gage.--Water-stage recorder. Datum of gage is 7,768.12 ft above mean sea level, datum of 1929. Prior to October 1, 1947, staff gages at same site and various datums all referred to the Public Service Company of New Mexico assumed datum 165.9 ft lower.

Extremes.--Maximum contents at 2400 during year, 3,110 acre-ft Sept. 28-30 (gage height, 103.3 ft); minimum, 1,520 acre-ft Dec. 14 to Jan. 17 (gage height, 79.4 ft).
1947-65: Maximum contents, 3,140 acre-ft June 25, 1960 (gage height, 103.7 ft); no contents January 25 to May 8, 1951.

Remarks.--Reservoir is formed by earth-fill dam, completed in 1926 (capacity, 503 acre-ft), raised 5 ft in 1935 (capacity 650 acre-ft), and raised 36.5 ft more in 1947. Capacities and changes in height of dam are for effective height of spillway which includes 1 ft of flash boards above concrete crest 1926 to July 1935, 2 ft August 1935 to September 1947, and varying heights of sand bag bulk heads from October 1947 to May 1953 when spillway was equipped with radial gates which open automatically at gage height about 103.1 ft (some adjustment possible). Capacity 3,090 acre-ft between gage heights -0.2 ft (bottom of lowest outlet tube) and 103.1 ft. No dead storage. Figures given herein represent contents at 2400. Water is for municipal use of city of Santa Fe.

Cooperation.--Capacity table and supplementary stage readings furnished by Public Service Co. of New Mexico.

Month-end gage heights and contents, water year October 1964 to September 1965

| Date | Gage height (feet) | Contents (acre-feet) | Change in contents (acre-feet) |
|---|---|---|---|
| Sept. 30 | 80.4 | 1,580 | - |
| Oct. 31 | 79.9 | 1,550 | - 30 |
| Nov. 30 | 79.6 | 1,530 | - 20 |
| Dec. 31 | 79.4 | 1,520 | - 10 |
| Calendar year 1964 | - | - | - 50 |
| Jan. 31 | 79.9 | 1,550 | + 30 |
| Feb. 28 | 79.8 | 1,540 | - 10 |
| Mar. 31 | 81.5 | 1,640 | + 100 |
| Apr. 30 | 88.8 | 2,080 | + 440 |
| May 31 | 99.8 | 2,850 | + 770 |
| June 30 | 103.0 | 3,090 | + 240 |
| July 31 | 102.4 | 3,040 | - 50 |
| Aug. 31 | 102.3 | 3,030 | - 10 |
| Sept. 30 | 103.3 | 3,110 | + 80 |
| Water year 1964-65 | - | - | + 1,530 |

8-3160. Santa Fe River near Santa Fe, N. Mex.

Location.Lat 35°41'10", long 105°50'35", in NE¼SE¼ sec.23, T.17 N., R.10 E., on left bank 0.4 mile downstream from McClure Dam and 5½ miles east of Santa Fe.

Drainage area.--18.2 sq mi.

Records available.--January 1913 to September 1965. Monthly discharge only for some periods, published in WSP 1312. Prior to October 1953, published as Santa Fe Creek near Santa Fe.

Gage.--Water-stage recorder and concrete control. Datum of gage is 7,718 ft above mean sea level, datum of 1929. Prior to Nov. 4, 1930, at site 1.5 miles downstream and Apr. 11, 1931, to September 1947 at site 0.3 mile upstream, each at different datum.

Average discharge.--52 years, 8.24 cfs (5,970 acre-ft per year).

Extremes.--Maximum discharge during year, 218 cfs June 14 (gage height, 3.58 ft); minimum daily, 1.3 cfs Nov. 9-16.
1913-65: Maximum discharge, 1,500 cfs Aug. 14, 1921 (gage height, 5.17 ft, site and datum then in use), from rating curve extended above 150 cfs by logarithmic plotting; minimum daily, 0.1 cfs Feb. 7-10, 20, 1927, Aug. 1-4, 1951.
Peaks which probably exceeded 1,000 cfs occurred Aug. 19, 1872, and Sept. 29 or 30, 1904. Without regulation the flood of Sept. 23, 1929, might have exceeded 1,500 cfs.

Remarks.--Records good. Flow regulated by McClure Reservoir (see 8-3155), completed in 1926, raised in 1935, and again in 1947.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

| | | | | | |
|---|---|---|---|---|---|
| 1.5 | 1.0 | 1.8 | 5.6 | 2.5 | 43 |
| 1.6 | 1.9 | 2.0 | 12 | 2.8 | 75 |
| 1.7 | 3.4 | 2.2 | 21 | | |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.4 | 1.4 | *1.4 | 1.6 | 2.5 | 2.1 | 2.2 | 15 | 4.1 | 10 | 9.8 | 10 |
| 2 | 1.4 | *1.4 | 1.4 | 1.6 | 2.5 | 1.9 | 2.2 | 15 | 5.2 | 11 | 9.8 | *11 |
| 3 | *1.4 | 1.4 | 1.4 | 1.6 | *2.4 | *1.9 | 2.4 | 15 | 6.2 | 12 | 11 | 11 |
| 4 | 1.5 | 1.4 | 1.4 | 1.6 | 2.4 | 1.9 | 2.2 | 15 | 6.7 | 14 | 17 | 11 |
| 5 | 1.5 | 1.4 | 1.4 | *1.6 | 2.4 | 1.9 | 2.2 | *15 | 7.6 | 10 | 17 | 10 |
| 6 | 1.5 | 1.4 | 1.4 | 1.6 | 2.4 | 1.9 | 2.2 | 15 | 8.1 | 7.0 | 17 | 10 |
| 7 | 1.4 | 1.4 | 1.4 | 1.6 | 2.4 | 1.9 | 2.2 | 15 | *19 | *7.3 | 17 | 5.2 |
| 8 | 1.4 | 1.4 | 1.4 | 1.6 | 2.4 | 1.9 | 2.1 | 15 | 28 | 7.3 | 17 | 2.1 |
| 9 | 1.4 | 1.3 | 1.5 | 1.6 | 2.4 | 1.9 | 2.1 | 15 | 23 | 7.0 | 17 | 9.6 |
| 10 | 1.4 | 1.3 | 1.5 | 1.5 | 2.4 | 1.9 | 2.1 | 15 | 18 | 7.0 | 17 | 17 |
| 11 | 1.4 | 1.3 | 1.6 | 1.5 | 2.4 | 1.9 | 2.1 | 15 | 19 | 6.7 | 17 | 19 |
| 12 | 1.4 | 1.3 | 1.6 | 1.5 | 2.4 | 1.9 | 2.1 | 16 | 19 | 6.7 | 10 | 21 |
| 13 | 1.4 | 1.3 | 1.6 | 1.4 | 2.2 | 1.9 | 2.1 | 16 | 19 | 6.4 | 10 | 21 |
| 14 | 1.4 | 1.3 | 1.6 | 1.4 | 2.2 | 1.9 | 2.1 | 16 | 20 | 6.4 | 10 | 15 |
| 15 | 1.4 | 1.3 | 1.6 | 1.6 | 2.2 | 2.1 | 3.7 | 16 | 27 | 6.4 | 10 | *11 |
| 16 | 1.4 | 1.3 | 1.6 | 1.6 | 2.2 | 2.1 | *5.2 | 17 | 24 | 6.4 | 10 | 11 |
| 17 | 1.4 | 1.4 | 1.6 | 1.6 | 2.1 | 2.1 | 5.4 | 17 | 24 | 6.2 | 10 | 10 |
| 18 | 1.4 | 1.4 | 1.7 | 1.6 | 2.1 | 2.1 | 5.4 | 17 | 37 | 5.9 | 11 | 10 |
| 19 | 1.4 | 1.4 | 1.7 | 1.7 | 2.1 | 2.1 | 5.6 | 18 | 68 | 5.9 | 14 | 11 |
| 20 | 1.4 | 1.4 | 1.7 | 1.8 | 2.1 | 2.1 | 5.9 | 18 | *56 | 5.9 | 14 | 11 |
| 21 | 1.4 | 1.4 | 1.8 | 1.9 | 2.1 | 2.1 | 7.8 | 18 | *24 | 5.9 | 14 | 11 |
| 22 | 1.4 | 1.4 | 1.8 | 1.9 | 2.1 | 2.1 | 10 | 18 | 13 | 5.9 | 16 | 10 |
| 23 | 1.4 | 1.4 | 1.8 | 1.9 | 2.1 | 2.1 | 12 | 18 | 32 | 5.9 | 16 | 7.9 |
| 24 | 1.4 | 1.4 | 1.7 | 2.1 | 2.1 | 2.1 | 14 | 18 | 27 | 5.9 | 16 | 4.9 |
| 25 | 1.4 | 1.4 | 1.7 | 2.2 | 2.1 | 2.1 | 14 | 18 | 23 | 5.9 | 16 | 4.9 |
| 26 | 1.4 | 1.4 | 1.7 | 2.2 | 2.1 | 2.1 | 14 | 3.5 | 16 | 5.9 | 16 | 4.7 |
| 27 | 1.4 | 1.4 | 1.7 | 2.2 | 2.1 | *2.1 | 14 | 4.0 | 12 | 5.9 | 16 | 4.7 |
| 28 | 1.4 | 1.4 | 1.7 | 2.2 | 2.1 | 2.2 | 14 | 3.4 | 17 | 7.1 | 16 | 4.7 |
| 29 | 1.4 | 1.4 | 1.6 | 2.4 | - | 2.2 | 14 | 3.4 | 12 | 10 | 16 | 4.7 |
| 30 | 1.4 | 1.4 | 1.6 | 2.5 | ---------- | 2.1 | 15 | 3.4 | 10 | *9.8 | 16 | 4.7 |
| 31 | 1.4 | ---------- | 1.6 | 2.5 | ---------- | 2.1 | ---------- | 3.6 | ---------- | 9.8 | 13 | ---------- |
| Total | 43.7 | 41.2 | 49.2 | 55.6 | 63.0 | 62.7 | 190.3 | 427.3 | 624.9 | 233.5 | 436.6 | 299.1 |
| Mean | 1.41 | 1.37 | 1.59 | 1.79 | 2.25 | 2.02 | 6.34 | 13.8 | 20.8 | 7.53 | 14.1 | 9.97 |
| Ac-ft | 87 | 82 | 98 | 110 | 125 | 124 | 377 | 848 | 1,240 | 463 | 866 | 593 |

Calendar year1964 : Max 12 Min 0.7 Mean 3.45 Ac-ft 2,500
Water year1964-65 : Max 68 Min 1.3 Mean 6.92 Ac-ft 5,010

* Discharge measurement made on this day.

8-3165. Nichols Reservoir near Santa Fe, N. Mex.

Location.--Lat 35°41'20", long 105°52'40", in E½NE¼ sec.21, T.17 N., R.10 E., on outlet tower at dam on Santa Fe River, three quarters of a mile upstream from Two Mile Reservoir, 2½ miles downstream from McClure Dam, and 3½ miles east of Santa Fe.

Drainage area.--22.8 sq mi.

Records available.--December 1942 to September 1965.

Gage.--Water-stage recorder. Datum of gage is 7,313.2 ft above mean sea level, datum of 1929.

Extremes.--Maximum contents at 2400 during year, 713 acre-ft June 19 (gage height, 167.9 ft); minimum, 220 acre-ft Apr. 23 (gage height, 146.2 ft).
1943-65: Maximum contents, 836 acre-ft June 8, 1952 (gage height, 171.8 ft); minimum, 16 acre-ft Feb. 11 to Mar. 10, 1944, Feb. 1-19, 1948.

Remarks.--Reservoir is formed by earth-fill dam. No storage prior to Mar. 16, 1943. Capacity, 796 acre-ft between gage heights 121.2 ft (bottom of lower operational gate) and 171.0 ft (top of flashboards in spillway). Dead storage, 14 acre-ft. Figures given herein represent total contents at 12 p.m. Water is for municipal use of city of Santa Fe.

Cooperation.--Capacity table computed from survey furnished in 1943 by Public Service Co. of New Mexico.

Month-end gage heights and contents, water year October 1964 to September 1965

| Date | Gage height (feet) | Contents (acre-feet) | Change in contents (acre-feet) |
|---|---|---|---|
| Sept. 30 | 160.2 | 496 | - |
| Oct. 31 | 155.0 | 375 | - 121 |
| Nov. 30 | 155.2 | 380 | + 5 |
| Dec. 31 | 159.1 | 470 | + 90 |
| Calendar year 1964 | - | - | + 35 |
| Jan. 31 | 160.6 | 507 | + 37 |
| Feb. 28 | 157.3 | 428 | - 79 |
| Mar. 31 | 153.3 | 342 | - 86 |
| Apr. 30 | 148.1 | 250 | - 92 |
| May 31 | 159.9 | 489 | + 239 |
| June 30 | 167.3 | 695 | + 206 |
| July 31 | 157.9 | 442 | - 253 |
| Aug. 31 | 165.6 | 643 | + 201 |
| Sept. 30 | 165.7 | 646 | + 3 |
| Water year 1964-65 | - | - | + 150 |

## 8-3180. Galisteo Creek at Domingo, N. Mex.

Location.--Lat 35°30'45", long 106°19'00", in SW¼ sec.21, T.15 N., R.6 E., in Santo Domingo Pueblo Grant, 160 ft downstream from highway bridge, 0.3 mile northeast of Domingo, 2¾ miles east of Santo Domingo Pueblo, and 4 miles upstream from mouth.

Drainage area.--640 sq mi, approximately.

Records available.--October 1941 to September 1965.

Gage.--Water-stage recorder. Datum of gage is 5,255.50 ft above mean sea level, datum of 1929 (levels by Corps of Engineers). Prior to July 20, 1956, at site 160 ft upstream at same datum.

Average discharge.--24 years, 9.87 cfs (7,150 acre-ft per year).

Extremes.--Maximum discharge during year, 6,150 cfs June 19 (gage height, 5.25 ft); no flow on many days.
1941-65: Maximum discharge, 19,600 cfs Sept. 25, 1955 (gage height, 12.1 ft, from floodmark), from rating curve extended above 11,000 cfs on basis of slope-area measurement of peak flow; no flow at times.
The floods of Sept. 23, 1929, and Aug. 20, 1935, probably exceeded 20,000 cfs. Discharge for the flood of Aug. 20, 1935, was estimated as 24,300 cfs by H. W. Yeo.

Remarks.--Records fair except those below 50 cfs, which are poor. Discharge measurements or observations of no flow generally made twice a month. Diversions for irrigation of about 50 acres above station. Records of suspended sediment loads and water temperatures for the water year 1965 are published in part 2 of this report.

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 0 | 0 | a 0.1 | 0 | 0 | | 0 | 0 | 0 | 159 | 0 |
| 2 | | 0 | .4 | 0 | 0 | .2 | | 0 | 0 | 6.9 | 97 | 1.0 |
| 3 | | 0 | .2 | 0 | 0 | .1 | | 0 | 0 | .1 | 4.8 | .8 |
| 4 | | 0 | 0 | .1 | 0 | .3 | | 0 | 0 | 18 | 0 | .1 |
| 5 | | 0 | 0 | 0 | 0 | .1 | | 0 | 0 | .3 | 0 | 0 |
| 6 | | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 1.5 | 0 | 188 |
| 7 | | 0 | .2 | 0 | 0 | 0 | | 0 | 0 | 67 | 0 | 184 |
| 8 | | 0 | .4 | .1 | 0 | 0 | | 0 | 0 | 4.1 | 0 | 721 |
| 9 | | 0 | .4 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 54 |
| 10 | | 0 | .4 | 0 | 0 | 0 | | 0 | 0 | 0 | 8.1 | 3.5 |
| 11 | | 0 | .4 | 0 | 0 | 0 | | 0 | .5 | 78 | .2 | 22 |
| 12 | | 0 | .1 | 0 | .4 | 0 | | .6 | 0 | 7.0 | 1.0 | 3.5 |
| 13 | | 0 | .3 | 0 | .2 | 0 | | 164 | 0 | 112 | .2 | .5 |
| 14 | | 0 | .4 | 0 | .4 | 0 | | 2.1 | 0 | 4.4 | 6.2 | .3 |
| 15 | | 0 | a .3 | 0 | 0 | 0 | | .5 | 0 | 115 | .2 | .2 |
| 16 | | 0 | a .4 | 0 | .2 | 0 | | 6.7 | 0 | 3.0 | 0 | .1 |
| 17 | | 0 | a .2 | 0 | .1 | 0 | | 1.4 | 0 | 4.6 | 15 | 0 |
| 18 | | .3 | a .1 | 0 | 0 | 0 | | .4 | 548 | .4 | 45 | .2 |
| 19 | | .1 | a .1 | 0 | 0 | 0 | | .9 | 1,110 | .1 | 1.2 | .1 |
| 20 | | .1 | a .2 | 0 | 0 | 0 | | .5 | 3.5 | 0 | 14 | .1 |
| 21 | | 0 | a .2 | 0 | 0 | 0 | | .3 | .2 | 2.1 | 4.0 | 0 |
| 22 | | .1 | a .2 | 0 | 0 | 0 | | 0 | 0 | .2 | 211 | 0 |
| 23 | | .1 | a .2 | 0 | 0 | 0 | | .3 | 0 | .1 | 3.5 | 0 |
| 24 | | .1 | a .2 | 0 | 0 | 0 | | 0 | .1 | 1.3 | .6 | 0 |
| 25 | | 0 | a .1 | 0 | 0 | 0 | | 0 | 222 | 3.7 | .2 | 0 |
| 26 | | 0 | 0 | 0 | 0 | 0 | | 0 | 54 | .3 | 0 | 0 |
| 27 | | 0 | 0 | .1 | 0 | 0 | | 0 | a 2 | 9.8 | 0 | 0 |
| 28 | | 0 | 0 | .3 | 0 | 0 | | 0 | a .5 | 11 | 0 | 0 |
| 29 | | 0 | 0 | .1 | | 0 | | 0 | a .1 | 17 | .5 | 0 |
| 30 | | 0 | a .1 | 0 | ---------- | 0 | | 134 | 0 | .5 | 0 | 0 |
| 31 | | ---------- | a .2 | 0 | ---------- | 0 | ---------- | .2 | ---------- | 364 | 0 | ---------- |
| Total | 0 | 0.8 | 5.7 | 0.8 | 1.3 | 0.7 | 0 | 311.9 | 1,940.9 | 832.4 | 571.7 | 1,179.4 |
| Mean | 0 | 0.03 | 0.18 | 0.03 | 0.05 | 0.02 | 0 | 10.1 | 64.7 | 26.9 | 18.4 | 39.3 |
| Ac-ft | 0 | 1.6 | 11 | 1.6 | 2.6 | 1.4 | 0 | 619 | 3,850 | 1,650 | 1,130 | 2,340 |

Calendar year 1964: Max 249 Min 0 Mean 3.54 Ac-ft 2,570
Water year 1964-65: Max 1,110 Min 0 Mean 13.3 Ac-ft 9,610

Peak discharge (base, 3,000 cfs).--June 19 (0140) 6,150 cfs (5.25 ft).

a No gage-height record.

## 8-3190. Rio Grande at San Felipe, N. Mex.

Location.--Lat 35°26'40", long 106°26'20", in SW¼NW¼ sec.17, T.14 N., R.5 E., in San Felipe Grant, on right bank 200 ft downstream from Tonque Arroyo, 1,800 ft upstream from steel highway bridge, three-quarters of a mile upstream from San Felipe Pueblo, and 11 miles northeast of Bernalillo.

Drainage area.--16,100 sq mi, approximately (includes 2,940 sq mi in closed basin in San Luis Valley, Colo.).

Records available.--October 1925 to September 1965. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Datum of gage is 5,115.73 ft above mean sea level, datum of 1929, adjustment of 1951. Prior to Sept. 27, 1957, at site 1,800 ft downstream at datum 5.35 ft lower, except period May 16, 1945 to Sept. 30, 1946 when it was 5.94 ft lower than present datum.

Average discharge.--40 years, 1,407 cfs (1,019,000 acre-ft per year).

Extremes.--Maximum discharge during year, 10,900 cfs June 18 (gage height, 6.73 ft); minimum, 123 cfs Oct. 6.
1927-65: Maximum discharge, 27,300 cfs June 26, 1937 (gage height, 11.13 ft, site and datum then in use), from rating curve extended above 15,000 cfs by logarithmic plotting; minimum, 32 cfs July 7, 1934.
Other major floods occurred in 1874, 1884 and 1904.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Discharge measurements generally made 2 to 4 times a month. Diversions for irrigation of about 705,000 acres above station, some of which are irrigated below by Cochiti eastside main canal and San Felipe eastside acequia, which bypass station. Possible regulation by two reservoirs on Rio Chama.

Rating tables (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Apr. 28 to May 2, May 12-21, May 31 to June 10, June 17, 22-27, July 20-24, Sept. 12)

| Oct. 1 to June 17 | | | | June 18 to Sept. 30 | | | |
|---|---|---|---|---|---|---|---|
| 2.9 | 130 | 4.4 | 1,850 | 2.6 | 340 | 4.5 | 3,300 |
| 3.1 | 230 | 5.0 | 3,400 | 3.0 | 600 | 5.0 | 4,800 |
| 3.4 | 455 | 5.6 | 6,000 | 3.5 | 1,160 | 6.0 | 8,000 |
| 3.8 | 900 | | | 4.0 | 2,100 | | |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 186 | 282 | 370 | 531 | 670 | 809 | 1,200 | 2,800 | 2,520 | 3,870 | 2,520 | 380 |
| 2 | 175 | 282 | 396 | 580 | 700 | 848 | 1,570 | 3,160 | 3,160 | 4,950 | 2,560 | 426 |
| 3 | 162 | 288 | 412 | 531 | 730 | 822 | 1,740 | 3,600 | 4,280 | 4,650 | 3,200 | 677 |
| 4 | 214 | 288 | 421 | 464 | 750 | 686 | 1,800 | 3,960 | 4,200 | 5,070 | 3,420 | 544 |
| 5 | 202 | 295 | 430 | 464 | 750 | 522 | 1,830 | 4,200 | 3,190 | 4,980 | 2,750 | 506 |
| 6 | 144 | 295 | 404 | 540 | 740 | 600 | 1,740 | 4,320 | 3,100 | 4,980 | 2,140 | 500 |
| 7 | 170 | 302 | 355 | 650 | 730 | 650 | 1,620 | 4,600 | 2,950 | 4,980 | 1,820 | 625 |
| 8 | 192 | 302 | 325 | 900 | 730 | 620 | 1,370 | 4,600 | 3,100 | 4,890 | 1,740 | 1,490 |
| 9 | 180 | 302 | 310 | 1,700 | 720 | 640 | 1,190 | 4,240 | 3,220 | 4,590 | 1,420 | 1,060 |
| 10 | 180 | 325 | 348 | 1,500 | 720 | 686 | 1,340 | 3,800 | 3,680 | 4,230 | 1,190 | 900 |
| 11 | 236 | 332 | 378 | 1,100 | 710 | 783 | 1,130 | 4,040 | 4,360 | 4,020 | 1,090 | 750 |
| 12 | 219 | 597 | 430 | 900 | 650 | 809 | 1,040 | 3,680 | 4,920 | 3,200 | 900 | 856 |
| 13 | 170 | 1,300 | 404 | 800 | 560 | 770 | 1,330 | 4,730 | 4,440 | 3,000 | 750 | 700 |
| 14 | 170 | 1,470 | 348 | 700 | 531 | 770 | 1,420 | 4,000 | 4,240 | 3,120 | 700 | 600 |
| 15 | 170 | 1,520 | 310 | 650 | 570 | 758 | 1,300 | 4,040 | 4,240 | 3,250 | 700 | 618 |
| 16 | 170 | 1,570 | 325 | 650 | 600 | 746 | 1,390 | 4,200 | 4,160 | 3,180 | 654 | 520 |
| 17 | 170 | 1,600 | 378 | 650 | 600 | 746 | 1,250 | 3,920 | 4,800 | 3,200 | 672 | 464 |
| 18 | 256 | 1,710 | 387 | 640 | 590 | 770 | 1,250 | 3,680 | 6,780 | 2,980 | 681 | 450 |
| 19 | 219 | 1,380 | 396 | 630 | 630 | 746 | 1,370 | 3,720 | 7,290 | 2,680 | 760 | 584 |
| 20 | 175 | 938 | 404 | 630 | 650 | 734 | 2,020 | 4,040 | 5,460 | 2,390 | 700 | 568 |
| 21 | 180 | 600 | 404 | 630 | 662 | 722 | 2,580 | 4,440 | 5,220 | 1,800 | 645 | 807 |
| 22 | 175 | 474 | 430 | 630 | 674 | 734 | 2,650 | 4,720 | 5,160 | 1,470 | 770 | 915 |
| 23 | 166 | 430 | 438 | 630 | 722 | 722 | 3,130 | 4,880 | 5,190 | 1,510 | 690 | 645 |
| 24 | 166 | 421 | 438 | 600 | 770 | 796 | 4,080 | 5,150 | 4,980 | 1,160 | 627 | 834 |
| 25 | 236 | 412 | 474 | 600 | 876 | 822 | 4,520 | 4,600 | 5,250 | 936 | 520 | 972 |
| 26 | 210 | 412 | 493 | 580 | 956 | 861 | 4,200 | 4,200 | 5,190 | 960 | 450 | 1,060 |
| 27 | 190 | 412 | 502 | 550 | 722 | 861 | 3,800 | 3,600 | 4,890 | 996 | 430 | 1,080 |
| 28 | 190 | 396 | 522 | 530 | 758 | 796 | 3,560 | 3,480 | 4,350 | 1,660 | 450 | 1,050 |
| 29 | 200 | 404 | 550 | 550 | -- | 848 | 3,220 | 3,720 | 4,080 | 1,720 | 520 | 1,060 |
| 30 | 197 | 396 | 662 | 600 | ---------- | 984 | 2,860 | 3,340 | 3,750 | 1,420 | 520 | 1,020 |
| 31 | 230 | ---------- | 550 | 630 | ---------- | 1,030 | ---------- | 2,950 | ---------- | 1,820 | 450 | ---------- |
| Total | 5,900 | 19,735 | 12,994 | 21,740 | 19,471 | 23,691 | 63,500 | 124,410 | 132,150 | 93,662 | 36,439 | 22,661 |
| Mean | 190 | 658 | 419 | 701 | 695 | 764 | 2,117 | 4,013 | 4,405 | 3,021 | 1,175 | 755 |
| Ac-ft | 11,700 | 39,140 | 25,770 | 43,120 | 38,620 | 46,990 | 126,000 | 246,800 | 262,100 | 185,800 | 72,280 | 44,950 |
| (†) | 1,640 | 0 | 0 | 0 | 0 | 2,250 | 1,540 | 1,480 | 1,660 | 1,740 | 1,450 | 1,340 |

Calendar year 1964: Max 2,010 Min 80 Mean 516 Ac-ft 374,900
Water year 1964-65: Max 7,290 Min 144 Mean 1,579 Ac-ft 1,143,000

Peak discharge (base, 5,000 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 4-24 | 2400 | 5.40 | 5,000 | 6-12 | 2300 | 5.33 | 5,050 |
| 5-13 | 0630 | 6.02 | 8,440 | 6-18 | 2200 | 6.73 | 10,900 |
| 5-23 | 2000 | 5.54 | 6,000 | 7-2 | 2330 | 5.20 | 5,400 |

† Monthly diversion, in acre-ft, of Cochiti eastside canal; record of this flow is furnished by Bureau of Reclamation.

Note.--No gage-height record Oct. 26-29, Jan. 7 to Feb. 10, Aug. 12-15, 25-31, Sept. 10, 11, 13, 14.

8-3215. Jemez River below East Fork, near Jemez Springs, N. Mex.

Location.--Lat 35°49'39", long 106°38'51", in NW¼ sec.5, T.18 N., R.3 E., on left bank 0.4 mile downstream from East Fork and boundary of Santa Fe National Forest and 5.3 miles northeast of Jemez Springs.

Drainage area.--173 sq mi.

Records available.--July 1949 to October 1950 (gaged separately above East Fork), May 1951 to September 1957 (irrigation seasons only), March 1958 to September 1965. Records for 1949-50 published as "near Jemez Springs" and "East Fork Jemez River near Jemez Springs".

Gage.--Water-stage recorder. Datum of gage is 6,702.7 ft above mean sea level (planetable survey). Prior to May 1951, at sites 3,000 ft upstream, at different datums and on separate channels.

Average discharge.--8 years (1949-50, 1958-65), 25.5 cfs (18,460 acre-ft per year).

Extremes.--Maximum discharge during year, 496 cfs Apr. 17 (gage height, 3.20 ft); minimum, 3.9 cfs Nov. 28.
1949-50, 1951-65: Maximum discharge recorded, 2,520 cfs Apr. 21, 1958 (gage height, 7.35 ft), from rating curve extended above 1,100 cfs on basis of slope-area and contracted-opening measurements of peak flow; minimum, 3.2 cfs Dec. 3, 1964.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Discharge measurements generally made 2 to 3 times a month. No diversion above station. Records of chemical analyses and water temperatures for the water year 1965 are published in part 2 of this report.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

| | | | |
|---|---|---|---|
| 0.9 | 6.0 | 1.5 | 56 |
| 1.0 | 10 | 2.0 | 140 |
| 1.2 | 23 | 2.8 | 340 |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 10 | 11 | 12 | 10 | 14 | 14 | 51 | 66 | 20 | 15 | 41 | 12 |
| 2 | 10 | 12 | 13 | b 9 | 13 | b 14 | 56 | 62 | 18 | 14 | 44 | 12 |
| 3 | 9.5 | 12 | 14 | b 9 | 13 | b 14 | 70 | 58 | a 16 | 13 | 30 | 12 |
| 4 | 9.5 | 12 | 10 | b 10 | 13 | b 12 | 77 | 58 | a 16 | 13 | 22 | 11 |
| 5 | 10 | 12 | b 10 | 10 | 14 | b 14 | 66 | 53 | a 16 | 10 | 15 | 12 |
| 6 | 10 | 12 | b 10 | 13 | 14 | b 14 | 58 | 48 | a 16 | 10 | 14 | 13 |
| 7 | 10 | 12 | b 10 | 17 | 15 | 15 | 74 | 42 | a 14 | 11 | 13 | 13 |
| 8 | 10 | 11 | b 10 | 17 | 15 | 15 | 70 | 36 | a 14 | 12 | 13 | 16 |
| 9 | 9.5 | 12 | b 10 | 14 | 14 | 15 | 110 | 35 | a 14 | 10 | 13 | 17 |
| 10 | 9.5 | 13 | b 10 | 13 | 12 | 15 | 96 | 34 | a 20 | 10 | 13 | 14 |
| 11 | 9.5 | 13 | b 12 | 13 | 13 | 16 | 55 | 30 | a 20 | 9.5 | 13 | 13 |
| 12 | 9.5 | 9.5 | 13 | 13 | b 10 | 16 | 71 | 31 | a 20 | 9.5 | 12 | 14 |
| 13 | 9.5 | 10 | b 12 | 12 | b 10 | 15 | 110 | 48 | a 20 | 10 | 12 | 14 |
| 14 | 9.5 | 13 | b 10 | 12 | b 12 | 14 | 160 | 62 | a 16 | 15 | 13 | 13 |
| 15 | 9.5 | 14 | b 8 | 11 | 15 | 14 | 195 | 48 | a 14 | 20 | 14 | 12 |
| 16 | 9.1 | 15 | b 8 | 11 | b 12 | 16 | 296 | 40 | a 14 | 15 | 15 | 11 |
| 17 | 9.5 | 15 | 9.1 | 12 | 14 | 13 | 318 | 34 | 13 | 14 | 14 | 13 |
| 18 | 10 | 15 | 9.1 | 12 | 14 | 13 | 267 | 30 | 15 | 12 | 14 | 16 |
| 19 | 10 | 11 | 10 | 12 | 15 | 14 | 181 | 29 | 24 | 10 | 15 | 17 |
| 20 | 9.5 | b 10 | 10 | 13 | 15 | 15 | 156 | 28 | 20 | 9.5 | 15 | 20 |
| 21 | 9.5 | 10 | 11 | 13 | 15 | 14 | 117 | 26 | 15 | 10 | 13 | 20 |
| 22 | 9.5 | 11 | 10 | 13 | 15 | 15 | 100 | 24 | 14 | 9.5 | 14 | 15 |
| 23 | 9.5 | 10 | 10 | b 12 | b 14 | 17 | 86 | 23 | 14 | 9.1 | 13 | 14 |
| 24 | 10 | 10 | 13 | 12 | b 12 | 17 | 77 | 22 | 16 | 10 | 12 | 13 |
| 25 | 10 | 12 | 14 | 12 | b 12 | 17 | 72 | 23 | 17 | 12 | 12 | 13 |
| 26 | 10 | 12 | 13 | b 12 | 15 | 17 | 110 | 23 | 16 | 21 | 12 | 12 |
| 27 | 11 | 14 | 14 | b 10 | 14 | 20 | 117 | 22 | 14 | 19 | 11 | 12 |
| 28 | 10 | 8.2 | 15 | b 10 | 17 | 23 | 112 | 21 | 12 | 17 | 12 | 12 |
| 29 | 11 | 10 | 12 | 12 | - | 24 | 148 | 20 | 12 | 17 | 14 | 12 |
| 30 | 12 | 10 | 9.5 | 13 | ---------- | 26 | 86 | 20 | 12 | 14 | 13 | 12 |
| 31 | 11 | ---------- | 10 | 14 | ---------- | 38 | ---------- | 21 | ---------- | 20 | 12 | ---------- |
| Total | 307.1 | 351.7 | 341.7 | 376 | 381 | 516 | 3,562 | 1,117 | 482 | 401.1 | 493 | 410 |
| Mean | 9.91 | 11.7 | 11.0 | 12.1 | 13.6 | 16.6 | 119 | 36.0 | 16.1 | 12.9 | 15.9 | 13.7 |
| Ac-ft | 609 | 698 | 678 | 746 | 756 | 1,020 | 7,060 | 2,220 | 956 | 796 | 978 | 813 |

Calendar year 1964 : Max 300 Min 7 Mean 17.5 Ac-ft 12,670
Water year 1964-65 : Max 318 Min 8 Mean 23.9 Ac-ft 17,330

Peak discharge (base, 500 cfs).--No peak above base.

a No gage-height record.
b Stage-discharge relation affected by ice.

8-3230. Rio Guadalupe at Box Canyon near Jemez, N. Mex.

Location.--Lat 35°43'55", long 106°45'45", in E½ sec.6, T.17 N., R.2 E. (projected), in Canon de San Diego Grant, on left bank at downstream end of Guadalupe Box Canyon, 4.8 miles upstream from mouth, 5 miles southwest of Jemez Springs, and 7 miles north of Jemez.

Drainage area.--235 sq mi.

Records available.--May 1951 to September 1957 (irrigation seasons only), May 1958 to September 1965.

Gage.--Water-stage recorder. Datum of gage is 6,015.5 ft above mean sea level, datum of 1929 (planetable survey).

Average discharge.--7 years (1958-65), 31.7 cfs (22,950 acre-ft per year).

Extremes.--Maximum discharge during year, 433 cfs May 20 (gage height, 5.40 ft); minimum, 3.0 cfs Nov. 13.
1951-65: Maximum discharge determined, 1,440 cfs Apr. 21, 1958 (gage height, 7.6 ft, from floodmarks), from rating curve extended above 750 cfs on basis of slope-area measurements of peak flow; minimum, 2 cfs Dec. 13, 1960.
Maximum discharge known probably occurred on May 13 or 14, 1941, when a discharge of 3,190 cfs was computed for a downstream station (drainage area, 239 sq mi) called Rio Guadalupe near Jemez Springs.

Remarks.--Records good except those for periods of ice effect, which are poor. Discharge measurements generally made twice a month. Some regulation by San Gregorio Reservoir on Clear Creek, tributary to Rio de Las Vacas, to Rio Guadalupe (constructed July to October 1958, capacity, 345 acre-ft), and by transmountain diversion into Rio Puerco Basin for irrigation of 200 to 300 acres in vicinity of Cuba.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

| | | | |
|---|---|---|---|
| 2.9 | 3.1 | 3.7 | 42 |
| 3.0 | 4.7 | 4.0 | 81 |
| 3.2 | 10 | 4.5 | 183 |
| 3.4 | 19 | 5.1 | 348 |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 10 | 5.6 | 7.9 | 8.8 | 12 | 12 | 50 | 185 | 98 | 23 | 34 | 7.3 |
| 2 | 9 | 5.6 | 9.1 | 7 | 11 | 12 | 52 | 253 | 84 | 20 | 83 | 6.8 |
| 3 | 9 | 5.8 | 9.7 | 9 | 11 | 10 | 53 | 304 | 80 | 18 | 27 | 6.5 |
| 4 | 8 | 5.8 | 8 | 10 | 11 | 10 | 58 | 319 | 70 | 16 | 18 | 6.5 |
| 5 | 8 | 5.8 | 8 | 10 | 11 | 12 | 50 | 280 | 66 | 14 | 10 | 6.8 |
| 6 | 11 | 5.6 | 7 | 11 | 12 | 12 | 44 | 266 | 65 | 13 | 11 | 7.0 |
| 7 | 16 | 5.8 | 6 | 15 | 12 | 12 | 50 | 275 | 62 | 12 | 10 | 7.3 |
| 8 | 10 | 5.8 | 6 | 14 | 12 | 12 | 51 | 272 | 63 | 12 | 9.4 | 8.5 |
| 9 | 8.5 | 6.1 | 6 | 12 | 10 | 12 | 60 | 222 | 77 | 12 | 11 | 16 |
| 10 | 5.8 | 6.1 | 8 | 14 | 9.7 | 13 | 54 | 195 | 104 | 12 | 10 | 12 |
| 11 | 3.9 | 6.5 | 9 | 14 | 9 | 16 | 45 | 167 | 91 | 11 | 10 | 10 |
| 12 | 3.7 | 6.5 | 8 | 12 | 8 | 14 | 41 | 183 | 130 | 11 | 9.1 | 9.4 |
| 13 | 3.7 | 6.5 | 7 | 12 | 8 | 13 | 53 | 261 | 100 | 12 | 8.5 | 11 |
| 14 | 3.6 | 6.5 | 7 | 11 | 10 | 12 | 61 | 227 | 75 | 13 | 9.4 | 9.7 |
| 15 | 3.6 | 7.0 | 7 | 10 | 10 | 12 | 65 | 207 | 62 | 23 | 11 | 8.5 |
| 16 | 3.4 | 8.8 | 6 | 9.7 | 10 | 14 | 83 | 174 | 54 | 27 | 11 | 8.2 |
| 17 | 3.4 | 9.7 | 6 | 9.4 | 10 | 13 | 98 | 197 | 44 | 21 | 12 | 7.9 |
| 18 | 3.7 | 11 | 7 | 9.7 | 10 | 14 | 108 | 258 | 42 | 18 | 11 | 8.2 |
| 19 | 3.7 | 9.7 | 7.9 | 9.4 | 10 | 14 | 109 | 286 | 58 | 15 | 9.4 | 8.2 |
| 20 | 3.9 | 9 | 7.6 | 9.1 | 12 | 12 | 147 | 329 | 40 | 12 | 8.2 | 10 |
| 21 | 4.9 | 9 | 7.6 | 9.4 | 12 | 12 | 178 | 307 | 32 | 11 | 7.3 | 13 |
| 22 | 5.2 | 9 | 7.9 | 8.8 | 12 | 14 | 217 | 289 | 27 | 11 | 7.6 | 12 |
| 23 | 5.4 | 9 | 7.9 | 8.8 | 12 | 14 | 272 | 266 | 24 | 11 | 7.9 | 12 |
| 24 | 5.6 | 9 | 9.4 | 10 | 12 | 16 | 280 | 227 | 31 | 11 | 8.2 | 11 |
| 25 | 5.6 | 9 | 10 | 8.8 | 10 | 16 | 269 | 162 | 43 | 13 | 7.6 | 8.5 |
| 26 | 5.4 | 8 | 9.1 | 8 | 10 | 14 | 242 | 119 | 33 | 16 | 6.8 | 7.9 |
| 27 | 5.6 | 8 | 9.4 | 8 | 12 | 18 | 193 | 102 | 23 | 13 | 6.3 | 7.3 |
| 28 | 5.6 | 7.9 | 9 | 8 | 14 | 21 | 160 | 90 | 21 | 21 | 6.3 | 7.0 |
| 29 | 5.6 | 7.9 | 9.7 | 8 | - | 24 | 147 | 90 | 20 | 23 | 7.0 | 7.0 |
| 30 | 5.6 | 8.2 | 10 | 10 | ---------- | 27 | 147 | 95 | 27 | 17 | 7.3 | 6.8 |
| 31 | 5.6 | ---------- | 10 | 11 | ---------- | 38 | ---------- | 104 | ---------- | 16 | 6.8 | ---------- |
| Total | 192.0 | 224.2 | 248.2 | 315.9 | 302.7 | 465 | 3,437 | 6,711 | 1,746 | 478 | 402.1 | 268.3 |
| Mean | 6.19 | 7.47 | 8.01 | 10.2 | 10.8 | 15.0 | 115 | 216 | 58.2 | 15.4 | 13.0 | 8.94 |
| Ac-ft | 381 | 445 | 492 | 627 | 600 | 922 | 6,820 | 13,310 | 3,460 | 948 | 798 | 532 |

Calendar year 1964: Max 100 Min 3.4 Mean 16.1 Ac-ft 11,650
Water year 1964-65: Max 329 Min 3.4 Mean 40.5 Ac-ft 29,340

Peak discharge (base, 400 cfs).--May 20 (0010) 433 cfs (5.40 ft).

Note.--Stage-discharge relation affected by ice Nov. 20-27, Dec. 4-18, 28, Jan. 2-5, 26-29, Feb. 11 to Mar. 8

## 8-3240. Jemez River near Jemez, N. Mex.

Location.--Lat 35°39'45", long 106°44'30", in NW¼ sec.33, T.17 N., R.2 E. (projected), in Canyon de San Diego Grant, on left bank 0.7 mile downstream from Rio Guadalupe and 3½ miles north of Jemez, Sandoval County.

Drainage area.--470 sq mi.

Records available.--June 1936 to May 1941 (published as Jemez Creek near Jemez), August 1949 to October 1950, May 1951 to September 1952 (irrigation seasons only), March 1953 to September 1954, May 1955 to September 1957 (irrigation seasons only), May 1958 to September 1965.

Gage.--Water-stage recorder (digital). Datum of gage is 5,622.3 ft above mean sea level, datum of 1929. June 22, 1936, to Mar. 11, 1937, at site 60 ft upstream at datum 0.50 ft higher. Mar. 12, 1937, to July 8, 1938, at present site at datum 0.70 ft higher. July 9, 1938, to May 6, 1941, at site 60 ft upstream at datum 0.70 ft higher.

Average discharge.--17 years (1936-40, 1949-50, 1953-65), 65.6 cfs (47,490 acre-ft per year).

Extremes.--Maximum discharge during year, 605 cfs Sept. 8 (gage height, 4.21 ft); minimum, 9.8 cfs Jan. 4.
1936-41, 1949-65: Maximum discharge recorded, 4,520 cfs Aug. 1, 1964 (gage height, 8.10 ft); minimum, 5.5 cfs Jan. 2, 1961.
Maximum flood known since at least 1890 occurred between May 6 and 15, 1941, after gage was destroyed (discharge probably exceeded 6,000 cfs), from information by local residents. A peak of 5,900 cfs occurred Apr. 21, 1958 (gage height, 8.2 ft), from rating curve extended above 2,200 cfs on basis of contracted-opening measurement.
Revisions.--Figure of maximum discharge for 1964 has been revised to 5,600 cfs Aug. 1 (gage height, 8.10 ft), superseding figure published in 1964 State report. No daily discharges were revised.

Remarks.--Records good except those for periods of ice effect, which are poor. Discharge measurements generally made 2 to 3 times a month. Diversions for irrigation of about 300 acres above station.

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 20 | 17 | 22 | 21 | 26 | 30 | 107 | 262 | 118 | 47 | 73 | 22 |
| 2 | 19 | 17 | 26 | 17 | 24 | 29 | 113 | 311 | 105 | 40 | 118 | 25 |
| 3 | 17 | 18 | 26 | 22 | 24 | 29 | 116 | 344 | 96 | 34 | 72 | 23 |
| 4 | 17 | 18 | 22 | 24 | 24 | 29 | 139 | 372 | 88 | 30 | 39 | 20 |
| 5 | 17 | 18 | 18 | 23 | 25 | 29 | 124 | 326 | 83 | 23 | 30 | 19 |
| 6 | 16 | 24 | b 18 | 23 | 26 | 30 | 105 | 298 | 80 | 24 | 24 | 30 |
| 7 | 22 | 23 | b 18 | 31 | 27 | 29 | 126 | 301 | 76 | 23 | 21 | 23 |
| 8 | 23 | 21 | b 16 | 35 | 26 | 28 | 124 | 300 | 76 | 24 | 20 | 63 |
| 9 | 19 | 21 | b 16 | 28 | 25 | 28 | 168 | 251 | 91 | 22 | 21 | 32 |
| 10 | 18 | 21 | b 18 | 28 | 25 | 28 | 166 | 228 | 125 | 22 | 22 | 27 |
| 11 | 17 | 21 | 20 | 26 | 20 | 32 | 114 | 203 | 116 | 20 | 20 | 21 |
| 12 | 16 | 20 | 22 | 28 | b 18 | 30 | 113 | 213 | 150 | 20 | 22 | 22 |
| 13 | 16 | 19 | 19 | 25 | b 20 | 28 | 147 | 292 | 121 | 24 | 21 | 24 |
| 14 | 15 | 19 | b 18 | 26 | b 20 | 24 | 190 | 281 | 91 | 32 | 24 | 20 |
| 15 | 15 | 21 | b 16 | 26 | b 22 | 25 | 235 | 247 | 76 | 38 | 23 | 20 |
| 16 | 15 | 22 | b 18 | 25 | 24 | 28 | 365 | 215 | 65 | 44 | 36 | 20 |
| 17 | 16 | 25 | b 18 | 25 | 24 | 26 | 400 | 227 | 58 | 38 | 32 | 21 |
| 18 | 16 | 29 | b 18 | 25 | 24 | 25 | 400 | 287 | 68 | 32 | 29 | 27 |
| 19 | 15 | 24 | 18 | 25 | 24 | 25 | 297 | 299 | 82 | 30 | 25 | 30 |
| 20 | 15 | 22 | 18 | 26 | 26 | 23 | 300 | 342 | 71 | 24 | 25 | 30 |
| 21 | 16 | 22 | 18 | 26 | 26 | 25 | 273 | 318 | 51 | 20 | 19 | 33 |
| 22 | 16 | 22 | 19 | 25 | 27 | 30 | 291 | 300 | 42 | 20 | 20 | 28 |
| 23 | 16 | 21 | 19 | 20 | 30 | 30 | 330 | 271 | 39 | 20 | 21 | 27 |
| 24 | 17 | 21 | 20 | 24 | 25 | 31 | 340 | 234 | 47 | 22 | 19 | 25 |
| 25 | 18 | 23 | 23 | 24 | 26 | 32 | 334 | 192 | 60 | 20 | 18 | 23 |
| 26 | 18 | 22 | 22 | 20 | 29 | 32 | 340 | 154 | 53 | 40 | 16 | 22 |
| 27 | 18 | 23 | 22 | b 20 | 29 | 35 | 300 | 134 | 42 | 35 | 16 | 20 |
| 28 | 18 | 21 | 24 | b 20 | 31 | 42 | 275 | 115 | 36 | 42 | 17 | 20 |
| 29 | 19 | 22 | 24 | 25 | - | 48 | 321 | 114 | 31 | 49 | 20 | 19 |
| 30 | 18 | 22 | 18 | 25 | ---------- | 56 | 250 | 117 | 46 | 39 | 21 | 18 |
| 31 | 17 | ---------- | 22 | 25 | ---------- | 72 | ---------- | 127 | ---------- | 47 | 21 | ---------- |
| Total | 535 | 639 | 616 | 763 | 697 | 988 | 6,903 | 7,675 | 2,283 | 945 | 905 | 754 |
| Mean | 17.3 | 21.3 | 19.9 | 24.6 | 24.9 | 31.9 | 230 | 248 | 76.1 | 30.5 | 29.2 | 25.1 |
| Ac-ft | 1,060 | 1,270 | 1,220 | 1,510 | 1,380 | 1,960 | 13,690 | 15,220 | 4,530 | 1,870 | 1,800 | 1,500 |

Calendar year 1964: Max 341 Min 11 Mean 34.7 Ac-ft 25,170
Water year 1964-65: Max 400 Min 15 Mean 64.9 Ac-ft 47,010

Peak discharge (base, 1,000 cfs).--No peak above base.

b Stage-discharge relation affected by ice.

8-3285. Jemez Canyon Reservoir near Bernalillo, N. Mex.

Location.--Lat 35°23'40", long 106°32'45", in SW¼SW¼ sec.32, T.14 N., R.4 E., at corner of outlet works control tower of Jemez Canyon Dam, about 2½ miles upstream from mouth and 6 miles north of Bernalillo, N. Mex.

Drainage area.--1,034 sq mi.

Records available.--October 1953 to September 1965.

Gage.--Water-stage recorder. Datum of gage is at mean sea level (levels by Corps of Engineers).

Extremes.--Maximum contents during year, 1,420 acre-ft June 21-23 (elevation, 5,151.0 ft); no contents for most of year.
1953-65: Maximum contents, 71,220 acre-ft June 8, 1958 (elevation, 5,213.36 ft); no storage for most of time.

Remarks.--Reservoir is formed by earth-fill dam, completed Oct. 19, 1953. Capacity, 183,200 acre-ft (from capacity table adopted July 1, 1963) between elevations 5,125.0 (sill of outlet gates) and 5,252.3 ft (operating deck of spillway). Maximum controlled capacity, 114,000 acre-ft at elevation 5,232.3 ft (floor of spillway which is located about three-quarters of a mile south of dam; flows directly to Rio Grande). Original plan for reservoir operation was to desilt all flow above 30 cfs by storage for one day before releasing to Rio Grande, and for possible detention during flood stage on Rio Grande.

Cooperation.--Capacity tables and records furnished by Corps of Engineers.

Month-end elevations and contents, water year October 1964 to September 1965

| Date | Elevation (feet) | Contents (acre-feet) | Change in contents (acre-feet) |
|---|---|---|---|
| Sept. 30 | 0 | 0 | - |
| Oct. 31 | 0 | 0 | 0 |
| Nov. 30 | 0 | 0 | 0 |
| Dec. 31 | 0 | 0 | 0 |
| Calendar year 1964 | - | - | 0 |
| Jan. 31 | 0 | 0 | 0 |
| Feb. 28 | 0 | 0 | 0 |
| Mar. 31 | 0 | 0 | 0 |
| Apr. 30 | 5,147.7 | 692 | + 692 |
| May 31 | 5,141.4 | 49 | - 643 |
| June 30 | 0 | 0 | - 49 |
| July 31 | 5,145.8 | 384 | + 384 |
| Aug. 31 | 0 | 0 | - 384 |
| Sept. 30 | 0 | 0 | 0 |
| Water year 1964-65 | - | - | 0 |

## 8-3290. Jemez River below Jemez Canyon Dam, N. Mex.

Location.--Lat 35°23'10", long 106°31'45", in NE¼ sec.5, T.13 N., R.4 E., on right bank three-quarters of a mile downstream from Jemez Canyon Dam, 1½ miles upstream from mouth, and 6 miles north of Bernalillo.

Drainage area.--1,040 sq mi.

Records available.--March 1936 to January 1938, March 1943 to September 1965. Published as "Jemez Creek" prior to 1948, and as "near Bernalillo" prior to 1954.

Gage.--Water-stage recorder. Datum of gage is 5,095.60 ft above mean sea level, datum of 1929 (Corps of Engineers bench mark). Prior to Apr. 24, 1951, at site three-quarters of a mile upstream at datum 24.51 ft higher. Apr. 24, 1951, to June 25, 1958, at site 37 ft upstream at datum 4.40 ft above present datum. Supplementary water-stage recorder at gates on Jemez Canyon Dam at datum 5,125.00 ft above mean sea level, datum of 1929 (Corps of Engineers bench mark) used at times since January 1953.

Average discharge.--23 years (1936-37, 1943-65), 50.2 cfs (36,340 acre-ft per year).

Extremes.--Maximum discharge during year, 618 cfs May 14 (gage height, 6.87 ft); no flow at times.
1936-38, 1943-65: Maximum discharge, 16,300 cfs Aug. 29, 1943 (gage height, 5.62 ft, site and datum then in use), from rating curve extended above 3,000 cfs by logarithmic plotting; no flow at times.
A flood in 1900 was probably less than 16,000, but highest known outside period of record.

Remarks.--Records poor. Discharge measurements generally made 3 to 8 times a month. Subsequent to October 1953, flow at this station can be completely regulated by Jemez Canyon Reservoir (see 8-3285). However, reservoir is designed essentially for desilting and flood control rather than storage. Diversions for irrigation of about 3,000 acres above station.

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 0.8 | 16 | 17 | 26 | 32 | 46 | 275 | 61 | 36 | 186 | 0 |
| 2 | 0 | .9 | 28 | 9.9 | 25 | b16 | 43 | 269 | 48 | 40 | 199 | 42 |
| 3 | 0 | 1.1 | 46 | b10 | 25 | a5 | 46 | 238 | 49 | a15 | 243 | 195 |
| 4 | 0 | 1.3 | 19 | b10 | 21 | b30 | 56 | 201 | 62 | a 5 | a 50 | 6.1 |
| 5 | 0 | 1.7 | b 8 | 17 | 21 | b32 | 85 | 252 | 68 | a 0 | a 30 | 4.9 |
| 6 | 0 | 1.5 | b 6 | 23 | 19 | 38 | 100 | 324 | 55 | .1 | a 20 | 5.2 |
| 7 | 0 | 1.5 | b 4 | 27 | 31 | 40 | 97 | 324 | 31 | .1 | a 10 | 86 |
| 8 | 0 | 1.7 | b 1 | 34 | 28 | 37 | 82 | 321 | 38 | .4 | a 10 | 34 |
| 9 | 0 | 1.3 | b 2 | 30 | 37 | 36 | 79 | 314 | 44 | .1 | 8.8 | 130 |
| 10 | 0 | 1.5 | b 4 | 37 | 43 | 27 | 79 | 209 | 48 | 0 | 8.8 | 8.1 |
| 11 | 0 | 1.5 | b 4 | 20 | 26 | 38 | 82 | 144 | 98 | 0 | 8.8 | 24 |
| 12 | 0 | 1.2 | 7.1 | 16 | a 4 | 36 | 70 | 215 | 149 | .1 | 8.4 | 24 |
| 13 | 0 | 4.8 | a 1 | 16 | a 0 | 31 | 97 | 186 | 130 | 0 | 7.6 | 8.4 |
| 14 | 0 | 7.5 | 0 | 15 | 16 | 22 | 100 | 225 | 118 | .9 | 7.2 | 9.6 |
| 15 | 0 | 8.1 | 0 | 17 | 50 | 20 | 114 | 360 | 57 | 126 | 55 | 7.8 |
| 16 | 0 | 11 | b 1 | 20 | 33 | 25 | 238 | 342 | 29 | 26 | 14 | 3.8 |
| 17 | 0 | 24 | b 3 | 28 | 32 | 19 | 228 | 250 | 26 | 22 | 51 | a 1 |
| 18 | 0 | 29 | a 1 | 26 | 28 | b12 | 282 | 164 | 26 | a10 | 36 | 2.2 |
| 19 | 0 | 40 | a 1 | 27 | 29 | b12 | 300 | 213 | 34 | a 2 | 24 | a 1 |
| 20 | 0 | 16 | a 5 | 29 | 28 | b12 | 343 | 284 | 31 | .1 | a 15 | 6.1 |
| 21 | 0 | 16 | b 15 | 32 | 27 | 17 | 294 | 314 | a 20 | 34 | a 5 | 5.4 |
| 22 | .6 | 14 | b 25 | 26 | 28 | 21 | 266 | 311 | 25 | 13 | a 1 | 3.3 |
| 23 | .6 | 16 | 43 | 12 | 23 | 26 | 248 | 304 | 26 | 7.8 | a 0 | 3.9 |
| 24 | .6 | 14 | 28 | 19 | 36 | 22 | 251 | 146 | 26 | a 3 | 0 | 2.9 |
| 25 | .6 | 12 | 22 | 20 | 25 | 26 | 248 | 39 | 25 | a 0 | 0 | 2.6 |
| 26 | .8 | 16 | 20 | b 2 | 31 | 25 | 251 | 245 | 25 | 93 | 0 | 2.7 |
| 27 | .9 | 20 | 20 | b 1 | 29 | 27 | 254 | 234 | 25 | 6.2 | 0 | .2 |
| 28 | .9 | 15 | 23 | 14 | 31 | 29 | 281 | 100 | 221 | a 2 | 0 | .9 |
| 29 | .9 | 17 | 21 | 32 | - | 31 | 298 | 84 | 329 | 20 | 0 | .8 |
| 30 | .9 | 13 | 18 | 27 | ---------- | 37 | 291 | 73 | 40 | 7.6 | 0 | .3 |
| 31 | .8 | ---------- | 14 | 21 | ---------- | 36 | ---------- | 74 | ---------- | 48 | 0 | ---------- |
| Total | 7.6 | 309.4 | 406.1 | 634.9 | 752 | 817 | 5,249 | 7,034 | 1,964 | 518.4 | 998.6 | 622.2 |
| Mean | 0.24 | 10.3 | 13.1 | 20.5 | 26.9 | 26.4 | 175 | 227 | 65.5 | 16.7 | 32.2 | 20.7 |
| Ac-ft | 15 | 614 | 805 | 1,260 | 1,490 | 1,620 | 10,410 | 13,950 | 3,900 | 1,030 | 1,980 | 1,230 |

Calendar year 1964: Max 264 Min 0 Mean 19.9 Ac-ft 14,430
Water year 1964-65: Max 360 Min 0 Mean 52.9 Ac-ft 38,300

a No gage-height record.
b Stage-discharge relation affected by ice.

8-3291. Bernalillo floodwater retarding reservoir No. 1 (Piedra Lisa Arroyo), near Bernalillo, N. Mex.

Location.--Lat 35°18'50", long 106°31'45", in NW¼ sec.33, T.13 N., R.4 E. (projected), in Bernalillo Grant, in reservoir 0.3 mile east of intersection of State Highways 44 and 422 and 1½ miles northeast of Bernalillo.

Drainage area.--4.1 sq mi, of which 2.0 sq mi has contouring, pitting and small dams to reduce runoff.

Records available.--September 1955 to September 1965.

Gage.--Water-stage recorder adjacent to outlet tower with fixed ports. Datum of gage is 5,169.98 ft above mean sea level (levels by Soil Conservation Service). Since July 21, 1958, supplementary outflow gage 390 ft below toe of dam, water-stage recorder and Parshall flume.

Average outflow.--10 years, 0.012 cfs (8.7 acre-ft per year).

Extremes.--No flow during year.
1955-65: Maximum outflow, 55 cfs July 19, 1956 (gage height, 11.23 ft). Maximum inflow, 2,330 cfs, July 19, 1956 (average for 5-minute interval), computed from outflow and change in reservoir contents. No inflow or outflow for most of time.

Remarks.--Records excellent. Records of suspended sediment loads for the water year 1965 are published in part 2 of this report.

Reservoir is formed by earth-fill dam, completed in 1955. Capacity, 300 acre-ft (original survey, no dead storage). Gage height of spillway crest is 27 ft, crest of dam is 35 ft. Outlet tower has an inside opening 3 ft square and outlet pipe through dam is 2 ft in diameter. A total of 9 port openings are spaced at 5-ft vertical intervals on upstream and sides of tower. They are 2 ft wide by 1 ft high; sill of lowest upstream port is at gage-height 4.8 ft (modified in 1963) and lowest side ports at gage-heights 6.3 ft.

## 8-3295. Rio Grande near Bernalillo, N. Mex.

Location.--Lat 35°17'05", long 106°35'45", in SE¼NW¼ sec.11, T.12 N., R.3 E. (projected), on right bank 2 miles northwest of Sandia Pueblo, 3 miles southwest of Bernalillo, 3.5 miles downstream from State Highway 44, and 8.5 miles downstream from Jemez River.

Drainage area.--17,300 sq mi, approximately (includes 2,940 sq mi in closed basin in San Luis Valley, Colo.).

Records available.--May 1941 to September 1965. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder at a datum of 5,030.57 ft above mean sea level, datum of 1929, adjustment of 1951. Supplemental water-stage recorder at a site 1,900 ft downstream used alternately 1953-58, 1961, at the same datum 1953-55, variable 1956-58 and 1.26 ft lower than primary gage in 1961.

Average discharge.--24 years, 1,082 cfs (783,300 acre-ft per year).

Extremes.--Maximum discharge during year, 10,500 cfs June 19 (gage height, 5.09 ft); no flow at times.
1941-65: Maximum discharge, 25,400 cfs May 16, 1941; maximum gage height, 6.83 ft Sept. 20, 1941; no flow at times.
Other major floods occurred as follows (based primarily on records for station at San Felipe): Sept. 23, 1929, about 23,000 cfs; Aug. 21, 1935, about 22,000 cfs; June 26, 1937, about 27,000 cfs.

Remarks.--Records fair except those for periods of ice effect or doubtful or no gage-height record and those for Apr. 20 to Aug. 8, which are poor. Discharge measurements generally made 4 times a month. Diversions above station for irrigation of about 710,000 acres, some of which is below station. Possible regulation by operation of two reservoirs on Rio Chama and flood-and-silt detention reservoir on Jemez River (see 8-3285). Records of suspended sediment loads and water temperatures for the water year 1965 are published in part 2 of this report.

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 64 | 314 | 442 | 520 | 670 | 842 | 3040 | 2350 | 3100 | 2520 | 45 |
| 2 | | 60 | 349 | 530 | 530 | 634 | 1330 | 3220 | 3100 | 4500 | 2720 | 47 |
| 3 | | 58 | 410 | 480 | 574 | 684 | 1500 | 3400 | 3610 | 4100 | 3280 | 260 |
| 4 | | 110 | a 380 | 394 | 622 | 684 | 1810 | 3750 | 3750 | 4500 | 3400 | 238 |
| 5 | | 129 | a 340 | 410 | 646 | 368 | 1600 | 4260 | 2800 | 4260 | 3220 | 152 |
| 6 | | 147 | a 300 | 520 | 658 | 314 | 1400 | 4580 | 2800 | 4500 | 2800 | 133 |
| 7 | | 150 | 276 | 598 | 698 | 386 | 1350 | 4740 | 2800 | 4900 | 1810 | 274 |
| 8 | | 158 | 270 | 712 | 726 | 370 | 1100 | 4500 | 3040 | 4100 | 1600 | 881 |
| 9 | | 147 | 235 | d 1500 | 740 | 335 | 826 | 4100 | 2920 | 4100 | 1380 | 838 |
| 10 | | 162 | 288 | d 1300 | 712 | 370 | 1060 | 4100 | 3160 | 3100 | 860 | 337 |
| 11 | | 182 | 307 | d 1100 | 698 | 530 | 922 | 4030 | 3610 | 2300 | 455 | a 250 |
| 12 | | 269 | 328 | d 900 | 670 | 586 | 858 | 3400 | 4340 | 2020 | 343 | 410 |
| 13 | | 1080 | 307 | d 700 | 530 | 530 | 1010 | 4680 | 4100 | 2750 | 274 | a 300 |
| 14 | | 1480 | 328 | d 600 | 470 | 510 | 1150 | 3750 | 4100 | 3040 | 208 | 185 |
| 15 | | 1500 | 174 | d 600 | 586 | 480 | 938 | 4100 | 3610 | 3220 | 332 | a 140 |
| 16 | | 1520 | b 160 | a 550 | 658 | 426 | 1230 | 4100 | 2860 | 3220 | 295 | a 120 |
| 17 | | 1660 | b 200 | a 500 | 622 | 442 | 1040 | 4180 | 4100 | 3220 | 301 | a 100 |
| 18 | | 1720 | b 240 | a 500 | 622 | 460 | 826 | 3540 | 5120 | 2920 | 374 | a 100 |
| 19 | | 1450 | b 300 | a 500 | 610 | 460 | 988 | 3820 | 6200 | 2650 | 392 | a 120 |
| 20 | | 988 | b 350 | a 450 | 634 | 490 | 1480 | 4340 | 4990 | 1810 | 352 | a 160 |
| 21 | | 520 | b 380 | a 450 | 586 | 490 | 1900 | 4420 | 4990 | 1440 | 307 | a 200 |
| 22 | | a 450 | b 380 | 550 | 634 | 490 | 2550 | 4500 | 4660 | 700 | 366 | 538 |
| 23 | | a 400 | b 360 | 550 | 670 | 442 | 2800 | 4580 | 5170 | 830 | 340 | 235 |
| 24 | | 356 | b 340 | 540 | 768 | 442 | 3610 | 5080 | 4500 | 610 | 301 | 256 |
| 25 | | 349 | 342 | 530 | 740 | 434 | 4100 | 4660 | 5440 | 429 | 169 | 435 |
| 26 | | 349 | 394 | 586 | 826 | 500 | 4580 | 4100 | 5170 | 721 | 152 | 516 |
| 27 | | 342 | 434 | 510 | 550 | 470 | 4340 | 3610 | 5080 | 467 | 119 | 637 |
| 28 | | 342 | 434 | 470 | 610 | 410 | 3960 | 3100 | 4500 | 1320 | 91 | 562 |
| 29 | | 342 | 450 | 470 | - | 418 | a 3500 | 3750 | 4260 | 1600 | 97 | 586 |
| 30 | | 328 | 670 | 480 | ---------- | 540 | a 3200 | 2750 | 3400 | 1090 | 101 | 546 |
| 31 | | ---------- | 530 | 500 | ---------- | 754 | ---------- | 2060 | ---------- | 1020 | 75 | ---------- |
| Total | 0 | 16754.4 | 10570 | 18922 | 17910 | 15119 | 57800 | 122240 | 120530 | 78537 | 29034 | 9601 |
| Mean | 0 | 558 | 341 | 610 | 640 | 488 | 1,927 | 3,943 | 4,018 | 2,533 | 937 | 320 |
| Ac-ft | 0 | 33,230 | 20,970 | 37,530 | 35,520 | 29,990 | 114,600 | 242,500 | 239,100 | 155,800 | 57,590 | 19,040 |

Calendar year 1964: Max 1,720 Min 0 Mean 264 Ac-ft 191,500
Water year 1964-65: Max 6,200 Min 0 Mean 1,362 Ac-ft 985,900

Peak discharge (base, 5,000 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 5-13 | 1130 | 4.63 | 8,120 | 6-19 | 0900 | 5.09 | 10,500 |
| 5-24 | 0030 | 4.65 | 7,700 | 8-2 | 1130 | 4.53 | 6,160 |

a No gage-height record.
b Stage-discharge relation affected by ice.
d Doubtful gage-height record.

## 8-3300. Rio Grande at Albuquerque, N. Mex.

Location.--Lat 35°05'20", long 106°40'50", in SE¼ sec.13, T.10 N., R.2 E. (projected), in Atrisco Grant at downstream side of Old Town bridge on U.S. Highway 66 at Albuquerque.

Drainage area.--17,440 sq mi, approximately (includes 2,940 sq mi in closed basin in San Luis Valley, Colo.).

Records available.--October 1941 to September 1965. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Datum of gages is 4,946.16 ft above mean sea level, datum of 1929. Prior to Sept. 18, 1947, at various sites at datum about 2.00 ft higher; Sept. 18, 1947, to Apr. 12, 1959, at site 550 ft to the left of present site; Apr. 13, 1959, to June 29, 1960, at site 150 ft to the right of present site. Supplemental water-stage recorder at a site 75 ft to right of present site used June 24 to Aug. 31 and Oct. 1-31, 1964, at same datum.

Average discharge.--24 years, 1,075 cfs (778,300 acre-ft per year).

Extremes.--Maximum discharge during year, 8,720 cfs June 19 (gage height, 7.18 ft); no flow at times.
1941-65: Maximum discharge, 25,000 cfs Apr. 24, 1942, from rating curve extended above 13,900 cfs by logarithmic plotting; maximum gage height, that of June 19, 1965; no flow at times.

Remarks.--Records good. Discharge measurements generally made twice a week. Possible regulation by operation of reservoirs on Rio Chama and by flood-and-silt-detention reservoir on Jemez River (see 8-2850, 8-2869, 8-3285). Diversions above station for irrigation of about 718,000 acres, several hundred of which are below station.

Cooperation.--Records for Albuquerque Riverside drain and Arenal, Armijo, and Atrisco canals furnished by Bureau of Reclamation.

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7.9 | 47 | 320 | 549 | 528 | 744 | 899 | 3,250 | 2,640 | 3,800 | 2,570 | 50 |
| 2 | 1.5 | 116 | 330 | 563 | 521 | 752 | 1,130 | 3,450 | 3,100 | 4,300 | 2,830 | 106 |
| 3 | 4.4 | 53 | 390 | 570 | 570 | 760 | 1,550 | 3,890 | 4,400 | 4,220 | 2,940 | 297 |
| 4 | 2.5 | 76 | 365 | 493 | 648 | 704 | 1,630 | 4,070 | 4,340 | 4,850 | 3,380 | 406 |
| 5 | 4.4 | 100 | 375 | 472 | 648 | 584 | 1,720 | 4,280 | 3,510 | 4,620 | 3,180 | 322 |
| 6 | 0 | 100 | 375 | 514 | 656 | 472 | 1,720 | 4,430 | 3,300 | 4,620 | 2,340 | 285 |
| 7 | 0 | 100 | 325 | 570 | 744 | 584 | 1,440 | 4,640 | 2,950 | 4,600 | 1,980 | 348 |
| 8 | 0 | 108 | 278 | 626 | 752 | 640 | 1,260 | 4,760 | 2,920 | 4,650 | 1,820 | 607 |
| 9 | 0 | 108 | 265 | 1,150 | 752 | 549 | 863 | 4,640 | 3,300 | 3,980 | 1,580 | 1,090 |
| 10 | 0 | 93 | 253 | 1,450 | 744 | 556 | 1,050 | 3,830 | 3,700 | 3,700 | 1,290 | 584 |
| 11 | 0 | 110 | 292 | 1,180 | 744 | 648 | 980 | 3,650 | 4,280 | 3,600 | 990 | 306 |
| 12 | 0 | 137 | 325 | 863 | 696 | 744 | 908 | 3,650 | 4,940 | 3,090 | 668 | 662 |
| 13 | 0 | 462 | 320 | 720 | 648 | 664 | 917 | 4,650 | 4,880 | 2,690 | 495 | 628 |
| 14 | .9 | 790 | 325 | 633 | 598 | 680 | 1,240 | 3,620 | 4,310 | 2,830 | 394 | 402 |
| 15 | 0 | 1,000 | 283 | 598 | 570 | 656 | 908 | 4,100 | 4,190 | 3,120 | 475 | 340 |
| 16 | 0 | 1,150 | 146 | 570 | 605 | 619 | 1,080 | 4,190 | 3,680 | 3,050 | 434 | 315 |
| 17 | 1.6 | 1,210 | 175 | 535 | 570 | 612 | 1,180 | 4,010 | 3,980 | 3,250 | 309 | 245 |
| 18 | 3.3 | 1,310 | 233 | 514 | 598 | 605 | 1,110 | 3,890 | 5,300 | 3,080 | 402 | 238 |
| 19 | 1.2 | 1,360 | 195 | 493 | 605 | 563 | 1,060 | 3,910 | 6,950 | 3,000 | 406 | 255 |
| 20 | 0 | 910 | 296 | 486 | 648 | 584 | 1,280 | 4,100 | 5,210 | 2,450 | 465 | 315 |
| 21 | 0 | 635 | 395 | 472 | 619 | 612 | 2,120 | 4,340 | 5,330 | 1,930 | 378 | 318 |
| 22 | 0 | 530 | 385 | 486 | 640 | 500 | 2,580 | 4,550 | 5,300 | 1,080 | 358 | 598 |
| 23 | 0 | 416 | 506 | 528 | 680 | 458 | 3,100 | 4,800 | 5,240 | 1,050 | 465 | 406 |
| 24 | 0 | 370 | 600 | 528 | 720 | 465 | 3,710 | 5,180 | 5,270 | 970 | 343 | 326 |
| 25 | 0 | 355 | 544 | 500 | 736 | 500 | 4,220 | 4,550 | 5,360 | 812 | 297 | 536 |
| 26 | 0 | 355 | 506 | 528 | 910 | 465 | 4,340 | 4,340 | 5,240 | 930 | 258 | 632 |
| 27 | 0 | 355 | 530 | 535 | 680 | 486 | 4,040 | 3,980 | 4,940 | 660 | 240 | 700 |
| 28 | 0 | 330 | 551 | 500 | 656 | 479 | 3,890 | 3,920 | 4,450 | 847 | 120 | 653 |
| 29 | 0 | 320 | 544 | 549 | - | 412 | 3,400 | 3,860 | 4,320 | 1,530 | 100 | 668 |
| 30 | 0 | 325 | 572 | 521 | ---------- | 479 | 3,380 | 3,740 | 3,800 | 1,190 | 80 | 639 |
| 31 | 0 | ---------- | 656 | 542 | ---------- | 720 | ---------- | 3,520 | ---------- | 1,020 | 51 | ---------- |
| Total | 27.7 | 13,331 | 11,655 | 19,238 | 18,486 | 18,296 | 58,705 | 127,790 | 131,130 | 85,519 | 31,638 | 13,277 |
| Mean | 0.89 | 444 | 376 | 621 | 660 | 590 | 1,957 | 4,122 | 4,371 | 2,759 | 1,021 | 443 |
| Ac-ft | 55 | 26,440 | 23,120 | 38,160 | 36,670 | 36,290 | 116,400 | 253,500 | 260,100 | 169,600 | 62,750 | 26,330 |
| (†) | 10,610 | 1,980 | 2,990 | 2,690 | 2,130 | 10,750 | 15,240 | 12,770 | 13,740 | 14,590 | 14,550 | 12,740 |

Calendar year 1964: Max 1,530 Min 0 Mean 2,923 Ac-ft 212,200
Water year 1964-65: Max 6,950 Min 0 Mean 1,450 Ac-ft 1,049,000

Peak discharge (base, 4,000 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 5-13 | 1620 | 6.85 | 7,050 | 6-19 | 1020 | 7.18 | 8,720 |
| 6-3 | 2040 | 6.14 | 4,760 | 8-2 | 1440 | 5.76 | 4,580 |

† Combined flow, in acre-feet, of Albuquerque Riverside drain and Arenal, Armijo, and Atrisco canals. This flow, which bypasses river gage, can be added to river records to get entire surface flow in valley cross-section.

8-3319.9 Rio Grande conveyance channel near Bernardo, N. Mex.

Location.--Lat 34°24'55", long 106°48'10", in E½ sec.11, T.2 N., R.1 E. (projected), in Sevilleta or Belen Grant, 0.2 mile south of U.S. Highway 60, 1.8 miles east of Bernardo, about 3 miles upstream from floodway, and 4 miles upstream from Rio Puerco.

Records available.--June 1936 to September 1937, July 1943 to September 1965. Prior to October 1964 included in composite flow of Rio Grande near Bernardo. This channel formerly called San Francisco Riverside drain.

Gage.--Water-stage recorder with concrete control. Datum of gage is 4,720.00 ft above mean sea level, datum of 1929, adjustment of 1951. Prior to October 1964, 0.2 mile upstream at various datums.

Average discharge.--13 years (1952-65), 447 cfs (326,600 acre-ft per year).

Extremes.--1952-65: Maximum daily discharge, 2,220 cfs Apr. 22, 1958; no flow at times.

Records prior to October 1952 are not equivalent due to channel stabilization and stable diversion control since this date.

Remarks.--Records fair. Conveyance channel is 1 of 4 channels (see Nos. 8-3320.1, 8-3320.3, and 8-3320.5) carrying flow in valley cross-section. Original design and plan was for conveyance channel to carry flows up to about 2,000 cfs. For combined monthly flow in acre-ft of this channel, floodway, Bernardo interior drain and San Juan Riverside drain see tabulation below daily table for No. 8-3320.1. Discharge measurements generally made once a week. Records of chemical analyses, suspended sediment loads, and water temperatures for the water year 1965 are published in part 2 of this report.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Dec. 8, 9, Jan. 11-13, Apr. 22 to Aug. 14)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 3.0 | 0 | 3.3 | 4.5 | 4.0 | 102 | 6.0 | 1,240 |
| 3.1 | .1 | 3.5 | 20 | 4.5 | 280 | 7.0 | 1,940 |
| 3.2 | 1.1 | 3.7 | 44 | 5.0 | 550 | | |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 0 | 360 | 624 | 514 | 527 | 194 | 729 | 1,240 | 729 | 968 | 27 |
| 2 | | 0 | 375 | 538 | 550 | 520 | 423 | 750 | 1,180 | 1,090 | 1,330 | 18 |
| 3 | | 0 | 380 | 502 | 556 | 556 | 743 | 925 | 1,250 | 1,320 | 1,120 | 17 |
| 4 | | 0 | 420 | 538 | 574 | 624 | 1,210 | 1,040 | 1,250 | 1,220 | 1,230 | 54 |
| 5 | | 0 | 400 | 514 | 610 | 586 | 1,200 | 834 | 1,160 | 1,330 | 1,180 | 128 |
| 6 | | 0 | 390 | 484 | 673 | 454 | 1,370 | 862 | 1,060 | 1,140 | 988 | 127 |
| 7 | | 0 | 400 | 484 | 687 | 268 | 1,180 | 722 | 1,100 | 1,080 | 960 | 266 |
| 8 | | 0 | 375 | 538 | 708 | 335 | 932 | 785 | 1,000 | 1,150 | 890 | 180 |
| 9 | | 0 | 315 | 586 | 736 | 345 | 904 | 785 | 960 | 1,200 | 890 | 656 |
| 10 | | 0 | 293 | 1,440 | 750 | 310 | 673 | 701 | 890 | 1,480 | 820 | 670 |
| 11 | | 0 | 275 | 1,640 | 757 | 310 | 785 | 820 | 841 | 1,180 | 715 | 490 |
| 12 | | 0 | 295 | 1,050 | 764 | 350 | 995 | 974 | 820 | 1,060 | 514 | 490 |
| 13 | | 0 | 320 | 750 | 729 | 478 | 722 | 890 | 500 | 981 | 330 | 454 |
| 14 | | 0 | 340 | 638 | 610 | 466 | 624 | 967 | 728 | 1,130 | 255 | 574 |
| 15 | | 164 | 355 | 624 | 556 | 460 | 911 | 855 | 1,260 | 1,190 | 206 | 345 |
| 16 | | 310 | 360 | 598 | 502 | 436 | 736 | 876 | 1,140 | 1,150 | 210 | 250 |
| 17 | | 460 | 260 | 598 | 550 | 490 | 743 | 862 | 1,020 | 771 | 150 | 222 |
| 18 | | 715 | 214 | 586 | 568 | 466 | 1,090 | 890 | 1,040 | 673 | 136 | 170 |
| 19 | | 953 | 240 | 592 | 568 | 360 | 1,020 | 897 | 1,140 | 827 | 102 | 136 |
| 20 | | 1,170 | 240 | 574 | 562 | 350 | 750 | 862 | 1,060 | 1,090 | 122 | 173 |
| 21 | | 799 | 255 | 586 | 580 | 461 | 884 | 925 | 806 | 1,100 | 114 | 142 |
| 22 | | 538 | 290 | 592 | 604 | 464 | 1,450 | 953 | 967 | 995 | 202 | 139 |
| 23 | | 436 | 350 | 574 | 610 | 305 | 1,390 | 946 | 1,140 | 900 | 245 | 230 |
| 24 | | 395 | 425 | 592 | 638 | 230 | 1,520 | 904 | 1,130 | 700 | 202 | 235 |
| 25 | | 370 | 568 | 580 | 673 | 202 | 1,380 | 1,090 | 1,000 | 600 | 150 | 170 |
| 26 | | 355 | 526 | 556 | 687 | 265 | 1,380 | 1,180 | 960 | 700 | 104 | 166 |
| 27 | | 345 | 454 | 556 | 634 | 290 | 1,240 | 1,220 | 848 | 617 | 72 | 315 |
| 28 | | 345 | 460 | 568 | 743 | 218 | 1,150 | 1,280 | 855 | 484 | 70 | 330 |
| 29 | | 340 | 490 | 502 | - | 255 | 953 | 1,450 | 799 | 448 | 61 | 365 |
| 30 | | 345 | 490 | 490 | ---------- | 295 | 736 | 1,390 | 715 | 1,060 | 56 | 345 |
| 31 | | ---------- | 490 | 496 | ---------- | 163 | ---------- | 1,300 | ---------- | 960 | 47 | ---------- |
| Total | 0 | 8,040 | 11,405 | 19,990 | 17,693 | 11,839 | 29,288 | 29,664 | 29,859 | 30,355 | 14,439 | 8,084 |
| Mean | 0 | 268 | 368 | 645 | 639 | 382 | 976 | 957 | 995 | 979 | 466 | 269 |
| Ac-ft | 0 | 15,950 | 22,620 | 39,650 | 35,490 | 23,480 | 58,090 | 58,840 | 59,220 | 60,210 | 28,640 | 16,030 |

Calendar year 1964 : Max 1,460 Min 0 Mean 192 Ac-ft 139,300
Water year 1964-65 : Max 1,640 Min 0 Mean 578 Ac-ft 418,200

## 8-3320.1 Rio Grande floodway near Bernardo, N. Mex.

Location.--Lat 34°25'03", long 106°48'00", in Belen or Sevilleta Grant on downstream side of bridge on U.S. Highway 60, 5 miles downstream from heading of conveyance channel and 2 miles east of Bernardo, Socorro County.

Drainage area.--19,230 sq mi, approximately (includes 2,940 sq mi in closed basin in San Luis Valley, Colo.).

Records available.--June 1936 to January 1939, October 1941 to September 1965. Monthly discharge only October 1942 to June 1943 published in WSP 1312. Published as "Rio Grande near Bernardo" prior to October 1964. Prior to October 1952, flow of Bernardo interior drain was included only when it carried river overflow, the entire flow has been included from October 1952 to September 1964. Flow in the conveyance channel, formerly San Francisco Riverside drain, has been included in record prior to October 1964.

Gage.--Water-stage recorder. Datum of gage is 4,722.55 ft above mean sea level, datum of 1929, adjustment of 1951.

Average discharge.--19 years (1936-38, 1941-58) 1,171 cfs (847,800 acre-ft per year). Includes flow of floodway, conveyance channel, and Bernardo interior drain.
7 years (1958-65) 239 cfs (173,000 acre-ft per year). Includes flow of floodway only.
7 years (1958-65) 767 cfs (555,300 acre-ft per year). Includes flow of floodway, conveyance channel, Bernardo interior drain, and Lower San Juan Riverside drain.

Extremes.--Maximum discharge during year, 5,680 cfs July 17 (gage height, 5.90 ft); no flow for extended periods.
1936-39, 1941-65: Maximum discharge, 21,000 cfs April 25, 1942 (gage height, 6.90 ft); no flow for many days most years.

Remarks.--Records fair except those for periods of indefinite stage-discharge relation, which are poor. Floodway is 1 of 4 channels (see Nos. 8-3319.9, 8-3320.3 and 8-3320.5) carrying flow in valley cross-section. For combined monthly flow in acre-ft of floodway, conveyance channel, Bernardo interior drain and Lower San Juan Riverside drain see tabulation below. Normal plan is for floodway to carry flow when capacity of conveyance channel (about 2,000 cfs) is exceeded. Discharge measurements generally made once or twice a week during periods of flow. Diversions for irrigation of about 740,000 acres above station. Records of chemical analyses, suspended sediment loads, and water temperatures for the water year 1965 are published in part 2 of this report.

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | 0 | 1,600 | 1,600 | 1,850 | 183 | 0 |
| 2 | | | | | | | 0 | 1,660 | 1,200 | 1,870 | 1,560 | 0 |
| 3 | | | | | | | 0 | 1,760 | 1,620 | 2,290 | 1,800 | 0 |
| 4 | | | | | | | 0 | 2,080 | 2,050 | 1,910 | 2,050 | 0 |
| 5 | | | | | | | 0 | 2,490 | 2,050 | 2,580 | 1,910 | 0 |
| 6 | | | | | | | 0 | 2,720 | 1,800 | 2,500 | 1,080 | 0 |
| 7 | | | | | | | 0 | 2,550 | 1,500 | 2,580 | 740 | 0 |
| 8 | | | | | | | 0 | 2,900 | 1,400 | 2,410 | 625 | 0 |
| 9 | | | | | | | 0 | 3,060 | 1,760 | 2,290 | 680 | 0 |
| 10 | | | | | | | 0 | 2,940 | 2,000 | 1,950 | 480 | 13 |
| 11 | | | | | | | 0 | 2,220 | 2,430 | 2,120 | 152 | 0 |
| 12 | | | | | | | 0 | 2,050 | e 3,000 | 1,930 | 23 | 0 |
| 13 | | | | | | | 0 | 2,080 | 3,820 | 1,200 | 0 | 0 |
| 14 | | | | | | | 0 | 2,760 | 3,580 | 1,130 | 0 | 0 |
| 15 | | | | | | | 0 | 2,050 | 2,440 | 1,320 | 0 | 0 |
| 16 | | | | | | | 0 | 2,080 | 2,350 | 1,650 | 0 | 0 |
| 17 | | | | | | | 0 | 3,020 | 2,320 | 1,800 | 0 | 0 |
| 18 | | | | | | | 0 | 2,800 | 2,260 | 1,610 | 0 | 0 |
| 19 | | | | | | | 0 | 2,250 | 2,440 | 1,120 | 0 | 0 |
| 20 | | | | | | | 0 | 2,340 | e 4,100 | 704 | 0 | 0 |
| 21 | | | | | | | 0 | 2,400 | e 4,000 | 384 | 0 | 0 |
| 22 | | | | | | | 434 | 2,550 | e 2,800 | 74 | 0 | 0 |
| 23 | | | | | | | 486 | 2,720 | e 3,000 | 0 | 0 | 0 |
| 24 | | | | | | | 870 | e 3,000 | e 3,400 | 0 | 0 | 0 |
| 25 | | | | | | | 1,240 | e 2,900 | 3,350 | 0 | 0 | 0 |
| 26 | | | | | | | 2,340 | 2,720 | 3,250 | 38 | 0 | 0 |
| 27 | | | | | | | 2,940 | 2,690 | 3,520 | 0 | 0 | 0 |
| 28 | | | | | | | 2,550 | 2,180 | 3,300 | 0 | 0 | 0 |
| 29 | | | | | | | 2,550 | 1,720 | 2,620 | 0 | 0 | 0 |
| 30 | | | | | ---------- | | 2,050 | 2,120 | 2,410 | 8 | 0 | 0 |
| 31 | | ---------- | | | ---------- | | ---------- | 1,780 | ---------- | 9 | 0 | ---------- |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 15,460 | 74,190 | 77,370 | 37,327 | 11,283 | 13 |
| Mean | 0 | 0 | 0 | 0 | 0 | 0 | 515 | 2,393 | 2,579 | 1,204 | 364 | 0.43 |
| Ac-ft | 0 | 0 | 0 | 0 | 0 | 0 | 30,660 | 147,200 | 153,500 | 74,040 | 22,380 | 26 |
| (†) | 2,710 | 18,160 | 25,940 | 43,270 | 38,580 | 32,360 | 98,950 | 217,400 | 223,700 | 145,700 | 61,440 | 25,830 |

Calendar year 1964: Max 102 Min 0 Mean 0.39 Ac-ft 286 (†) Mean 276 Ac-ft 200,700
Water year 1964-65: Max 4,100 Min 0 Mean 591 Ac-ft 427,800 (†) Mean 1,290 Ac-ft 934,100

e Indefinite stage-discharge relation.
† Combined flow, in acre-ft and mean, in cfs, of floodway, conveyance channel, Bernardo interior drain, and Lower San Juan Riverside drain. Composite records fair.

8-3320.3 Lower San Juan Riverside drain near Bernardo, N. Mex.

Location.--Lat 34°24'50", long 106°47'40", in SE¼NW¼ sec.12, T.2 N., R.1 E., on right bank, 1,400 feet downstream from bridge on U.S. Highway 60 and 2.5 miles east of Bernardo, Socorro County.

Records available.--August 1954 to September 1965. Monthly discharge only August 1955 to September 1960 published in WSP 1732 (daily records in district files). Daily records since July 1958 in files of Bureau of Reclamation.

Gage.--Water-stage recorder. Datum of gage is 4,722.35 ft above mean sea level, datum of 1929, adjustment of 1951.

Extremes.--1954-65: Maximum daily discharge, 200 cfs May 22, 1961; no flow for several days during 1963.

Remarks.--This drain is one of four channels (see Nos. 8-3319.9, 8-3320.1 and 8-3320.5) carrying flow in valley cross-section. For combined monthly flow in acre-ft of this drain, conveyance channel, floodway, and Bernardo interior drain see tabulation below daily table for No. 8-3320.1. Discharge measurements generally made 2 to 4 times a month.

Cooperation.--Since July 1958 records furnished by Bureau of Reclamation.

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 24 | 46 | 28 | 35 | 34 | 61 | 149 | 124 | 146 | 155 | 113 | 82 |
| 2 | 31 | 38 | 28 | 35 | 33 | 122 | 141 | 127 | 111 | 136 | 127 | 69 |
| 3 | 18 | 23 | 32 | 33 | 33 | 136 | 109 | 115 | 116 | 164 | 127 | 107 |
| 4 | 25 | 17 | 31 | 32 | 33 | 124 | 138 | 109 | 132 | 178 | 112 | 118 |
| 5 | 24 | 16 | 31 | 30 | 33 | 111 | 132 | 123 | 103 | 174 | 122 | 80 |
| 6 | 23 | 16 | 31 | 29 | 33 | 116 | 147 | 133 | 107 | 172 | 118 | 106 |
| 7 | 23 | 16 | 32 | 32 | 33 | 124 | 116 | 131 | 118 | 121 | 95 | 111 |
| 8 | 15 | 16 | 30 | 30 | 33 | 113 | 138 | 113 | 114 | 132 | 111 | 150 |
| 9 | 25 | 16 | 30 | 26 | 33 | 83 | 143 | 124 | 138 | 146 | 115 | 151 |
| 10 | 42 | 16 | 30 | 30 | 33 | 96 | 99 | 110 | 120 | 128 | 111 | 112 |
| 11 | 44 | 16 | 30 | 34 | 33 | 76 | 93 | 90 | 131 | 113 | 87 | 104 |
| 12 | 40 | 16 | 30 | 34 | 33 | 81 | 100 | 66 | 140 | 108 | 82 | 118 |
| 13 | 36 | 16 | 30 | 34 | 32 | 93 | 104 | 92 | 161 | 114 | 96 | 118 |
| 14 | 23 | 17 | 29 | 33 | 32 | 95 | 132 | 125 | 167 | 102 | 100 | 118 |
| 15 | 13 | 17 | 30 | 33 | 30 | 94 | 88 | 141 | 139 | 98 | 126 | 116 |
| 16 | 21 | 17 | 30 | 33 | 30 | 93 | 98 | 157 | 124 | 93 | 103 | 110 |
| 17 | 21 | 18 | 30 | 33 | 29 | 94 | 91 | 144 | 120 | 85 | 58 | 107 |
| 18 | 17 | 19 | 28 | 33 | 29 | 106 | 115 | 161 | 152 | 97 | 58 | 86 |
| 19 | 26 | 22 | 29 | 35 | 29 | 112 | 86 | 150 | 115 | 106 | 74 | 103 |
| 20 | 17 | 25 | 28 | 36 | 28 | 115 | 82 | 105 | 109 | 96 | 110 | 114 |
| 21 | 18 | 26 | 29 | 37 | 28 | 119 | 107 | 119 | 115 | 121 | 103 | 100 |
| 22 | 18 | 27 | 28 | 39 | 28 | 94 | 135 | 116 | 132 | 132 | 122 | 111 |
| 23 | 23 | 26 | 29 | 39 | 29 | 122 | 149 | 132 | 136 | 130 | 118 | 104 |
| 24 | 41 | 25 | 31 | 39 | 28 | 135 | 98 | 145 | 168 | 92 | 113 | 100 |
| 25 | 38 | 25 | 34 | 38 | 28 | 122 | 120 | 143 | 165 | 137 | 131 | 121 |
| 26 | 45 | 24 | 36 | 38 | 27 | 98 | 156 | 133 | 174 | 145 | 118 | 116 |
| 27 | 57 | 24 | 36 | 37 | 27 | 103 | 134 | 128 | 144 | 144 | 119 | 90 |
| 28 | 44 | 26 | 35 | 37 | 27 | 109 | 133 | 134 | 124 | 135 | 92 | 125 |
| 29 | 48 | 28 | 35 | 36 | - | 100 | 126 | 107 | 138 | 106 | 102 | 132 |
| 30 | 42 | 28 | 35 | 35 | ---------- | 86 | 133 | 112 | 134 | 90 | 85 | 148 |
| 31 | 35 | ---------- | 35 | 34 | ---------- | 113 | ---------- | 118 | ---------- | 104 | 100 | ---------- |
| Total | 927 | 662 | 960 | 1059 | 858 | 3246 | 3592 | 3827 | 3993 | 3854 | 3248 | 3327 |
| Mean | 29.9 | 21.1 | 31.0 | 34.2 | 30.6 | 105 | 120 | 123 | 133 | 124 | 105 | 111 |
| Ac-ft | 1840 | 1310 | 1900 | 2100 | 1700 | 6440 | 7120 | 7590 | 7920 | 7640 | 6440 | 6600 |

Calendar year 1964: Max 132 Min 8.7 Mean 45.5 Ac-ft 33,050
Water year 1964-65: Max 178 Min 13 Mean 81.0 Ac-ft 58,600

8-3320.5 Bernardo interior drain near Bernardo, N. Mex.

Location.--Lat 34°24'55", long 106°49'15", in NE¼ sec.10, T.2 N., R.1 E. (projected), on downstream side of bridge on U.S. Highway 60 and 1.0 mile east of Bernardo.

Records available.--June 1936 to May 1937, October 1943 to September 1964, included in composite flow "Rio Grande near Bernardo", (daily records in district files), October 1964 to September 1965. Monthly discharge only 1936-37 (WSP 828).

Gage.--Water-stage recorder. Datum of gage is 4,713.99 ft above mean sea level, datum of 1929, adjustment of 1951. June 4, 1936 to May 17, 1937, staff gage 150 ft downstream at datum 2.77 ft higher.

Extremes.--1952-65: Maximum daily discharge, 140 cfs May 2, 1963; no flow at times.
Prior to October 1952, drain was subject to overflow from floodway.

Remarks.--Records good. Discharge measurements generally made twice a month. This drain is 1 of 4 channels (see Nos. 8-3319.9, 8-3320.1, and 8-3320.3) carrying flow in valley cross-section. For combined monthly flow in acre-ft of this drain, conveyance channel, floodway, and Lower San Juan Riverside drain see tabulation below daily table for No. 8-3320.1. Records of chemical analyses, suspended sediment loads, and water temperatures for water year 1965 are published in part 2 of this report.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1 to Jan. 5, May 4-7)

| | |
|---|---|
| 5.0 | 23 |
| 5.4 | 43 |
| 5.8 | 77 |
| 6.2 | 124 |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 10 | 15 | 22 | 25 | 24 | 26 | 49 | 81 | 49 | 46 | 67 | 38 |
| 2 | 12 | 12 | 21 | 25 | 23 | 25 | 43 | 73 | 43 | 50 | 76 | 39 |
| 3 | 14 | 7.5 | 22 | 25 | 24 | 25 | 41 | 58 | 34 | 75 | 66 | 39 |
| 4 | 17 | 6.1 | 22 | 25 | 24 | 28 | 44 | 54 | 52 | 82 | 68 | 53 |
| 5 | 17 | 5.8 | 23 | 25 | 25 | 24 | 39 | 56 | 60 | 78 | 87 | 52 |
| 6 | 15 | 6.4 | 22 | 25 | 25 | 27 | 36 | 63 | 57 | 54 | 78 | 50 |
| 7 | 19 | 8.4 | 23 | 25 | 26 | 34 | 41 | 60 | 61 | 54 | 70 | 47 |
| 8 | 16 | 8.7 | 23 | 25 | 25 | 32 | 43 | 51 | 50 | 56 | 80 | 62 |
| 9 | 13 | 8.4 | 23 | 25 | 26 | 30 | 39 | 52 | 62 | 72 | 82 | 56 |
| 10 | 19 | 6.9 | 23 | 25 | 26 | 34 | 47 | 63 | 72 | 67 | 77 | 60 |
| 11 | 20 | 7.8 | 23 | 26 | 26 | 36 | 49 | 58 | 71 | 55 | 64 | 52 |
| 12 | 14 | 8.4 | 23 | 26 | 26 | 44 | 47 | 72 | 62 | 52 | 70 | 75 |
| 13 | 16 | 8.4 | 23 | 25 | 26 | 54 | 41 | 80 | 58 | 48 | 68 | 66 |
| 14 | 19 | 12 | 23 | 25 | 26 | 44 | 52 | 80 | 44 | 40 | 68 | 63 |
| 15 | 12 | 14 | 23 | 24 | 25 | 48 | 63 | 69 | 38 | 52 | 78 | 56 |
| 16 | 18 | 15 | 24 | 24 | 25 | 46 | 49 | 72 | 39 | 53 | 64 | 53 |
| 17 | 18 | 17 | 23 | 24 | 24 | 44 | 54 | 62 | 30 | 65 | 59 | 48 |
| 18 | 12 | 18 | 23 | 24 | 24 | 42 | 77 | 49 | 32 | 64 | 50 | 58 |
| 19 | 9.3 | 20 | 23 | 24 | 24 | 41 | 34 | 53 | 43 | 42 | 57 | 49 |
| 20 | 13 | 22 | 23 | 25 | 25 | 43 | 42 | 62 | 58 | 36 | 56 | 59 |
| 21 | 10 | 23 | 23 | 25 | 25 | 42 | 42 | 50 | 46 | 31 | 61 | 47 |
| 22 | 13 | 23 | 23 | 25 | 25 | 28 | 56 | 68 | 49 | 44 | 61 | 47 |
| 23 | 13 | 23 | 23 | 25 | 25 | 36 | 59 | 93 | 54 | 75 | 64 | 50 |
| 24 | 14 | 23 | 22 | 25 | 25 | 44 | 63 | 76 | 77 | 66 | 60 | 53 |
| 25 | 13 | 23 | 24 | 25 | 25 | 59 | 67 | 62 | 46 | 87 | 59 | 57 |
| 26 | 12 | 23 | 25 | 25 | 25 | 52 | 69 | 52 | 56 | 79 | 55 | 59 |
| 27 | 13 | 22 | 25 | 25 | 25 | 50 | 54 | 53 | 60 | 62 | 61 | 57 |
| 28 | 12 | 22 | 25 | 25 | 26 | 57 | 48 | 41 | 48 | 68 | 56 | 49 |
| 29 | 12 | 22 | 23 | 24 | - | 48 | 81 | 50 | 36 | 59 | 53 | 52 |
| 30 | 12 | 22 | 23 | 23 | ---------- | 44 | 85 | 53 | 35 | 99 | 50 | 53 |
| 31 | 12 | ---------- | 25 | 24 | ---------- | 45 | ---------- | 62 | ---------- | 105 | 41 | ---------- |
| Total | 439.3 | 453.8 | 716 | 768 | 700 | 1,232 | 1,554 | 1,928 | 1,542 | 1,916 | 2,006 | 1,599 |
| Mean | 14.2 | 15.1 | 23.1 | 24.8 | 25.0 | 39.7 | 51.8 | 62.2 | 51.4 | 61.8 | 64.7 | 53.3 |
| Ac-ft | 871 | 900 | 1,420 | 1,520 | 1,390 | 2,440 | 3,080 | 3,820 | 3,060 | 3,800 | 3,980 | 3,170 |

Calendar year 1964: Max 135 Min 4.2 Mean 38.7 Ac-ft 28,080
Water year 1964-65: Max 105 Min 5.8 Mean 40.7 Ac-ft 29,450

## 8-3340. Rio Puerco above Arroyo Chico, near Guadalupe, N. Mex.
(Formerly published as Rio Puerco above Chico Arroyo, near Guadalupe, N. Mex.)

Location.--Lat 35°36'05", long 107°09'55", in SW¼ sec.21, T.16 N., R.3 W., on right bank 1.6 miles upstream from Arroyo Chico and 5½ miles northeast of village of Guadalupe, Sandoval County.

Drainage area.--420 sq mi, approximately.

Records available.--July 1951 to September 1965.

Gage.--Water-stage recorder. Datum of gage is 5,950 ft above mean sea level, datum of 1929.

Average discharge.--14 years, 13.0 cfs (9,410 acre-ft per year).

Extremes.--Maximum discharge during year, 2,380 cfs July 15 (gage height, 7.67 ft); no flow for many days.
1951-65: Maximum discharge, 4,540 cfs Aug. 18, 1961, from rating curve extended above 280 cfs on basis of slope-area measurements at gage heights 7.75 and 10.60 ft; maximum gage height, 13.2 ft Aug. 12, 1952; no flow for many days in each year.
Flood of June 29, 1943, probably exceeded 5,000 cfs (based on records for stations above and below).

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 3,700 acres above station in past years, but present diversion negligible.

Rating table, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Apr. 13-19, Aug. 20 to Sept. 25)

| | | | |
|---|---|---|---|
| 0.1 | 0 | 0.8 | 20 |
| .2 | .1 | 1.6 | 94 |
| .3 | .6 | 2.0 | 150 |
| .4 | 2.0 | 2.5 | 240 |
| .5 | 5.4 | 3.1 | 365 |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 0 | 0 | 0.1 | 20 | 1 | 0 | 16 | 26 | 1.5 | 93 | * 0.5 |
| 2 | | 0 | 0 | .1 | 10 | .1 | 1.2 | 22 | 24 | .1 | 57 | 7.6 |
| 3 | | 0 | 0 | .1 | 10 | .1 | 6.8 | 40 | 21 | .1 | 36 | .1 |
| 4 | | 0 | 0 | .1 | 5 | .1 | 5.0 | 55 | 19 | .1 | * 5.4 | .1 |
| 5 | | 30 | 0 | .1 | 1 | .1 | 4.6 | 52 | 18 | 0 | 2.2 | .2 |
| 6 | | * 1.2 | 0 | * .1 | * .8 | .1 | 3.6 | * 40 | 16 | 0 | 1 | 1.6 |
| 7 | (*) | .1 | 0 | 39 | .8 | .2 | 1.4 | 40 | 14 | 0 | .5 | 2.7 |
| 8 | | 0 | 0 | 130 | .8 | .2 | .5 | 42 | 10 | 0 | .1 | 120 |
| 9 | | 0 | .1 | 50 | 1.2 | .3 | .3 | 40 | 19 | 0 | .1 | 54 |
| 10 | | 0 | * 0 | 20 | 1.1 | .3 | .3 | 27 | * 46 | 0 | .1 | 5 |
| 11 | | .1 | .6 | 5 | .5 | * .5 | .2 | 22 | 58 | 0 | .1 | 3 |
| 12 | | 0 | .1 | 1 | .3 | .5 | .2 | 22 | 72 | 6.0 | 1.8 | 163 |
| 13 | | 0 | 0 | 1 | .4 | 1.6 | * .2 | 36 | 53 | .1 | .2 | * 21 |
| 14 | | 0 | 0 | 1 | .3 | 3.6 | .1 | 51 | 40 | 18 | 19 | 8.6 |
| 15 | | 0 | 0 | 1 | .3 | 1.4 | 0 | 33 | 30 | * 322 | 56 | 3.9 |
| 16 | | .1 | 0 | 1 | 1 | 1.4 | 0 | * 31 | 25 | 9.1 | 364 | 1.1 |
| 17 | | * 0 | 0 | 1 | .1 | 1.1 | 0 | 24 | * 21 | 14 | 61 | .5 |
| 18 | | 0 | 0 | 1 | .1 | .8 | 0 | 40 | 50 | 5 | 5 | .3 |
| 19 | | 0 | 0 | 1 | .2 | .7 | 0 | 61 | 32 | 1 | 1 | .1 |
| 20 | | 0 | 0 | 1 | * .3 | .2 | 2.9 | 77 | 19 | .5 | * .3 | 26 |
| 21 | (*) | 0 | .1 | 5 | 28 | .5 | * 7.7 | 89 | 10 | .1 | .5 | 75 |
| 22 | | 0 | .1 | 10 | 45 | .3 | 12 | 88 | 5 | 105 | .6 | 4 |
| 23 | | 0 | .1 | 2 | 34 | .2 | 21 | 79 | 2 | 24 | .5 | * 2.0 |
| 24 | | 0 | .1 | 2 | 5 | .1 | 37 | 74 | 44 | 5 | .4 | .7 |
| 25 | | 0 | .1 | 1 | 1 | .1 | 50 | 60 | 5 | 11<br>12 | .3 | .5 |
| 26 | | 0 | .1 | .1 | 1 | .1 | 57 | 45 | 3 | * 12 | .1 | .4 |
| 27 | | 0 | .1 | .1 | 2 | 0 | 40 | * 31 | 2 | 3.0 | .1 | .3 |
| 28 | | 0 | .1 | .1 | 5 | 0 | * 24 | 20 | * 2.0 | 22 | .1 | .3 |
| 29 | | 0 | .1 | .1 | | 0 | 18 | 18 | .8 | 126 | .3 | .2 |
| 30 | | 0 | .1 | 1 | ---------- | * 0 | 16 | 18 | .6 | 5 | 11 | .2 |
| 31 | | ---------- | .1 | 5 | ---------- | 0 | ---------- | 21 | ---------- | 22 | 6.8 | ---------- |
| Total | 0 | 31.5 | 1.5 | 280.0 | 174.3 | 15.6 | 310.0 | 1,314 | 687.4 | 712.6 | 724.5 | 502.9 |
| Mean | 0 | 1.05 | 0.05 | 9.03 | 6.22 | 0.50 | 10.3 | 42.4 | 22.9 | 23.0 | 23.4 | 16.8 |
| Ac-ft | 0 | 62 | 3.0 | 555 | 346 | 31 | 615 | 2,610 | 1,360 | 1,410 | 1,440 | 997 |

Calendar year 1964: Max 372 Min 0 Mean 2.52 Ac-ft 1,830
Water year 1964-65: Max 364 Min 0 Mean 13.0 Ac-ft 9,430

Peak discharge (base, 1,800 cfs).--July 15 (0100) 2,380 cfs (7.67 ft).

* Discharge measurement or observation of no flow made on this day.
Note.--No gage-height record Oct. 1-6, Jan. 9 to Feb. 5, Feb. 24-28, Mar. 1-10, 22-29, Apr. 8-12, June 15, 16, 21-23, 25-27, July 2-11, 13, 18-21, 24, 30, Aug. 6-13, 18, 19, Sept. 4, 5, 10, 11, 17-19, 22, 26-30; Stage-discharge relation affected by ice Dec. 14 to Jan. 6.

## 8-3405. Arroyo Chico near Guadalupe, N. Mex.
(Formerly published as Chico Arroyo near Guadalupe, N. Mex.)

Location.--Lat 35°35'40", long 107°11'20", in NE¼ sec.30, T.16 N., R.3 W., on left bank a quarter of a mile upstream from mouth, 4½ miles northwest of Guadalupe, and 5½ miles southwest of Cabezon.

Drainage area.--1,390 sq mi, approximately.

Records available.--November 1943 to September 1965.

Gage.--Water-stage recorder and concrete control. Datum of gage is 5,923 ft above mean sea level, datum of 1929.

Average discharge.--22 years, 22.9 cfs (16,580 acre-ft per year).

Extremes.--Maximum discharge during year, 4,160 cfs July 29 (gage height, 7.06 ft), from rating curve extended as explained below; no flow for many days.
1943-65: Maximum discharge, 12,200 cfs July 17, 1953 (gage height, 15.1 ft), from rating curve extended above 2,900 cfs on basis of slope-area measurements at gage heights 9.6 and 12.8 ft; no flow at times.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 100 acres above station.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1.8 | 0 | 2.3 | 3.9 | 2.8 | 26 | 3.5 | 260 |
| 1.9 | .2 | 2.5 | 7.2 | 2.9 | 40 | 4.0 | 630 |
| 2.0 | .6 | 2.6 | 11 | 3.1 | 85 | 4.5 | 1,120 |
| 2.1 | 1.4 | 2.7 | 17 | 3.3 | 150 | 5.0 | 1,660 |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | a 0.1 | 0 | 0 | 0.1 | 0 | b0.2 | 0 | 0 | 0 | a .4 | 386 | * 82 |
| 2 | a .1 | 0 | .3 | 0 | 3.5 | b .2 | 0 | 0 | 0 | a .1 | 1,510 | 664 |
| 3 | a 0 | 0 | .2 | .1 | b 2.5 | b .3 | 0 | 0 | 0 | a 0 | 263 | 141 |
| 4 | a 0 | 0 | .1 | .1 | b 2 | b .5 | 0 | 0 | 0 | a 0 | *37 | 11 |
| 5 | a 0 | 0 | 0 | .1 | a 1.5 | b 1.0 | 0 | 0 | 0 | a 0 | 6.3 | 61 |
| 6 | 0 | *0 | 0 | * .2 | *1.3 | b1.0 | 0 | * 0 | 0 | a 0 | a 1 | 65 |
| 7 | *0 | 0 | 0 | .1 | 1.6 | b1.0 | 0 | 0 | 0 | a 0 | a .2 | 4.59 |
| 8 | 0 | 0 | 0 | b .2 | 1.6 | b1.0 | 0 | 0 | 0 | a 0 | a .1 | 572 |
| 9 | 0 | 0 | 0 | b .4 | b1 | b .5 | 0 | 0 | 0 | a 0 | a .1 | 325 |
| 10 | 0 | 0 | * .1 | b .6 | b1 | .2 | 0 | 0 | *31 | a 0 | a 0 | 26 |
| 11 | 0 | 0 | 0 | b .8 | b .5 | * .6 | 0 | 0 | 20 | a 0 | a 0 | a 5 |
| 12 | 0 | 0 | 0 | b .8 | a .1 | 1.1 | 0 | 0 | 5.0 | 7.5 | a 0 | 236 |
| 13 | 0 | 0 | 0 | b .8 | a 0 | .5 | ** 0 | 0 | 4.2 | 3.5 | a 0 | * 32 |
| 14 | **0 | 0 | 0 | b .8 | a 0 | .2 | 0 | 0 | a 1 | 4.5 | a 0 | 3.9 |
| 15 | 0 | .1 | 0 | b .6 | a .1 | .1 | 0 | 0 | a .2 | * 2.1 | .6 | a 1 |
| 16 | 0 | *.3 | 0 | b .3 | | .1 | 0 | * 1.8 | a 0 | .1 | 5.6 | a .4 |
| 17 | .1 | *.2 | 0 | b .6 | .2 | .1 | 0 | 0 | * 0 | 7.0 | 205 | a .1 |
| 18 | 16 | .1 | 0 | b .6 | .2 | a .1 | 0 | 0 | .1 | 87 | 330 | a .1 |
| 19 | a 1 | 0 | .1 | b .5 | .3 | a .1 | 0 | 0 | 0 | 58 | 41 | a .1 |
| 20 | a .1 | 0 | 0 | .7 | * .4 | a .1 | 0 | 0 | 0 | 5.0 | * 5.5 | 196 |
| 21 | 0 | 0 | 0 | .5 | b .3 | a 0 | * 0 | 0 | 0 | a 1.5 | 2.2 | 518 |
| 22 | 0 | 0 | .1 | b .1 | b .1 | a 0 | 0 | 0 | 0 | 3.0 | 14 | 224 |
| 23 | 0 | 0 | .2 | a 0 | b .1 | a 0 | 0 | 0 | 0 | 10 | 36 | * 1.0 |
| 24 | 0 | 0 | .1 | a .2 | b .4 | a 0 | 0 | 0 | .4 | a 2 | 4.3 | .1 |
| 25 | 0 | 0 | 0 | a 0 | b .8 | a 0 | 0 | 0 | 1.7 | a 1 | a 1 | 0 |
| 26 | 0 | 0 | 0 | a 0 | b .8 | a 0 | .8 | 0 | .5 | *31 | a .2 | 0 |
| 27 | 0 | 0 | 0 | a 0 | * .9 | a 0 | .6 | * 0 | a 0 | 18 | a .1 | 0 |
| 28 | 0 | 0 | .2 | a 0 | .8 | a 0 | ** 0 | 0 | * 0 | 58 | 65 | 0 |
| 29 | 0 | 0 | .3 | a 0 | - | a 0 | 0 | 0 | 6.5 | 578 | 31 | 0 |
| 30 | 0 | 0 | .1 | a 0 | ---------- | * 0 | 0 | 0 | 8.5 | 58 | 83 | 0 |
| 31 | 0 | ---------- | .1 | a 0 | ---------- | 0 | ---------- | 0 | ---------- | 230 | 11 | ---------- |
| Total | 17.4 | 0.7 | 1.9 | 9.2 | 22.2 | 8.9 | 1.4 | 1.8 | 124.1 | 1,165.7 | 3,039.2 | 3,623.7 |
| Mean | 0.56 | 0.02 | 0.06 | 0.30 | 0.79 | 0.29 | 0.05 | 0.06 | 4.13 | 37.6 | 98.0 | 121 |
| Ac-ft | 35 | 1.4 | 3.8 | 18 | 44 | 18 | 2.8 | 3.6 | 246 | 2,310 | 6,030 | 7,190 |

Calendar year 1964 : Max 983 Min 0 Mean 21.8 Ac-ft 15,870
Water year 1964-65 : Max 1,510 Min 0 Mean 22.0 Ac-ft 15,900

Peak discharge (base, 2,900 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 7-29 | 0030 | 7.06 | 4,160 | 9-7 | 2030 | 6.30 | 3,260 |
| 8-2 | 0200 | 6.60 | 3,630 | | | | |

* Discharge measurement or observation of no flow made on this day
** Field estimate made on this day.
a No gage-height record.
b Stage-discharge relation affected by ice.

8-3414. Bluewater Lake near Bluewater, N. Mex.

Location.--Lat 35°17'40", long 108°06'40", in SE¼ sec.4, T.12 N., R.12 W., on left end of dam and 9.5 miles west of Bluewater.

Drainage area.--201 sq mi.

Records available.--June 1927 to December 1950, April 1958 to September 1965. June 1927 to December 1950 in Water Bulletins (Nos. 10-20) of International Boundary and Water Commission (see also WSP 1732). January 1951 to June 1958 in files of Bluewater - Toltec Irrigation Co.

Gage.--Water-stage recorder. Datum of gage is 7,345.57 ft above mean sea level, datum of 1929. July 1958 to January 1961, inclined staff gage and supplemental staff sections. Gage heights have been converted to sea-level elevations.

Extremes.--Maximum contents during year, 12,260 acre-ft May 2 (elevation, 7,381.7 ft); minimum observed, 3,850 acre-ft Dec. 31 (elevation, 7,366.9 ft).
1927-50, 1958-65: Maximum contents determined, 47,100 acre-ft in April 1941 (date and elevation not available), from table then in use; no storage at times prior to 1947.

Remarks.--Reservoir is formed by concrete arch dam. Storage began in 1927. Capacity, 38,500 acre-ft at elevation 7,402.6 ft (crest of uncontrolled siphon spillway which is vented to avoid drawdown below crest), and 44,200 acre-ft at elevation 7,405.6 ft (crest of ungated spillway over dam). Dead storage, 3.4 acre-ft at elevation 7,345.4 ft (sill of lower outlet tube). Lake not usually drawn below conservation pool level (elevation, 7,365.36 ft), below which ownership is by State Game and Fish Department. Above this level, water is owned and used by Bluewater - Toltec Irrigation Co. Figures given herein represent total contents, based on table derived from 10-foot contour survey made in 1945 by Bureau of Reclamation. Prior to Jan. 27, 1961, contents computed from daily staff gage readings at about 0800; recorded gage heights at 2400 to September 1963; incomplete recorder record supplemented by monthly staff readings to September 1965.

Month-end elevations and contents, water year October 1964 to September 1965

| Date | Elevation (feet) | Contents (acre-feet) | Change in contents (acre-feet) |
|---|---|---|---|
| Sept. 30 | 7,368.4 | 4,380 | - |
| Oct. 31 | 7,367.4 | 4,020 | - 360 |
| Nov. 30 | 7,367.1 | 3,920 | - 100 |
| Dec. 31 | 7,366.9 | 3,850 | - 70 |
| Calendar year 1964 | - | - | - 240 |
| Jan. 31 | 7,368.0 | 4,230 | + 380 |
| Feb. 28 | 7,369.0 | 4,600 | + 370 |
| Mar. 31 | 7,374.7 | 7,330 | + 2,730 |
| Apr. 30 | 7,381.6 | 12,180 | + 4,850 |
| May 31 | 7,379.7 | 10,700 | - 1,480 |
| June 30 | 7,377.3 | 8,980 | - 1,720 |
| July 31 | 7,375.5 | 7,810 | - 1,170 |
| Aug. 31 | 7,373.5 | 6,650 | - 1,160 |
| Sept. 30 | 7,372.6 | 6,180 | - 470 |
| Water year 1964-65 | - | - | + 1,800 |

8-3420. Bluewater Creek near Bluewater, N. Mex.

Location.--Lat 35°17'50", long 108°01'40", in W½SW¼ sec.5, T.12 N., R.11 W., on left bank 3½ miles northwest of Bluewater Village and 8 miles downstream from Bluewater Dam.

Drainage area.--209 sq mi.

Records available.--July 1912 to August 1915, April 1916 to June 1919, January 1927 to September 1965. Figures of daily discharge for July 20-23, 1912, published in WSP 358, have been found to be unreliable and should not be used. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Altitude of gage is 6,720 ft (by barometer). Prior to Mar. 4, 1918, at site 113 ft upstream at different datums. Mar. 4, 1918, to Mar. 17, 1939, at site 83 ft upstream; Mar. 4, 1918, to June 28, 1919 (destroyed by flood), at datum 1.92 ft higher; Apr. 6, 1921, to Mar. 17, 1939, at datum 1.57 ft higher.

Average discharge.--43 years (1912-15, 1916-18, 1927-65), 9.82 cfs (7,110 acre-ft per year).

Extremes.--Maximum discharge during year, 126 cfs Sept. 8 (gage height, 4.38 ft); minimum, 0.4 cfs Jan. 26, Mar. 5.
1912-18, 1927-65: Maximum discharge observed, about 1,510 cfs Mar. 10, 1916 (gage height, 8.6 ft, site and datum then in use, from floodmarks), from rating curve extended above 4.4 ft by logarithmic plotting; no flow at times.
Maximum flood known occurred Sept. 6, 1909 when Bluewater Dam washed out; stage and discharge not determined. A major flood occurred during period July 12-19, 1919, discharge not determined (gage height, 13.5 ft, from floodmarks, site and datum in use Mar. 4, 1918 to June 28, 1919).

Remarks.--Records good except those for periods of ice effect, which are fair. Flow regulated by Bluewater Lake (capacity at crest of uncontrolled siphon spillways, 38,500 acre-ft).

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

| Oct. 1 to May 2 | | May 3 to Sept. 30 | | | |
|---|---|---|---|---|---|
| 2.6 | 0.5 | 2.6 | 1.0 | 3.1 | 14 |
| 2.7 | 1.3 | 2.7 | 2.7 | 3.2 | 19 |
| 2.8 | 2.8 | 2.8 | 4.7 | 3.3 | 24 |
| 3.0 | 8.4 | 2.9 | 7.3 | 3.4 | 30 |
| 3.2 | 15 | 3.0 | 10 | 3.5 | 36 |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3.5 | 1.2 | 1.1 | 1.1 | * 1.2 | 1.1 | * 1.6 | * 3.0 | * 35 | * 25 | 3.6 | 12 |
| 2 | 2.4 | 1.2 | 1.1 | 1 | 1.0 | 1.1 | 1.5 | 3.4 | 36 | 24 | 4.7 | *12 |
| 3 | 2.2 | 1.2 | 1.2 | 1 | 1.0 | 1.1 | 1.5 | 12 | 34 | 22 | 2.5 | 8.3 |
| 4 | 2.2 | 1.2 | 1.2 | 1 | .9 | 1.2 | 1.5 | 24 | 34 | 22 | 1.8 | 5.7 |
| 5 | 2.2 | 1.2 | 1.1 | 1 | .9 | 1.1 | 1.5 | 25 | 33 | 28 | 1.7 | 4.7 |
| 6 | 4.0 | 1.1 | 1.2 | 1.1 | .9 | 1.2 | 1.6 | 25 | 32 | 31 | 1.7 | 4.4 |
| 7 | 4.8 | 1.1 | 1.1 | 1.1 | 1.1 | 1.2 | 1.6 | 25 | 33 | 29 | 1.7 | 4.4 |
| 8 | 4.5 | 1.2 | 1.1 | 1.1 | 1.1 | 1.1 | 1.6 | 24 | 32 | 29 | 1.7 | 16 |
| 9 | 4.8 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.6 | 25 | 32 | 31 | 3.6 | 6.0 |
| 10 | 9.7 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.8 | 25 | 6.8 | 27 | 9.2 | 3.6 |
| 11 | 9.4 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 2.1 | * 24 | 5.2 | 25 | 16 | 3.2 |
| 12 | 7.5 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 2.2 | 24 | 8.9 | 22 | 23 | 4.2 |
| 13 | 7.5 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 2.1 | 22 | 7.0 | 25 | 28 | 3.4 |
| 14 | 7.5 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 2.1 | 19 | 6.3 | * 26 | 24 | 3.4 |
| 15 | 7.8 | 1.2 | 1.1 | 1.1 | 1.2 | 1.3 | 2.1 | 19 | * 6.3 | 27 | 24 | 4.0 |
| 16 | 4.5 | 1.3 | 1.1 | 1.1 | 1.2 | 1.3 | 2.1 | 17 | 16 | 26 | 24 | 4.4 |
| 17 | 2.2 | 1.3 | 1.1 | 1.1 | 1.1 | 1.3 | 2.1 | 19 | 20 | 18 | 26 | 4.7 |
| 18 | 2.2 | * 1.3 | 1.1 | 1.1 | 1 | 1.3 | 2.1 | 20 | 20 | 23 | 26 | 4.7 |
| 19 | 2.2 | 1.3 | 1.1 | 1.1 | 1 | 1.2 | 2.1 | 22 | 20 | 22 | * 26 | 4.7 |
| 20 | 2.0 | 1.2 | 1.1 | 1.1 | 1.2 | 1.2 | 2.4 | 23 | 20 | 22 | 27 | 6.5 |
| 21 | 1.4 | 1.2 | 1.1 | 1.1 | 1.3 | 1.2 | 2.6 | 24 | 22 | 5.5 | 28 | 6.8 |
| 22 | 1.3 | 1.2 | 1.1 | 1 | 1.2 | 1.3 | 2.6 | 28 | 24 | 12 | 26 | 7.0 |
| 23 | 1.3 | 1.2 | 1.1 | 1 | 1.2 | 1.4 | 2.6 | 29 | 28 | 12 | 28 | 7.3 |
| 24 | 1.3 | 1.1 | 1.1 | 1 | 1.2 | 1.4 | 2.6 | 29 | 28 | 12 | 28 | 7.3 |
| 25 | 1.3 | 1.1 | 1.1 | 1 | 1.2 | 1.4 | 2.8 | 32 | 24 | 12 | 26 | 7.0 |
| 26 | 1.2 | 1.1 | 1.1 | 1 | 1.2 | 1.4 | 3.2 | 33 | 25 | 10 | 25 | 5.5 |
| 27 | 1.2 | 1.1 | 1.1 | 1 | * 1.1 | 1.4 | 3.8 | 35 | 24 | 6.0 | 24 | 4.2 |
| 28 | 1.2 | 1.1 | 1.1 | 1.3 | 1.1 | 1.4 | 3.5 | 35 | 28 | 3.6 | 23 | 5.5 |
| 29 | 1.2 | 1.1 | 1.1 | 1.3 | - | 1.5 | 3.2 | 36 | 28 | * 2.8 | 22 | 5.7 |
| 30 | 1.2 | * 1.1 | 1.1 | 1.3 | ---------- | 1.5 | 3.0 | 36 | 26 | 2.4 | 22 | 6.0 |
| 31 | * 1.2 | ---------- | * 1.1 | 1.3 | ---------- | 1.6 | ---------- | 36 | ---------- | 4.1 | 15 | ---------- |
| Total | 106.9 | 34.9 | 34.4 | 33.9 | 30.9 | 38.8 | 67.1 | 753.4 | 694.5 | 586.4 | 543.2 | 182.6 |
| Mean | 3.45 | 1.16 | 1.11 | 1.09 | 1.10 | 1.25 | 2.24 | 24.3 | 23.2 | 18.9 | 17.5 | 6.09 |
| Ac-ft | 212 | 69 | 68 | 67 | 61 | 77 | 133 | 1,490 | 1,380 | 1,160 | 1,080 | 362 |

Calendar year 1964: Max 35 Min 1.0 Mean 8.74 Ac-ft 3,200
Water year 1964-65: Max 36 Min 0.9 Mean 8.45 Ac-ft 6,160

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 8 to Jan. 18, Jan. 22-27, Feb. 11-14, 17-19, 23, 24.

## 8-3430. Bluewater Creek at Grants, N. Mex.

Location.--Lat 35°09'20", long 107°52'10", in SW¼NW¼ sec.26, T.11 N., R.10 W., on right bank at bridge on State Highway 53 at Grants, 0.2 mile south of U.S. Highway 66.

Drainage area.--1,020 sq mi, approximately.

Records available.--October 1912 to February 1914, June 1914, October 1914 to February 1915, May 1915 to June 1921, September 1921 to June 1923, October 1923 to May 1926, September to December 1926, May 1949 to September 1965. Monthly discharge only for some periods published in WSP 1312.

Gage.--Water-stage recorder. Datum of gage is 6,468.34 ft above mean sea level (levels by Corps of Engineers). Oct. 30, 1912, to Apr. 23, 1915, staff gage, Apr. 24, 1915, to Dec. 5, 1917, chain gage, and Dec. 6, 1917, to Dec. 31, 1926, staff gage, at nearby sites at different datums.

Average discharge.--26 years (1912-13, 1914-20, 1921-22, 1923-25, 1949-65), 4.58 cfs (3,320 acre-ft per year).

Extremes.--Maximum discharge during year, 81 cfs Aug. 1 (gage height, 2.64 ft); no flow for most of year.
1949-65: Maximum discharge recorded, 1,760 cfs Aug. 28, 1952 (gage height, 5.35 ft), from rating curve extended above 300 cfs on basis of velocity-area studies; no flow for long periods.
Maximum flood known occurred Sept. 6 or 7, 1909, when Bluewater Dam washed out.

Remarks.--Records fair. Flow partly regulated by Bluewater Lake (capacity at crest of uncontrolled siphon spillway, 38,500 acre-ft). Diversions and ground-water withdrawals for irrigation of about 4,500 acres above station.

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | *0 | *0.1 | *0.2 | 13 | 0.7 |
| 2 | | | | | (*) | | | 0 | 0 | 0 | 48 | *.5 |
| 3 | | | | | | | | 0 | 0 | 0 | 50 | .2 |
| 4 | | | | | | | | 0 | 0 | 0 | 6.9 | 0 |
| 5 | | | | | | | | 0 | 0 | .1 | 1.2 | 0 |
| 6 | | | | | | | | 0 | 0 | .1 | .3 | 0 |
| 7 | | | | | | | | 0 | 0 | .4 | 0 | 0 |
| 8 | | | | | | | | 0 | 0 | .2 | 0 | 0 |
| 9 | | | | | | | | 0 | 8.1 | .4 | 0 | 21 |
| 10 | | | | | | | | 0 | 10 | .2 | 0 | 5.5 |
| 11 | | | | | | | | 0 | .2 | .2 | 0 | .5 |
| 12 | | | | | | | | 0 | 0 | .1 | 0 | .2 |
| 13 | | | | | | | | 0 | 0 | .2 | 0 | .1 |
| 14 | | | | | | | | 0 | 0 | .2 | 5.3 | .1 |
| 15 | | | | | | | | 0 | 0 | 1.8 | 16 | 0 |
| 16 | | | | | | | | 0 | .1 | 1.3 | 3.0 | .2 |
| 17 | | | | | | | | 0 | 1.1 | .4 | 1.5 | .7 |
| 18 | | (*) | | | | | | 0 | .1 | .1 | 1.0 | .7 |
| 19 | | | | | | | | 0 | 1.8 | 1.3 | *3.8 | .4 |
| 20 | | | | | | | | 0 | 1.4 | .5 | 3.0 | .2 |
| 21 | | | | | | | | 0 | .7 | 5.5 | 2.4 | .1 |
| 22 | | | | | | | | 0 | 1.0 | 3.6 | 2.8 | .5 |
| 23 | | | | | | | | 0 | 1.4 | .2 | 2.0 | .7 |
| 24 | | | | | | | | 0 | 2.3 | 0 | 1.4 | .8 |
| 25 | | | | | | | | 0 | .2 | 0 | 1.0 | .7 |
| 26 | | | | | | | | 0 | 0 | .5 | .8 | .4 |
| 27 | (*) | | | | (*) | | | 0 | .7 | 2.0 | 1.3 | 0 |
| 28 | | | | | | | | 0 | .5 | .2 | 1.5 | .9 |
| 29 | | | | | - | | | 0 | .5 | *.2 | 1.1 | .6 |
| 30 | | (*) | (*) | | ---------- | | | 0 | .2 | 0 | .6 | .8 |
| 31 | | ---------- | | | ---------- | (*) | ---------- | .1 | ---------- | 0 | .8 | ---------- |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 | 30.4 | 19.9 | 168.7 | 36.5 |
| Mean | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.003 | 1.01 | 0.64 | 5.44 | 1.22 |
| Ac-ft | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.2 | 60 | 39 | 335 | 72 |

Calendar year 1964: Max 45 Min 0 Mean 0.29 Ac-ft 209
Water year 1964-65: Max 50 Min 0 Mean 0.70 Ac-ft 506

Peak discharge (base, 200 cfs).--No peak above base.

* Discharge measurement or observation of no flow made on this day.

8-3431. Grants Canyon at Grants, N. Mex.

Location.--Lat 35°09'40", long 107°50'15", in NE¼NE¼ sec.25, T.11 N., R.10 W., at Roosevelt Avenue, in the town of Grants, 0.2 mile east of intersection of Roosevelt and First Avenue and 1.1 mile upstream from confluence with Bluewater Creek (to form Rio San Jose).

Drainage area.--13.0 sq mi.

Records available.--December 1961 to September 1965.

Gage.--Water-stage recorder and control formed by four culvert barrels. Altitude of gage is 6,450 ft (from topographic map).

Extremes.--Maximum discharge during year, 255 cfs Sept. 8 & 11 (gage height, 2.14 ft); no flow for most of time.
1962-65: Maximum discharge, 1,550 cfs Aug. 26, 1963 (gage height, 5.10 ft), from rating curve extended above 218 cfs on basis of slope-area measurements at gage heights 3.17 and 5.10 ft; no flow for most of time.

Remarks.--Records poor.

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | (*) | * 0 | * 0 | 5.2 | 0 |
| 2 | | | | | (*) | | | | 0 | 0 | 1.6 | * 3.4 |
| 3 | | | | | | | | | 0 | 0 | 0 | a 0 |
| 4 | | | | | | | | | 0 | 0 | 0 | a 0 |
| 5 | | | | | | | | | 0 | 0 | 0 | a 0 |
| 6 | | | | | | | | | 0 | 0 | 0 | a 0 |
| 7 | | | | | | | | | 0 | 0 | 0 | a 1 |
| 8 | | | | | | | | | 0 | 0 | 0 | 1.3 |
| 9 | | | | | | | | | 2.9 | 0 | 0 | a 0 |
| 10 | | | | | | | | | .6 | 0 | 0 | a 0 |
| 11 | | | | | | | | | 0 | 0 | 0 | 8.2 |
| 12 | | | | | | | | | 0 | 0 | 0 | a 0 |
| 13 | | | | | | | | | 0 | 0 | .1 | a 0 |
| 14 | | | | | | | | | 0 | 0 | 0 | a 0 |
| 15 | | | | | | | | | * 0 | .8 | 0 | a 0 |
| 16 | | | | | | | | | 0 | .4 | 9.4 | a 0 |
| 17 | | | | | | | | | 0 | .2 | a 0 | a 0 |
| 18 | | (*) | | | | | | | .9 | 0 | a 0 | a 0 |
| 19 | | | | | | | | | 0 | 0 | * 0 | a 1 |
| 20 | | | | | | | | | 0 | 0 | 0 | a 0 |
| 21 | | | | | | | | | 0 | 0 | 0 | a 0 |
| 22 | | | | | | | | | 0 | 0 | 0 | a 0 |
| 23 | | | | | | | | | 0 | 2.0 | 0 | a 0 |
| 24 | | | | | | | | | 0 | .1 | 0 | a 0 |
| 25 | | | | | | | | | 0 | 0 | 0 | a 0 |
| 26 | | | | | | | | | 0 | 0 | 0 | a 0 |
| 27 | (*) | | | | (*) | | | | 0 | 0 | 0 | a 0 |
| 28 | | | | | | | | | 0 | 0 | 0 | a 0 |
| 29 | | | | | - | | | | 0 | * 0 | 2.0 | a 0 |
| 30 | | (*) | (*) | | ---------- | | | | 0 | 0 | 0 | a 0 |
| 31 | | ---------- | | | ---------- | (*) | --------- | | ---------- | 8.0 | 0 | ---------- |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4.6 | 11.5 | 32.7 | 26.6 |
| Mean | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.15 | 0.37 | 1.05 | 0.89 |
| Ac-ft | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9.1 | 23 | 65 | 53 |

Calendar year 1964: Max 9.8 Min 0 Mean 0.12 Ac-ft 85
Water year 1964-65: Max 16 Min 0 Mean 0.21 Ac-ft 150

Peak discharge (base, 100 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 6-9 | 2015 | 1.32 | 101 | 9-2 | 1230 | 1.80 | 170 |
| 7-31 | 2030 | 1.45 | 120 | 9-8 | 1650 | 2.14 | 255 |
| 8-2 | 0500 | 1.82 | 225 | 9-11 | 1850 | 2.14 | 255 |
| 8-16 | 1715 | 2.00 | 245 | | | | |

* Discharge measurement or observation of no flow made on this day.
a No gage-height record.

8-3435. Rio San Jose near Grants, N. Mex.

Location.--Lat 35°04'30", long 107°45'00", in SE¼SE¼ sec.23, T.10 N., R.9 W., on right bank at west boundary of Acoma Pueblo Grant, 8½ miles southeast of Grants.

Drainage area.--2,300 sq mi, approximately, of which about 1,130 sq mi does not contribute directly to surface runoff.

Records available.--June 1936 to September 1965. Prior to October 1955, published as San Jose River near Grants.

Gage.--Water-stage recorder and concrete control. Datum of gage is 6,269.47 ft above mean sea level, datum of 1929.

Average discharge.--29 years, 6.67 cfs (4,830 acre-ft per year).

Extremes.--Maximum discharge during year, 53 cfs Aug. 2, & 29 (gage height, 1.93 ft); minimum, 3.4 cfs Dec. 15.
1936-65: Maximum discharge, 1,400 cfs Sept. 20, 1963 (gage height, 4.87 ft), from rating curve extended above 438 cfs on basis of slope-area measurements at gage heights 3.19 and 4.87 ft; minimum, 3.1 cfs Sept. 18, 1948 & May 1, 1963.
Maximum flood known probably occurred Sept. 6 or 7, 1909, following destruction of Bluewater Dam. The peak of August 1947 may have been exceeded by those of August and September 1929, and August 1935.

Remarks.--Records good. Flow partly regulated by Bluewater Lake (capacity at crest of uncontrolled siphon spillway, 38,500 acre-ft). Diversions and ground-water withdrawal for irrigation of about 5,100 acres above station.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

| | | | |
|---|---|---|---|
| 1.3 | 2.3 | 1.7 | 23 |
| 1.4 | 4.9 | 1.8 | 34 |
| 1.6 | 15 | | |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 4.6 | 4.0 | 4.3 | 4.3 | 4.9 | 4.6 | 4.3 | 4.6 | * 4.3 | * 4.9 | 6.1 | 5.7 |
| 2 | 4.6 | 4.0 | 4.3 | 4.0 | * 4.6 | 4.6 | 4.3 | * 4.6 | 4.3 | 4.6 | 15 | * 7.5 |
| 3 | 4.6 | 4.3 | 4.6 | 4.0 | 4.6 | 4.6 | 4.3 | 4.6 | 4.3 | 4.6 | 24 | 5.3 |
| 4 | 4.6 | 4.0 | 4.3 | 4.3 | 4.6 | 4.6 | 4.3 | 4.6 | 4.3 | 4.6 | 33 | 5.3 |
| 5 | 4.3 | 4.0 | 4.3 | 4.3 | 4.6 | 4.6 | 4.3 | 4.6 | 4.3 | 4.3 | 21 | 4.6 |
| 6 | 4.3 | 4.0 | 4.3 | 4.6 | 4.6 | 4.6 | 4.3 | 4.6 | 4.3 | 4.6 | 11 | 4.3 |
| 7 | 4.6 | 4.0 | 4.3 | 4.9 | 4.6 | 4.3 | 4.3 | 4.6 | 4.3 | 4.6 | 7.5 | 4.0 |
| 8 | 4.6 | 4.0 | 4.3 | 4.6 | 4.6 | 4.3 | 4.3 | 5.3 | 4.3 | 4.9 | 6.1 | 4.9 |
| 9 | 4.3 | 4.0 | 4.3 | 4.3 | 4.6 | 4.3 | 4.6 | 5.3 | 4.3 | 4.9 | 5.3 | 5.7 |
| 10 | 4.3 | 4.0 | 4.6 | 4.3 | 4.6 | 4.3 | 4.9 | 5.3 | 4.6 | 4.9 | 5.3 | 7.5 |
| 11 | 4.3 | 4.0 | 4.6 | 4.6 | 4.6 | 4.6 | 4.9 | 4.6 | 6.1 | 5.3 | 4.9 | 17 |
| 12 | 4.3 | 4.0 | 4.3 | 4.6 | 4.6 | 4.6 | 4.6 | 4.9 | 8.5 | 5.3 | 4.9 | 10 |
| 13 | 4.3 | 4.0 | 4.0 | 4.6 | 4.3 | 4.6 | 4.9 | 5.3 | 6.1 | 5.7 | 4.9 | 8.0 |
| 14 | 4.3 | 4.3 | 3.7 | 4.6 | 4.6 | 4.6 | 5.3 | 5.3 | 4.9 | 5.7 | 4.9 | 7.5 |
| 15 | 4.3 | 4.0 | 4.0 | 4.6 | 4.6 | 4.6 | 4.9 | 5.3 | 4.9 | 5.7 | 5.3 | 4.9 |
| 16 | 4.3 | 4.3 | 4.3 | 4.6 | 4.6 | 4.6 | 4.6 | 5.3 | 4.6 | 5.7 | 7.0 | 4.3 |
| 17 | 4.3 | 4.3 | 4.3 | 4.6 | 4.6 | 4.6 | 4.6 | 5.3 | 4.6 | 5.7 | 15 | 4.3 |
| 18 | 4.6 | * 4.3 | 4.0 | 4.6 | 4.3 | 4.6 | 4.6 | 5.3 | 4.9 | 6.1 | * 12 | 4.3 |
| 19 | 4.3 | 4.3 | 4.0 | 4.6 | 4.3 | 4.3 | 4.6 | 5.3 | 5.3 | 6.1 | 7.5 | 4.3 |
| 20 | 4.3 | 4.6 | 4.0 | 4.6 | 4.3 | 4.6 | 4.6 | 5.3 | 5.7 | 5.7 | 6.5 | 4.9 |
| 21 | 4.3 | 4.6 | 4.3 | 4.6 | 4.3 | 4.6 | 4.6 | 4.9 | 7.0 | 5.7 | 7.0 | 4.9 |
| 22 | 4.3 | 4.3 | 4.3 | 4.9 | 4.3 | 4.6 | 4.6 | 4.9 | 7.0 | 5.7 | 8.5 | 4.9 |
| 23 | 4.0 | 4.6 | 4.6 | 4.9 | 4.3 | 4.3 | 4.6 | 4.6 | 7.0 | 5.7 | 10 | 4.6 |
| 24 | 4.0 | 4.3 | 4.6 | 4.9 | 4.3 | 4.6 | 4.6 | 4.6 | 7.5 | 5.7 | 9.0 | 4.3 |
| 25 | 4.0 | 4.6 | 4.9 | 4.9 | 4.3 | 4.6 | 4.6 | 4.3 | 8.0 | 6.1 | 7.5 | 4.3 |
| 26 | 4.0 | 4.3 | 4.6 | 4.6 | 4.3 | 4.6 | 5.3 | 4.3 | 8.0 | 6.1 | 7.0 | 4.6 |
| 27 | 4.0 | 4.3 | 4.6 | 4.3 | * 4.3 | 4.6 | 5.7 | 4.3 | 7.0 | 5.7 | 6.5 | 4.6 |
| 28 | 4.0 | 4.0 | 4.6 | 4.9 | 4.6 | 4.3 | 5.3 | 4.0 | 5.7 | 5.3 | 5.7 | 4.3 |
| 29 | 4.0 | 4.0 | 4.3 | 4.9 | - | 4.3 | 5.3 | 4.0 | 4.9 | 5.3 | 10 | 4.3 |
| 30 | 4.0 | * 4.0 | * 4.3 | 4.9 | ---------- | 4.3 | 4.9 | 4.3 | 4.9 | * 5.7 | 7.5 | 4.3 |
| 31 | * 4.0 | ---------- | 4.3 | 4.9 | ---------- | * 4.3 | ---------- | 4.3 | ---------- | 5.7 | 6.5 | ---------- |
| Total | 132.7 | 125.4 | 134.2 | 142.3 | 125.8 | 139.6 | 141.0 | 148.5 | 165.9 | 166.6 | 292.4 | 169.4 |
| Mean | 4.28 | 4.18 | 4.33 | 4.59 | 4.49 | 4.50 | 4.70 | 4.79 | 5.53 | 5.37 | 9.43 | 5.65 |
| Ac-ft | 262 | 249 | 266 | 282 | 250 | 277 | 280 | 295 | 329 | 330 | 580 | 336 |

Calendar year 1964: Max 21 Min 3.7 Mean 5.18 Ac-ft 3,700
Water year 1964-65: Max 33 Min 3.7 Mean 5.16 Ac-ft 3,740

Peak discharge (base, 100 cfs).--No peak above base.

* Discharge measurement made on this day.

8-3515. Rio San Jose at Correo, N. Mex.

Location.--Lat 34°58'05", long 107°11'15", in NE¼ sec.31, T.9 N., R.3 W., on right bank 0.7 mile upstream from State Highway 6, 0.8 mile northwest of Correo, and 14 miles upstream from mouth.

Drainage area.--3,660 sq mi, approximately, of which about 1,130 sq mi does not contribute directly to surface runoff.

Records available.--April 1943 to September 1965. Prior to October 1955, published as San Jose River at Correo.

Gage.--Water-stage recorder. Datum of gage is 5,492.43 ft above mean sea level, datum of 1929. Prior to Oct. 1, 1958, water-stage recorder and concrete control at site 1 mile downstream at datum 17.55 ft lower.

Average discharge.--22 years, 11.4 cfs (8,250 acre-ft per year).

Extremes.--Maximum discharge during year, 1,870 cfs Aug. 2 (gage height, 3.90 ft), from rating curve extended above 700 cfs on basis of 2 indirect measurements and discharge determined at former station downstream; no flow for many days.

1943-65: Maximum discharge, 7,150 cfs Aug. 11, 1955; maximum gage height, 20.7 ft Aug. 22, 1958, backwater from dam (site and datum then in use); no flow for long periods.

A flood which probably occurred Aug. 21, 1935, reached a stage of 15.4 ft, from floodmarks, former site and datum (discharge, about 11,000 cfs), but was probably exceeded by the flood of Sept. 23, 1929 (discharge not determined), based on study of records for Rio Puerco at Rio Puerco.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Flow partly regulated by Bluewater Lake (capacity at crest of uncontrolled siphon spillways, 38,500 acre-ft) and one small reservoir above station. Diversions and ground-water withdrawals for irrigation of about 7,800 acres above station.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

| | | | | | |
|---|---|---|---|---|---|
| 1.2 | 0 | 1.6 | 9.6 | 2.6 | 300 |
| 1.3 | .2 | 1.8 | 32 | 2.9 | 508 |
| 1.4 | 1.2 | 2.0 | 68 | 3.3 | 930 |
| 1.5 | 4.0 | 2.3 | 158 | | |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | 0 | 0.9 | 3.6 | 4.8 | (*) | 0 | 0 | 0 | 97 | *6.2 |
| 2 | | | 0 | .1 | *3.6 | 4 | | 0 | 0 | 0 | 874 | 65 |
| 3 | | | *1.0 | 0 | 4.0 | 4 | | * 0 | 0 | 0 | 730 | 87 |
| 4 | | | .5 | 0 | 4.0 | 5 | | 0 | 0 | 0 | 356 | 5 |
| 5 | | | .1 | 0 | 4.4 | 6.8 | | 0 | 0 | 0 | 66 | 2 |
| 6 | | | .1 | 0 | 4.4 | 5.2 | | 0 | 0 | 0 | * 36 | 76 |
| 7 | | | 1.0 | 1.2 | 4.8 | 4.8 | | 0 | 0 | 0 | 21 | 86 |
| 8 | | | .1 | 2.2 | 4.8 | 4.8 | | 0 | 0 | 0 | 8.0 | 148 |
| 9 | | (*) | 0 | .9 | 4.8 | 4.4 | | 0 | 0 | 0 | 1.3 | 148 |
| 10 | | | 0 | 1.6 | 4.4 | 4.0 | | 0 | 0 | 0 | .1 | 9.6 |
| 11 | | | 0 | .8 | 2.8 | * 4.8 | | 0 | 0 | 0 | 0 | 1.3 |
| 12 | (*) | | .4 | 1.2 | a .5 | 4.0 | | 0 | 0 | 0 | 0 | 20 |
| 13 | | | 0 | .9 | a 0 | 3.6 | | 0 | 0 | 0 | 24 | 3 |
| 14 | | | a 0 | 1.1 | a 0 | 3.6 | (*) | 0 | 0 | 0 | 15 | 1 |
| 15 | | | a 0 | .6 | a 1 | 3.6 | | 0 | 121 | 0 | 77 | 1 |
| 16 | | | a 0 | .4 | a 1 | 3.6 | | 0 | 20 | .5 | 30 | .5 |
| 17 | | | a .5 | .4 | 8 | 3.2 | | 0 | a 1 | 19 | 29 | * .5 |
| 18 | | | a .5 | .4 | 8 | 2.8 | | * 0 | a 0 | 2.6 | * 60 | .5 |
| 19 | | | a 0 | .5 | 7.4 | 2.5 | | 0 | * a 0 | 3.0 | 24 | 0 |
| 20 | | | a 0 | .7 | 4.8 | 2 | | 0 | * 0 | 2.3 | 8.5 | 0 |
| 21 | | | a 0 | 1.0 | 4.8 | 2.8 | | 0 | 0 | 0 | 3.5 | .1 |
| 22 | | | a 1 | .8 | 4.0 | 2.8 | | 0 | 0 | 0 | a 2 | .4 |
| 23 | | (*) | a 2 | 0 | *3.6 | 2.5 | | 0 | 0 | 0 | a .5 | 0 |
| 24 | | | a 3 | .1 | 4.8 | 1.2 | | 0 | 0 | 5.1 | a 5 | * 0 |
| 25 | | | 2.5 | .2 | 5.2 | .2 | | 0 | 0 | 11 | a 4 | 0 |
| 26 | (*) | | 2.0 | 0 | 4.8 | 0 | | 0 | 0 | * 116 | a 3 | 0 |
| 27 | | | 1.0 | 0 | 4.8 | 0 | | 0 | 0 | 25 | a 1 | 0 |
| 28 | | | 1.2 | 0 | 4.8 | 0 | | 0 | 0 | 9.6 | a 0 | 0 |
| 29 | | | .5 | .1 | - | 0 | | 0 | * 0 | a1.0 | a 1 | 0 |
| 30 | | | .9 | 3.6 | ---------- | 0 | | 4.2 | 0 | * .3 | 38 | 0 |
| 31 | | ---------- | * .6 | 4.4 | ---------- | 0 | ---------- | 1.5 | ---------- | 3.7 | 39 | ---------- |
| Total | 0 | 0 | 18.9 | 24.1 | 113.1 | 91.0 | 0 | 5.7 | 142 | 199.1 | 2,553.9 | 661.1 |
| Mean | 0 | 0 | 0.61 | 0.78 | 4.04 | 2.94 | 0 | 0.18 | 4.73 | 6.42 | 82.4 | 22.0 |
| Ac-ft | 0 | 0 | 37 | 48 | 224 | 180 | 0 | 11 | 282 | 395 | 5,070 | 1,310 |

Calendar year 1964: Max 1,560 Min 0 Mean 8.33 Ac-ft 6,040
Water year 1964-65: Max 874 Min 0 Mean 10.1 Ac-ft 7,560

Peak discharge (base, 800 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 6-10 | 1945 | 3.21 | 820 | 9-2 | 2240 | 3.27 | 845 |
| 8-2 | 0715 | 3.90 | 1,870 | | | | |

* Discharge measurement or observation of no flow made on this day

a No gage-height record.

## 8-3525. Rio Puerco at Rio Puerco, N. Mex.

Location.--Lat 34°47'35", long 106°59'20", in SW¼ sec.31, T.7 N., R.1 W., in San Clemente Grant, on downstream end of pier nearest left abutment of The Atchison, Topeka and Santa Fe, Railway Co. bridge, 7 miles downstream from Rio San Jose.

Drainage area.--6,590 sq mi, approximately, of which at least 1,130 sq mi does not contribute directly to surface runoff.

Records available.--June 1909 to December 1912 (records fragmentary, gage heights only), March 1934 to September 1965. Records for January 1913 to December 1914 published in WSP 358, 388, and 408 have been found to be unreliable and should not be used.

Gage.--Water-stage recorder and concrete control. Datum of gage is 5,008.59 ft above mean sea level, datum of 1929.

Average discharge.--31 years (1934-65), 60.1 cfs (43,510 acre-ft per year).

Extremes.--Maximum discharge during year, 4,080 cfs Aug. 3 (gage height, 3.32 ft); no flow for many days.
1934-65: Maximum discharge, 28,000 cfs Aug. 21, 1935 (gage height, 7.24 ft), by computation of peak flow over dam; no flow at times.
The damaging flood of Sept. 23, 1929, is the greatest since about 1880; it reached a stage of 18 ft (conditions prior to destruction of railroad bridge. Discharge, 37,700 cfs, by weir formula, from reports of State engineer). The flood of Aug. 12, 1929, reached a stage of about 16 ft (discharge, 31,300 cfs, by weir formula, from reports of State engineer). A flood on Oct. 4, 1913, reached a stage of 9.5 ft (discharge not determined) prior to construction of the concrete control.

Remarks.--Records fair except those for periods of no gage-height record, which are poor. Discharge measurements or observations of no flow generally made twice a month. Diversions for irrigation of about 11,500 acres above station (includes 3,700 acres irrigated wholly or partly from wells).

Rating table (gage height, in feet, and discharge, in cubic feet per second)

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 0.2 | 0 | 0.5 | 4.3 | 0.8 | 32 | 1.3 | 240 | 2.4 | 1,400 |
| .3 | .3 | .6 | 7.6 | .9 | 60 | 1.6 | 420 | 2.9 | 2,600 |
| .4 | 2.0 | .7 | 16 | 1.1 | 140 | 2.0 | 820 | | |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.6 | 0 | 0.1 | 0 | 1.4 | 3.5 | 0 | 4.5 | a 5 | 0.1 | 1320 | 40 |
| 2 | .1 | 0 | .4 | 0 | 2.4 | 3.5 | 0 | 3.3 | a 5 | 0 | 2580 | 83 |
| 3 | .1 | 0 | .6 | 0 | 2.4 | 2.4 | 0 | 1.7 | 3.5 | 1.4 | 1910 | 1070 |
| 4 | .1 | 0 | .2 | 0 | 2.4 | 2.6 | 0 | 2.2 | 4.3 | .1 | 660 | 210 |
| 5 | 0 | 0 | .1 | 0 | 2.4 | 3.1 | 0 | 19 | 3.8 | 0 | 150 | a100 |
| 6 | 0 | .1 | 0 | .2 | 2.6 | 4.0 | 0 | 35 | 3.3 | 0 | 49 | a80 |
| 7 | 0 | .1 | .1 | .1 | 3.3 | 4.0 | 0 | 28 | 2.4 | 0 | 27 | 280 |
| 8 | 0 | 0 | 0 | 0 | 3.5 | 3.8 | 0 | 22 | .7 | 0 | 16 | 476 |
| 9 | 0 | .1 | 0 | 0 | 3.3 | 3.8 | 0 | 24 | .3 | 0 | 6.1 | 797 |
| 10 | 0 | .1 | 0 | 43 | 3.8 | 3.5 | 0 | 28 | 4.3 | 0 | 2.2 | 378 |
| 11 | 0 | .1 | 0 | 14 | 1.4 | 3.5 | 0 | 24 | 127 | 0 | 0 | 128 |
| 12 | 0 | 0 | .1 | 6.6 | .7 | 4.3 | 0 | a 25 | 80 | 0 | 0 | 108 |
| 13 | 0 | 0 | .2 | 3.5 | .2 | 3.5 | 0 | a 20 | 139 | 1.8 | 0 | 524 |
| 14 | 0 | .1 | 0 | 1.0 | .2 | 2.8 | 0 | a 20 | 60 | 12 | 43 | 122 |
| 15 | 0 | 0 | 0 | 1.0 | 1.0 | 2.6 | 0 | a 15 | 24 | 68 | 106 | a30 |
| 16 | 0 | 0 | 0 | .8 | .3 | 2.8 | 0 | a 30 | 11 | 232 | 114 | a10 |
| 17 | 0 | .6 | 0 | .6 | 2.0 | 2.8 | 0 | a 25 | 6.4 | a 50 | 145 | 4.5 |
| 18 | 0 | .3 | 0 | .7 | 3.3 | 2.4 | 0 | a 20 | 5.4 | a 30 | 189 | 1.4 |
| 19 | 0 | .2 | 0 | .6 | 4.5 | 2.2 | 0 | a 15 | 4.9 | a 20 | 272 | .1 |
| 20 | 0 | 0 | 0 | .7 | 4.3 | 1.7 | 0 | 35 | 99 | a 90 | 80 | 0 |
| 21 | 0 | 0 | .1 | .7 | 3.1 | 1.4 | 0 | 43 | a 10 | a 10 | 21 | 18 |
| 22 | 0 | 0 | .1 | .4 | 3.3 | 2.2 | 0 | 68 | a 5 | a 5 | 14 | 98 |
| 23 | 0 | 0 | .3 | .1 | 3.3 | 2.0 | 0 | 88 | a 5 | 11 | a10 | 21 |
| 24 | 0 | .1 | 1.2 | .1 | 4.0 | 1.7 | 0 | 88 | a 0 | 68 | a 5 | 8.4 |
| 25 | 0 | .1 | .3 | .4 | 6.7 | 1.4 | 0 | 96 | a 0 | a 10 | 20 | 5.1 |
| 26 | 0 | .2 | 0 | 0 | 13 | .4 | .4 | 84 | 35 | 76 | a15 | 1.4 |
| 27 | 0 | .2 | .1 | 0 | 7.2 | 0 | 16 | a 60 | a 15 | 113 | a10 | .1 |
| 28 | 0 | 0 | 0 | 0 | 5.4 | 0 | 32 | a 40 | a 20 | a 35 | a 5 | .1 |
| 29 | 0 | .1 | 0 | .4 | - | 0 | 19 | a 20 | a 15 | 149 | 51 | 0 |
| 30 | 0 | .2 | 0 | .4 | ---------- | 0 | 9.9 | a 10 | 0 | 314 | 18 | 0 |
| 31 | 0 | ---------- | 0 | 0 | ---------- | 0 | ---------- | a 10 | ---------- | 104 | 97 | ---------- |
| Total | 2.9 | 2.6 | 3.9 | 75.3 | 91.4 | 71.9 | 77.3 | 1003.7 | 694.3 | 1400.4 | 7935.3 | 4594.1 |
| Mean | 0.09 | 0.09 | 0.13 | 2.43 | 3.26 | 2.32 | 2.58 | 32.4 | 23.1 | 45.2 | 256 | 153 |
| Ac-ft | 5.8 | 5.2 | 7.7 | 149 | 181 | 143 | 153 | 1,990 | 1,380 | 2,780 | 15,740 | 9,110 |

Calendar year 1964: Max 1,470 Min 0 Mean 25.2 Ac-ft 18,290
Water year 1964-65: Max 2,580 Min 0 Mean 43.7 Ac-ft 31,640

Peak discharge (base, 6,000 cfs).--No peak above base.

a No gage-height record.

## 8-3530. Rio Puerco near Bernardo, N. Mex.

Location.--Lat 34°24'30", long 106°51'10", in SE¼ sec.8, T.2 N., R.1 E., on bridge on former U.S. Highway 85 and ¼ mile upstream from Interstate Highway 25, 1.2 miles southwest of Bernardo, 3 miles upstream from mouth, and 18 miles south of Belen.

Drainage area.--7,350 sq mi, approximately, of which at least 1,130 sq mi does not contribute directly to surface runoff.

Records available.--November 1939 to September 1965. Fragmentary gage-height record and footnotes concerning no flow for the period September 1910 to August 1914, published in WSP 358 and 388, have been found to be in error and should not be used.

Gage.--Water-stage recorder. Datum of gage is 4,725.44 ft above mean sea level, datum of 1929.

Average discharge.--25 years (1940-65), 50.8 cfs (36,780 acre-ft per year).

Extremes.--Maximum discharge during year, 3,210 cfs Aug. 3 (gage height, 11.06 ft); no flow for extended periods.
1939-65: Maximum discharge, 18,800 cfs Sept. 23, 1941, from rating curve extended above 7,800 cfs by logarithmic plotting; maximum gage height, 13.8 ft Aug. 12, 1955; no flow for extended periods.
The greatest flood known since about 1880 occurred Sept. 23, 1929, from information by local residents (discharge, about 35,000 cfs, estimated on basis of peak at Rio Puerco). Another flood occurred Aug. 12, 1929 (discharge 30,600 cfs, by slope-area method, from reports of State engineer).

Remarks.--Records fair except those for periods of no gage-height record, which are poor. Diversions for irrigation of about 11,500 acres above station (includes 3,700 acres irrigated wholly or partly from wells). Records of chemical analyses, suspended sediment loads, and water temperatures for the water year 1965 are published in part 2 of this report.

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3.3 | | | 0 | | | 0 | 3.9 | 0.3 | 0 | 923 | * 79 |
| 2 | 1.2 | | | 0 | | | 0 | 2.1 | .1 | 0 | *2,290 | 50 |
| 3 | .1 | | | 0 | | | 0 | .5 | 0 | 0 | 2,850 | * 610 |
| 4 | 0 | | | 0 | | | 0 | 0 | 2.2 | 0 | 1,200 | 566 |
| 5 | 0 | | | 0 | | | 0 | * 0 | 0 | 0 | 381 | 142 |
| 6 | 0 | | | 0 | | | 0 | 0 | 0 | * 0 | 96 | 245 |
| 7 | 0 | | | 0 | | | 0 | 21 | 0 | 0 | 39 | 253 |
| 8 | 0 | | | 0 | | | 0 | *19 | 0 | .5 | 21 | 234 |
| 9 | 0 | | | 0 | | | 0 | 13 | 0 | .1 | 9.9 | 591 |
| 10 | 0 | | | 0 | (*) | | 0 | 13 | 0 | 0 | 4.4 | 660 |
| 11 | 0 | | (*) | .6 | | | 0 | 15 | * 0 | 0 | * .4 | a 200 |
| 12 | 0 | | | 7.2 | | | 0 | *14 | 90 | 0 | a .1 | a 150 |
| 13 | 0 | (*) | | 2.4 | | | 0 | 11 | 70 | 0 | a 0 | 286 |
| 14 | 0 | | | * 3.0 | | | 0 | 9.6 | *116 | 8.6 | a 0 | 252 |
| 15 | 0 | | | 1.2 | | | 0 | 7.5 | 48 | 27 | 85 | * 54 |
| 16 | * 0 | | | .2 | | | * 0 | 25 | 24 | 100 | 96 | 24 |
| 17 | 0 | | | .1 | | | 0 | 19 | 12 | 100 | 83 | 13 |
| 18 | 0 | | | 0 | | | 0 | 9.0 | a 6 | 20 | *153 | a 5 |
| 19 | 0 | | | 0 | | (*) | 0 | 7.2 | a 1 | 15 | 235 | a 2 |
| 20 | 0 | | | 0 | | | 0 | * 3.2 | 9.2 | * 18 | 119 | a .5 |
| 21 | 0 | | | 0 | | | 0 | 3.1 | 43 | 62 | 35 | a 1 |
| 22 | 0 | | | 0 | | | 0 | 17 | 9.9 | 20 | 17 | *16 |
| 23 | 0 | | | 0 | | | 0 | 28 | a 2 | 6.9 | a 6 | 45 |
| 24 | 0 | | | 0 | | | 0 | 37 | * .4 | 8.6 | a 2 | 9.6 |
| 25 | 0 | | | 0 | | | 0 | 38 | .1 | 28 | *1.3 | .9 |
| 26 | 0 | | | 0 | | | 0 | 37 | 0 | 140 | 0 | .1 |
| 27 | 0 | | | 0 | | | 0 | 27 | 11 | *100 | 12 | 0 |
| 28 | 0 | | | 0 | | | 0 | 18 | 4.6 | 75 | 5.3 | 0 |
| 29 | 0 | | | 0 | - | | 6.6 | 9.0 | 7.6 | 63 | 1.6 | 0 |
| 30 | 0 | | | 0 | ---------- | | 6.6 | 3.5 | 6.0 | * 298 | 20 | 0 |
| 31 | 0 | ---------- | | 0 | ---------- | | ---------- | 1.4 | ---------- | 140 | 19 | ---------- |
| Total | 4.6 | 0 | 0 | 14.7 | 0 | 0 | 13.4 | 412.0 | 463.4 | 1,230.7 | 8,705.0 | 4,489.1 |
| Mean | 0.15 | 0 | 0 | 0.47 | 0 | 0 | 0.45 | 13.3 | 15.4 | 39.7 | 281 | 150 |
| Ac-ft | 9.1 | 0 | 0 | 29 | 0 | 0 | 27 | 817 | 919 | 2,440 | 17,270 | 8,900 |

Calendar year 1964: Max 1,660 Min 0 Mean 24.0 Ac-ft 17,390
Water year 1964-65: Max 2,850 Min 0 Mean 42.0 Ac-ft 30,410

Peak discharge (base, 3,000 cfs).--Aug. 3 (1845) 3,210 cfs (11.06 ft).

* Discharge measurement or observation of no flow made on this day.
a No gage-height record.

## 8-3540. Rio Salado near San Acacia, N. Mex.

Location.--Lat 34°16'55", long 106°52'50", in E½ sec.30, T.1 N., R.1 E., near right bank 1.0 mile downstream from bridge on Interstate Highway 25, 1.4 miles upstream from mouth, 2.0 miles northeast of San Acacia, and 15 miles north of Socorro.

Drainage area.--1,380 sq mi, approximately.

Records available.--October 1947 to September 1965.

Gage.--Water-stage recorder. Datum of gage is 4,710.68 ft above mean sea level, datum of 1929.

Average discharge.--18 years, 13.8 cfs (9,990 acre-ft per year).

Extremes.--Maximum discharge, 36,200 cfs July 31 (gage height, 18.3 ft, from floodmarks), from rating curve extended above 2,800 cfs on basis of slope-area measurements at gage heights 11.25, 11.9 and 18.3 ft; no flow for most of time.
1947-65: Maximum discharge, that of July 31, 1965; no flow for most of time.

Remarks.--Records poor. Diversions for irrigation of about 100 acres above station. Records of chemical analyses, suspended sediment loads, and water temperatures for the water year 1965 are published in part 2 of this report.

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | 0 | | | | 0 | 2,500 | 10 |
| 2 | | | | | | 0 | | | | 1 | 1,000 | 10 |
| 3 | | | | | | 0 | | | | 0 | *300 | *100 |
| 4 | | | | | | 0 | | | | 0 | 100 | 50 |
| 5 | | | | | | 0 | | (*) | | 0 | 20 | 30 |
| 6 | | | | | | 0 | | | | 0 | 5 | 80 |
| 7 | | | | | | 0 | | | | 0 | 2 | 100 |
| 8 | | | | | | 0 | | | | 0 | 50 | *730 |
| 9 | | | | | | 0 | | | | 0 | 20 | 850 |
| 10 | | | | | (*) | 0 | | | | 0 | 2 | 50 |
| 11 | | | (*) | | | 0 | | | | 0 | 2 | 10 |
| 12 | | | | | | 1 | | | | *25 | 2 | 100 |
| 13 | | (*) | | | | 0 | | | | *2 | 20 | 20 |
| 14 | | | | (*) | | 0 | (*) | | | 1 | 100 | 2 |
| 15 | | | | | | 0 | | | | 0 | 50 | *1 |
| 16 | | | | | | 0 | | | | *170 | 40 | 1 |
| 17 | | | | | | 0 | | | | 2 | 30 | 1 |
| 18 | | | | | | 0 | | | | 0 | *10 | 50 |
| 19 | | | | | | 0 | | (*) | | 0 | 2 | 10 |
| 20 | | | | | | 0 | | | | 0 | 2 | 20 |
| 21 | | | | | | 0 | | | | 0 | 10 | 2 |
| 22 | | | | | | 0 | | | | 0 | 20 | 2 |
| 23 | | | | | | 0 | | | | *120 | 6 | 1 |
| 24 | | | | | | 0 | | | (*) | 10 | 2 | 1 |
| 25 | | | | | | 0 | | | | 2 | 2 | 0 |
| 26 | | | | | | 0 | | | | 60 | *10 | 0 |
| 27 | | | | | | 0 | | | | 45 | 2 | 0 |
| 28 | | | | | | 0 | | | | 10 | 2 | 0 |
| 29 | | | | | - | 0 | | | | 2 | 50 | 0 |
| 30 | | | | | | 0 | | | | *0 | *20 | 0 |
| 31 | | | | | | 0 | | | | 1,200 | 30 | |
| Total | 0 | 0 | 0 | 0 | 0 | 1.0 | 0 | 0 | 0 | 1,650 | 4,411 | 2,231 |
| Mean | 0 | 0 | 0 | 0 | 0 | 0.03 | 0 | 0 | 0 | 53.2 | 142 | 74.4 |
| Ac-ft | 0 | 0 | 0 | 0 | 0 | 2.0 | 0 | 0 | 0 | 3,270 | 8,750 | 4,430 |

Calendar year 1964: Max 800 Min 0 Mean 11.8 Ac-ft 8,590
Water year 1964-65: Max 2,500 Min 0 Mean 22.7 Ac-ft 16,450

Peak discharge (base, 3,000 cfs).--July 31 (2310) 36,200 cfs (18.3 ft, outside).

* Discharge measurement or observation of no flow made on this day.
Note.--No gage-height record Mar. 12, June 1-21, July 13-15, 17, 21, 25, 28-30, Aug. 1-13, Aug. 15 to Sept. 7, Sept. 19-30.

8-3545. Socorro main canal north at San Acacia, N. Mex.

Location.--Lat 34°15'15", long 106°53'45", in SE¼NW¼ sec.1, T.1 S., R.1 W., 0.5 mile downstream from point of diversion, on right bank at San Acacia.

Records available.--April 1936 to September 1965.

Gage.--Water-stage recorder (digital). Datum of gage is 4,660.16 ft above mean sea level, datum of 1929. Prior to Mar. 8, 1958, at site 300 ft upstream (in old channel) at datum 0.42 ft lower.

Extremes.--1936-65: Maximum daily discharge, 251 cfs July 30, 1965; no flow at times.

Remarks.--Records fair except those for periods of no gage-height record, which are poor. Discharge measurements generally made once a week during periods of flow. This canal is 1 of 3 channels (see Nos. 8-3549, 8-3548) carrying flow in valley cross-section. For combined monthly flow in acre-ft of this canal, conveyance channel, and floodway see tabulation below daily table for No. 8-3549. Canal diverts water from right bank of Rio Grande for irrigation of about 8,000 acres. Alamillo Acequia and 3 other smaller ditches divert water from canal above station for irrigation of about 400 acres. Discharge records collected at the canal heading October 1964 to September 1965, indicate 770 acre-ft or 9% of the initial canal flow was diverted before reaching the regular gaging station.

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 42 | 0 | 2.0 | 0 | 0 | 65 | 182 | 161 | 170 | 214 | a 0 | 183 |
| 2 | 30 | 0 | 3.5 | 0 | 0 | 112 | 202 | 187 | 162 | 209 | a 2 | 178 |
| 3 | 19 | 6.5 | 3.5 | 0 | 0 | 136 | 212 | 192 | 173 | 208 | a 2 | 128 |
| 4 | 26 | 4.5 | 3.0 | 3.5 | 1.0 | 127 | 212 | 196 | 179 | 208 | a 10 | a .5 |
| 5 | 23 | 4.0 | 0 | 5.0 | 4.0 | 152 | 194 | 195 | 177 | 207 | a 15 | a 0 |
| 6 | 24 | 0 | 0 | 3.0 | 0 | a 135 | 198 | 200 | 194 | 206 | 36 | 142 |
| 7 | 26 | 0 | 1.5 | 2.5 | 0 | a 135 | 188 | 199 | 193 | 205 | 160 | 183 |
| 8 | 13 | 0 | 0 | 1.0 | 7.5 | a 135 | 205 | 196 | 195 | 194 | 213 | 14 |
| 9 | 10 | 7.5 | 6.5 | 0 | 1.5 | a 120 | 205 | 190 | 199 | 200 | 239 | 0 |
| 10 | 29 | 4.0 | 2.5 | 0 | 2.0 | a 145 | 188 | 180 | 212 | 202 | 228 | 13 |
| 11 | 54 | 0 | 1.5 | 7.5 | 4.0 | a 160 | 209 | 181 | 210 | 200 | 231 | 0 |
| 12 | 50 | 2.5 | 0 | 0 | 0 | 140 | 198 | 188 | 203 | 165 | 235 | 0 |
| 13 | 24 | 0 | 0 | 5.5 | 0 | 135 | 194 | 192 | 201 | 140 | 232 | 10 |
| 14 | 8.9 | 0 | 3.5 | 0 | 0 | 147 | 198 | 192 | 205 | 157 | 229 | 0 |
| 15 | a 15 | 0 | 0 | 0 | 3.5 | 151 | 199 | 184 | a 220 | 162 | 224 | 126 |
| 16 | a 15 | 5.0 | 4.5 | 0 | 2.5 | 166 | 178 | 179 | a 230 | 193 | 228 | 176 |
| 17 | a 30 | 1.0 | 0 | 0 | 5.5 | 146 | 204 | 175 | 195 | 203 | 231 | 177 |
| 18 | a 40 | 0 | 0 | 0 | 3.5 | 150 | 208 | 162 | 209 | 229 | 235 | 182 |
| 19 | 35 | 2.5 | 0 | 0 | 3.0 | 152 | 202 | 180 | 156 | 228 | 237 | 175 |
| 20 | 35 | 6.0 | 0 | 0 | 0 | 162 | 202 | 182 | 100 | 222 | 241 | 176 |
| 21 | a 30 | 0 | 0 | 0 | 0 | 182 | 200 | 180 | 210 | 222 | 232 | 174 |
| 22 | a 30 | 0 | 2.0 | 0 | 0 | 160 | 196 | a 190 | 226 | 228 | 233 | 173 |
| 23 | a 30 | 5.5 | 0 | 0 | 5.0 | 142 | 192 | a 155 | 225 | 236 | 245 | 178 |
| 24 | a 40 | 2.5 | 0 | 0 | 1.5 | 172 | 206 | a 180 | 223 | 242 | 241 | 173 |
| 25 | a 45 | 4.5 | 0 | 0 | 3.0 | 169 | 200 | a 200 | 187 | 250 | 230 | 118 |
| 26 | 50 | 0 | 0 | 0 | 3.0 | 184 | 195 | 160 | 153 | a 200 | 228 | 5.0 |
| 27 | 64 | 3.5 | 0 | 0 | .2 | 182 | 178 | 168 | 199 | a 0 | 224 | 147 |
| 28 | 61 | 0 | 1.5 | 0 | 0 | 168 | 191 | 176 | 223 | 185 | 215 | 166 |
| 29 | 59 | 0 | 0 | 0 | | 170 | 196 | 165 | 223 | 246 | 196 | 166 |
| 30 | 56 | 7.5 | 0 | 0 | | 173 | 201 | 160 | 218 | 251 | 195 | 161 |
| 31 | 40 | | 0 | 0 | | 175 | | 167 | | 249 | 192 | |
| Total | 1,053.9 | 67.0 | 35.5 | 28.0 | 50.7 | 4,648 | 5,933 | 5,612 | 5,870 | 6,261 | 5,659 | 3,324.5 |
| Mean | 34.0 | 2.23 | 1.15 | 0.90 | 1.81 | 150 | 198 | 181 | 196 | 202 | 183 | 111 |
| Ac-ft | 2,090 | 133 | 70 | 56 | 101 | 9,220 | 11,770 | 11,130 | 11,640 | 12,420 | 11,220 | 6,590 |

Calendar year 1964: Max 200 Min 0 Mean 65.4 Ac-ft 47,460
Water year 1964-65: Max 251 Min 0 Mean 106 Ac-ft 76,440

a No gage-height record.

8-3548. Rio Grande conveyance channel at San Acacia, N. Mex.

Location.--Lat 34°15'55", long 106°54'00", in SW¼ sec.1, T.1 S., R.1 W., on right bank 75 ft upstream from railway crossing, 1.2 miles downstream from San Acacia diversion dam, and 0.5 mile south of San Acacia.

Records available.--October 1958 to September 1965. Prior to October 1964 records of flow included in composite flow of Rio Grande at San Acacia.

Gage.--Water-stage recorder (digital). Datum of gage is 4,652.5 ft above mean sea level (Bureau of Reclamation datum). Prior to 1958 all flow in floodway and Socorro main canal north.

Average discharge.--7 years, 373 cfs (270,000 acre-ft per year).

Extremes.--1958-65: Maximum daily discharge, 1,830 cfs Apr. 24, 1965; no flow at times.

Remarks.--Records excellent. Discharge measurements generally made 2 to 3 times per month. Conveyance channel is 1 of 3 channels (see Nos. 8-3545, 8-3549) carrying flow in valley cross-section. Original design and plan was for conveyance channel to carry all flows up to about 2,000 cfs. For combined monthly flow in acre-ft of this channel, floodway, and Socorro main canal north see tabulation below daily table for No. 8-3549. Records of suspended sediment loads and water temperatures for the water year 1965 are published in part 2 of this report.

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.1 | 49 | 351 | 638 | 564 | 606 | 100 | 1,150 | 1,280 | 1,230 | 1,140 | 21 |
| 2 | .1 | 48 | 361 | 627 | 600 | 525 | 199 | 1,160 | 1,300 | 1,210 | 1,230 | 75 |
| 3 | .1 | 35 | 329 | 558 | 690 | 561 | 405 | 1,160 | 1,320 | 1,240 | 1,270 | 396 |
| 4 | .1 | 14 | 424 | 579 | 687 | 603 | 854 | 1,140 | 1,280 | 1,230 | 1,270 | 869 |
| 5 | 0 | 11 | 444 | 573 | 702 | 630 | 1,050 | 1,160 | 1,270 | 1,230 | 1,260 | 461 |
| 6 | 0 | 13 | 426 | 537 | 753 | 546 | 1,210 | 1,180 | 1,270 | 1,210 | 1,280 | 175 |
| 7 | 0 | 13 | 423 | 513 | 771 | 306 | 1,070 | 1,170 | 1,280 | 1,210 | 1,330 | 463 |
| 8 | .1 | 13 | 417 | 573 | 780 | 369 | 874 | 1,190 | 1,300 | 1,220 | 1,190 | 945 |
| 9 | 0 | 10 | 384 | 621 | 810 | 387 | 862 | 1,160 | 1,300 | 1,210 | 1,110 | 1,310 |
| 10 | 0 | 11 | 369 | 929 | 828 | 333 | 655 | 1,150 | 1,290 | 1,210 | 1,020 | 1,370 |
| 11 | 0 | 14 | 342 | 1,730 | 840 | 268 | 603 | 1,150 | 1,290 | 1,210 | 789 | 899 |
| 12 | 0 | 13 | 339 | 1,330 | 849 | 309 | 910 | 1,200 | 1,290 | 1,210 | 545 | 1,140 |
| 13 | 0 | 15 | 348 | 900 | 840 | 429 | 636 | 1,150 | 1,280 | 1,210 | 363 | 1,040 |
| 14 | .1 | 13 | 349 | 738 | 720 | 456 | 525 | 1,150 | 1,230 | 1,280 | 292 | 1,090 |
| 15 | .1 | 49 | 395 | 708 | 645 | 441 | 728 | 1,140 | 1,300 | 1,260 | 284 | 501 |
| 16 | .1 | 278 | 405 | 651 | 579 | 435 | 672 | 1,160 | 1,290 | 1,270 | 224 | 241 |
| 17 | .1 | 408 | 324 | 642 | 594 | 453 | 558 | 1,160 | 1,290 | 1,270 | 160 | 199 |
| 18 | .1 | 630 | 252 | 618 | 630 | 432 | 816 | 1,170 | 1,300 | 1,250 | 150 | 131 |
| 19 | .1 | 849 | 268 | 618 | 633 | 390 | 895 | 1,190 | 1,300 | 1,220 | 201 | 94 |
| 20 | .1 | 1,190 | 300 | 609 | 642 | 321 | 538 | 1,180 | 1,280 | 1,460 | 210 | 97 |
| 21 | .1 | 876 | 278 | 627 | 642 | 333 | 501 | 1,160 | 1,190 | 1,400 | 90 | 97 |
| 22 | .1 | 594 | 327 | 639 | 675 | 462 | 1,400 | 1,150 | 1,200 | 1,100 | 87 | 83 |
| 23 | .1 | 447 | 416 | 618 | 687 | 285 | 1,680 | 1,150 | 1,170 | 816 | 163 | 155 |
| 24 | .1 | 405 | 447 | 627 | 723 | 280 | 1,830 | 1,110 | 1,150 | 414 | 136 | 215 |
| 25 | .1 | 372 | 495 | 624 | 741 | 190 | 1,820 | 1,150 | 1,140 | 390 | 106 | 208 |
| 26 | .1 | 360 | 501 | 600 | 735 | 193 | 1,710 | 1,220 | 1,200 | 690 | 50 | 292 |
| 27 | .1 | 348 | 495 | 600 | 805 | 228 | 1,080 | 1,230 | 1,170 | 1,130 | 25 | 216 |
| 28 | .1 | 336 | 525 | 627 | 888 | 195 | 1,160 | 1,230 | 1,160 | 669 | 14 | 267 |
| 29 | .1 | 339 | 543 | 588 | - | 210 | 1,190 | 1,230 | 1,190 | 506 | 98 | 311 |
| 30 | .1 | 339 | 546 | 564 | ---------- | 202 | 1,160 | 1,240 | 1,190 | 776 | 37 | 299 |
| 31 | 5.8 | ---------- | 558 | 561 | ---------- | 148 | ---------- | 1,240 | ---------- | 1,040 | 38 | ---------- |
| Total | 9.3 | 8,092 | 12,381 | 21,367 | 20,053 | 11,526 | 27,691 | 36,380 | 37,500 | 33,771 | 6,073.8 | 13,660 |
| Mean | 0.30 | 270 | 399 | 689 | 716 | 372 | 923 | 1,174 | 1,250 | 1,089 | 518 | 455 |
| Ac-ft | 18 | 16,050 | 24,560 | 42,380 | 39,770 | 22,860 | 54,920 | 72,160 | 74,380 | 66,980 | 31,880 | 27,090 |

Calendar year 1964: Max 1,360 Min 0 Mean 218 Ac-ft 158,400
Water year 1964-65: Max 1,830 Min 0 Mean 653 Ac-ft 473,000

## 8-3549. Rio Grande floodway at San Acacia, N. Mex.

Location.--Lat 34°15'28", long 106°53'30", in NE¼ sec.1, T.1 S., R.1 W. (projected), in Sevilleta Grant, 0.25 mile below San Acacia diversion dam, 2 miles downstream from Rio Salado, and 0.3 mile east of San Acacia.

Drainage area.--26,770 sq mi, approximately (includes 2,940 sq mi in closed basin in San Luis Valley, Colo.).

Records available.--April 1936 to September 1965. Flow in the conveyance channel has been included prior to October 1964.

Gage.--Water-stage recorder. Datum of gage is 4,656.39 ft above mean sea level, datum of 1929, adjustment of 1951. Prior to Mar. 19, 1953, at several sites 0.1 mile upstream at different datums. Mar. 19, 1953 to Aug. 19, 1965, at site 0.4 mile downstream at datum 1.71 ft higher. Floodway is bypassed by Socorro main canal north and, since October 1958, by conveyance channel.

Average discharge.--22 years (1936-58), 1,192 cfs (863,000 acre-ft per year), prior to construction of conveyance channel; does not include Socorro main canal north.
7 years (1958-65), 322 cfs (233,100 acre-ft per year), flow of floodway only.
7 years (1958-65), 773 cfs (559,600 acre-ft per year), combined flow of floodway, conveyance channel and Socorro main canal north.

Extremes.--Maximum discharge during year, 17,200 cfs Aug. 1 (gage height, 5.67 ft); no flow at times.
1936-65: Maximum discharge, 27,400 cfs Aug. 5, 1936 (gage height, 10.75 ft, site and datum then in use); no flow at times.

Remarks.--Records poor. Discharge measurements generally made once or twice a week. Floodway is 1 of 3 channels (see Nos. 8-3548 and 8-3545) carrying flow in valley cross-section. For combined monthly flow in acre-ft of floodway, conveyance channel, and Socorro main canal north see tabulation below. Normal plan is for floodway to carry flow when combined capacities of conveyance channel (about 2,000 cfs) and Socorro main canal north (about 200 cfs) is exceeded, during periods of silt sluicing, and when river silt load is excessive. Diversions above station for irrigation of about 760,000 acres; this includes Socorro main canal north which bypasses station and irrigates about 8,000 acres. Records of suspended sediment loads and water temperatures for the water year 1965 are published in part 2 of this report.

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.2 | 0 | 0.3 | 0.9 | 0.3 | 0.4 | 2.2 | 1,420 | 1,740 | 1,280 | 4,170 | 4.2 |
| 2 | 0 | 0 | .7 | .6 | .5 | .6 | 4.0 | 1,300 | 716 | 1,420 | 4,470 | 43 |
| 3 | 0 | 0 | 45 | .5 | 6.5 | .9 | 2.6 | 1,540 | 1,200 | 2,180 | 5,350 | 104 |
| 4 | 0 | 0 | 1.1 | .5 | .3 | 1.7 | 51 | 1,810 | 1,670 | 2,160 | 3,850 | 68 |
| 5 | .2 | .2 | .6 | .3 | .3 | 1.4 | 5.0 | 1,820 | 1,810 | 2,390 | 2,000 | 14 |
| 6 | .2 | .1 | .3 | .4 | .3 | 1.2 | 3.4 | 2,040 | a 1,500 | 2,070 | 1,130 | 23 |
| 7 | .1 | 0 | .3 | .6 | .3 | 1.2 | 4.5 | 2,120 | a 1,100 | 1,920 | a 500 | 186 |
| 8 | .1 | 0 | .4 | .6 | .1 | 5.1 | 5.0 | 2,260 | 890 | 2,180 | a 200 | 451 |
| 9 | .2 | .2 | .3 | .4 | .3 | 1.2 | 5.0 | 2,440 | 1,070 | 2,260 | a 40 | 432 |
| 10 | .4 | .3 | .1 | 289 | .3 | 1.1 | 3.4 | 2,580 | 1,640 | 1,940 | a 20 | 419 |
| 11 | .3 | .2 | .2 | 35 | .2 | 1.3 | 8.5 | 1,840 | 1,710 | 1,740 | a 10 | a 100 |
| 12 | .2 | .2 | .1 | 1.1 | .2 | 1.6 | 10 | 1,540 | 2,440 | 1,680 | a8 | a 200 |
| 13 | .2 | .2 | .3 | .4 | .1 | 1.8 | 3.2 | 1,600 | 2,980 | 1,120 | a6 | a 100 |
| 14 | .2 | 0 | 2 | .3 | .2 | 5.0 | 2.6 | 2,120 | 3,040 | a 800 | a 50 | a 50 |
| 15 | .2 | 0 | 1.0 | .3 | .2 | 2.4 | 6.4 | 1,960 | 2,200 | 1,050 | a 30 | a 20 |
| 16 | .3 | .1 | .3 | .3 | .2 | 2.4 | 23 | 2,230 | 1,990 | 1,430 | a 20 | 10 |
| 17 | .3 | .3 | .2 | .3 | .2 | 2.4 | 5.5 | 2,750 | 1,690 | 1,260 | 15 | 15 |
| 18 | .3 | .1 | .3 | .3 | .2 | 2.0 | 7.5 | 2,280 | 1,710 | 900 | 29 | 12 |
| 19 | .4 | 0 | .5 | .3 | .3 | 1.9 | 4.0 | 1,810 | 2,440 | 869 | 27 | 13 |
| 20 | .4 | .6 | .6 | .5 | .1 | 6.0 | 5.5 | 1,860 | 3,950 | 240 | 11 | 23 |
| 21 | .2 | .2 | .3 | .5 | .2 | 3.8 | 4.5 | 2,060 | 3,380 | 26 | 8.7 | 16 |
| 22 | .2 | .2 | .3 | .4 | .5 | 19 | 196 | 2,250 | 2,610 | 43 | 11 | 14 |
| 23 | .3 | .1 | .5 | .4 | .2 | 6.1 | 69 | 2,440 | 2,700 | 70 | 19 | 27 |
| 24 | .2 | .2 | .3 | .5 | 6.9 | 2.2 | 334 | 2,720 | 3,080 | a 15 | 7.6 | 26 |
| 25 | .2 | .3 | 77 | .5 | 3.2 | 2.0 | 820 | 2,770 | 2,980 | a 10 | 11 | 7.6 |
| 26 | .2 | .3 | 180 | .6 | .5 | 2.0 | 1,820 | 2,610 | 3,020 | 187 | 5.2 | 17 |
| 27 | .2 | .3 | 45 | .6 | 55 | 1.9 | 3,190 | 2,560 | 3,380 | 135 | 3.0 | 20 |
| 28 | .2 | .3 | 3.4 | .4 | 8.5 | 1.7 | 2,380 | 2,120 | 2,890 | a 10 | 5.7 | 16 |
| 29 | .3 | .2 | .5 | .2 | – | 1.7 | 2,020 | 1,750 | 2,120 | a5 | 1.7 | 18 |
| 30 | .3 | .2 | .3 | .3 | ---------- | 1.7 | 1,670 | 1,960 | 1,960 | 164 | 6.4 | 10 |
| 31 | .3 | ---------- | .4 | .2 | ---------- | 1.6 | ---------- | 1,870 | ---------- | 196 | 10 | ---------- |
| Total | 6.8 | 4.8 | 362.6 | 337.1 | 86.1 | 85.3 | 12,665.8 | 64,430 | 65,606 | 31,750 | 22,025.3 | 2,458.8 |
| Mean | 0.22 | 0.16 | 11.7 | 10.9 | 3.08 | 2.75 | 422 | 2,078 | 2,187 | 1,024 | 710 | 82.0 |
| Ac-ft | 13 | 9.5 | 719 | 669 | 171 | 169 | 25,120 | 127,800 | 130,100 | 62,980 | 43,690 | 4,880 |
| (†) | 2,120 | 16,190 | 25,350 | 43,110 | 40,040 | 32,250 | 91,810 | 211,100 | 213,100 | 142,400 | 86,790 | 38,560 |

Calendar year 1964: Max 493 Min 0 Mean 7.22 Ac-ft 5,240 (†) Mean 291 Ac-ft 211,100
Water year 1964-65: Max 5,350 Min 0 Mean 547 Ac-ft 396,300 (†) Mean 1,265 Ac-ft 945,800

a No gage-height record.
(†) Combined flow, in acre-ft and mean, in cfs, of floodway, conveyance channel, and Socorro main canal north.

8-3560. Socorro main canal south near San Antonio, N. Mex.

Location.--Lat 33°53'30", long 106°52'00", in NW¼ sec.8, T.5 S., R.1 E., on right bank 1½ miles upstream from Bosque del Apache Grant and 1¾ miles south of San Antonio.

Records available.--April 1937 to July 1938 (published as "at end near San Antonio"), March 1948 to September 1965.

Gage.--Water-stage recorder (digital). Wooden control since Mar. 27, 1954. Datum of gage is 4,526.41 ft above mean sea level, datum of 1929. April 1937 to July 1938 at two different sites about 1½ miles downstream at different datums. March 1948 to November 1951 at site 30 ft upstream at datum 7.29 ft higher.

Extremes.--1937-38, 1948-65: Maximum daily discharge, 51 cfs Sept. 20, 1965; no flow at times.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Discharge measurements generally made 2 to 3 times a month during irrigation season. Diversions made at San Acacia into Socorro main canal north are the main source of water but may be supplemented by diversions from the conveyance channel at 3 points and from San Antonio Riverside drain, 2 miles upstream. Some diversions occur between gage and north boundary of U.S. Fish and Wildlife Refuge (Bosque del Apache Grant). This is 1 of 3 stations gaging flow into refuge.

Monthly discharge, in cubic feet per second, water year October 1964 to September 1965

| Month | Maximum | Minimum | Mean | Runoff in Acre-feet |
|---|---|---|---|---|
| October | 11 | 0 | 1.64 | 101 |
| November | 13 | 0 | .45 | 27 |
| December | 0 | 0 | 0 | 0 |
| Calendar year 1964 | 41 | 0 | 6.51 | 4,720 |
| January | 0 | 0 | 0 | 0 |
| February | 0 | 0 | 0 | 0 |
| March | 48 | 0 | 19.3 | 1,190 |
| April | 44 | .5 | 21.1 | 1,250 |
| May | 47 | 18 | 30.5 | 1,880 |
| June | 40 | 7.2 | 21.5 | 1,280 |
| July | 42 | 13 | 25.4 | 1,560 |
| August | 36 | 4.6 | 18.2 | 1,120 |
| September | 51 | 6.3 | 27.5 | 1,630 |
| Water year 1964-65 | 51 | 0 | 13.9 | 10,040 |

Note.--No gage-height record Aug. 16, Sept. 10-16.

8-3565. San Antonio Riverside drain near San Antonio, N. Mex.

Location.--Lat 33°53'00", long 106°51'05", in SW¼SW¼ sec.9, T.5 S., R.1 E., on left bank 1 mile east of old U.S. Highway 85, and 1.2 miles upstream from boundary of Bosque del Apache Grant (wildlife refuge), and 2 miles southeast of San Antonio.

Records available.--March 1948 to September 1965. May 1936 to February 1938, at site 50 ft downstream from Elmendorf interior drain; records not equivalent.

Gage.--Water-stage recorder. Datum of gage is 4,524.33 ft above mean sea level (levels by Bureau of Reclamation). Mar. 15, 1948, to Mar. 31, 1949, site 1.2 miles downstream at datum 1.14 ft lower.

Extremes.--1948-65: Maximum daily discharge, 161 cfs May 31, 1957; no flow at times since 1959.

Remarks.--Records good except those for periods of no gage-height record and those for May 1-27, which are poor. Discharge measurements or observations of no flow generally made 2 to 3 times a month. Diversions from drain above station, canal wasteways and interior drains entering channel above station. Flow represents 1 of 3 channels entering north boundary of Bosque del Apache Grant. Reduction in flow occurred after conveyance channel was completed in about 1957.

Monthly discharge, in cubic feet per second, water year October 1964 to September 1965

| Month | Maximum | Minimum | Mean | Runoff in acre-feet |
|---|---|---|---|---|
| October | 0 | 0 | 0 | 0 |
| November | 3.0 | .5 | 2.15 | 128 |
| December | 4.4 | 3.0 | 3.59 | 221 |
| Calendar year 1964 | 37 | 0 | 3.80 | 2,760 |
| January | 5.7 | 4.5 | 4.95 | 304 |
| February | 6.5 | 5.2 | 5.93 | 329 |
| March | 35 | 4.7 | 13.9 | 856 |
| April | 31 | 3.8 | 18.9 | 1,130 |
| May | 50 | 25 | 38.7 | 2,380 |
| June | 53 | 36 | 46.3 | 2,760 |
| July | 62 | 27 | 49.2 | 3,020 |
| August | 53 | 14 | 32.1 | 1,970 |
| September | 14 | .7 | 3.28 | 195 |
| Water year 1964-65 | 62 | 0 | 18.4 | 13,290 |

Note.--No gage-height record.Nov. 1, 2, May 28-to June 2, Aug. 21-24, Sept. 10-12, 24-29.

8-3570. Elmendorf interior drain near San Antonio, N. Mex.

Location.--Lat 33°51'50", long 106°51'25", in NE¼ sec.20, T.5 S., R.1 E. (projected), in Bosque del Apache Grant (wildlife refuge), on right bank 2,000 ft downstream from north boundary of refuge, 1.0 mile east of railroad, and 3.7 miles south of junction of U.S. Highways 85 and 380.

Records available.--July 1936 to January 1938 (Published as "at end near San Antonio"), March 1948 to September 1965.

Gage.--Water-stage recorder (digital) and metal control. Datum of gage is 4,518.9 ft above mean sea level, datum of 1929 (levels by Bureau of Reclamation). July 1936 to January 1938, staff gage at site half a mile upstream in former channel at datum of 4,519.24 ft, datum of 1929. Mar. 11, 1948, to Nov. 10, 1949, at site about 2,500 ft upstream (in old channel) at different datum. Nov. 11, 1949, to Feb. 7, 1956, at site 2,000 ft upstream (present channel) at datum about 0.26 ft lower than present datum.

Extremes.--1948-65: Maximum daily discharge, 58 cfs May 17, 1965; no flow at times.

Remarks.--Records fair. Discharge measurements generally made 2 to 3 times a month. Flow past station represents 1 of 3 channels of inflow to wildlife refuge.

Monthly discharge, in cubic feet per second, water year October 1964 to September 1965

| Month | Maximum | Minimum | Mean | Runoff in acre-feet |
|---|---|---|---|---|
| October | 13 | 0 | 1.77 | 109 |
| November | 3.5 | 0 | .37 | 22 |
| December | .3 | 0 | .11 | 6.5 |
| Calendar year 1964 | 51 | 0 | 9.94 | 7,210 |
| January | 1.0 | .1 | .18 | 11 |
| February | .6 | .1 | .18 | 10 |
| March | 41 | .3 | 19.9 | 1,220 |
| April | 47 | 12 | 30.2 | 1,800 |
| May | 58 | 26 | 44.5 | 2,740 |
| June | 53 | 12 | 33.9 | 2,020 |
| July | 46 | 4.0 | 31.5 | 1,940 |
| August | 59 | 14 | 37.2 | 2,280 |
| September | 50 | 3.2 | 24.7 | 1,470 |
| Water Year 1964-65 | 58 | 0 | 18.8 | 13,630 |

8-3575. San Antonio Riverside drain near San Marcial, N. Mex.

Location.--Lat 33°44'45", long 106°55'15", in Bosque del Apache Grant (wildlife refuge), on left bank 1.0 mile upstream from outlet to Rio Grande conveyance channel, 5 miles northeast of San Marcial, and 12 miles south of San Antonio.

Records available.--March 1948 to September 1965.

Gage.--Water-stage recorder. Datum of gage is 4,489.12 ft above mean sea level, datum of 1929. Mar. 19, 1948 to July 28, 1960, water-stage recorder at present site and datum. July 28, 1960, to May 14, 1962, water-stage recorder 0.4 mile downstream and at datum 3.42 ft lower.

Extremes.--1948-65: Maximum daily discharge, 226 cfs May 22, 1957; no flow at times.

Remarks.--Records good October to February 28, others fair. Discharge measurements generally made 2 to 3 times a month. Flow represents surface outflow from wildlife refuge. Diversion for irrigation of a few hundred acres above station.

Monthly discharge, in cubic feet per second, water year October 1964 to September 1965

| Month | Maximum | Minimum | Mean | Runoff in acre-feet |
|---|---|---|---|---|
| October | 24 | 0 | 2.55 | 157 |
| November | .6 | .1 | .21 | 12 |
| December | 1.8 | .2 | .65 | 40 |
| Calendar year 1964 | 75 | 0 | 16.7 | 12,140 |
| January | 14 | .9 | 3.97 | 244 |
| February | 12 | 4.4 | 8.02 | 446 |
| March | 66 | 9.4 | 33.6 | 2,070 |
| April | 88 | 16 | 43.0 | 2,560 |
| May | 101 | 55 | 75.1 | 4,620 |
| June | 96 | 26 | 57.0 | 3,390 |
| July | 97 | 50 | 78.8 | 4,850 |
| August | 86 | 24 | 55.7 | 3,430 |
| September | 87 | 9.4 | 53.2 | 3,160 |
| Water year 1964-65 | 101 | 0 | 34.5 | 24,980 |

8-3584. Rio Grande floodway at San Marcial, N. Mex.

Location.--Lat 33°40'50", long 106°59'15", in Pedro Armendaris Grant No. 33 on pier of the Atchison, Topeka, and Santa Fe Railway Co. bridge, 18.5 miles southwest of San Antonio, and 1.1 miles downstream from former site of San Marcial, Socorro County.

Drainage area.--27,700 sq mi, approximately (includes 2,940 sq mi in closed basin in San Luis Valley, Colo.).

Records available.--October 1895 to September 1965. Published as "Rio Grande at San Marcial" prior to October 1964 with flow in the conveyance channel included.

Gage.--Water-stage recorder. Datum of gage is 4,455.19 ft above mean sea level, datum of 1929. Prior to June 25, 1943, floodway had water-stage recorder, inverted rod, inclined staff, and wire-weight gages at several sites within 2 miles of present site at various datums. Prior to 1950 all flow through floodway.

Average discharge.--63 years (1895-58), 1,363 cfs (986,800 acre-ft per year), includes flow of conveyance channel.
7 years (1958-65), 219 cfs (158,500 acre-ft per year), flow in floodway only.
7 years (1958-65), 687 cfs (497,400 acre-ft per year), includes flow of floodway and conveyance channel.

Extremes.--Maximum discharge during year, 3,720 cfs Aug. 4 (gage height, 13.75 ft); no flow for most of time.
1895-1965: Maximum discharge, about 50,000 cfs Oct. 11, 1904; no flow at times.

Remarks.--Records fair except those below 200 cfs, which are poor. Floodway is 1 of 2 channels (see No. 8-3538) carrying flow in valley cross-section. For combined monthly fow in acre-ft see tabulation below. Normal plan is for floodway to carry flow when capacity of conveyance channel (about 2,000 cfs) is exceeded. Discharge measurements generally made once or twice a week during periods of flow. Diversions for irrigation of about 775,000 acres above station (includes about 13,800 acre-ft diverted from conveyance channel, as based on weekly measurements, data furnished by Bureau of Reclamation). Records of chemical analyses, suspended sediment loads, and water temperatures for the water year 1965 are published in part 2 of this report.

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | 0 | 1,060 | 1,240 | 1,380 | 1,320 | 0 |
| 2 | | | | | | | 0 | 855 | 690 | 786 | 2,250 | 0 |
| 3 | | | | | | | 0 | 810 | 478 | 1,220 | 3,520 | 0 |
| 4 | | | | | | | 0 | 1,100 | 1,330 | 1,840 | 3,290 | 0 |
| 5 | | | | | | | 0 | 1,320 | 1,760 | 1,770 | 2,260 | 0 |
| 6 | | | | | | | 0 | 1,460 | 1,410 | 1,970 | 1,520 | 1 |
| 7 | | | | | | | 0 | 1,540 | 990 | 1,740 | 405 | 51 |
| 8 | | | | | | | 0 | 1,670 | 828 | 1,820 | 142 | 207 |
| 9 | | | | | | | 0 | 1,770 | 562 | 1,960 | 41 | 208 |
| 10 | | | | | | | 0 | 1,880 | 1,040 | 1,700 | 1 | 217 |
| 11 | | | | | | | 0 | 1,610 | 1,350 | 1,490 | 0 | 123 |
| 12 | | | | | | | 0 | 1,260 | 1,680 | 1,260 | 0 | 20 |
| 13 | | | | | | | 0 | 1,230 | 2,130 | 1,180 | 0 | 75 |
| 14 | | | | | | | 0 | 1,390 | 2,350 | 480 | 0 | 22 |
| 15 | | | | | | | 0 | 1,800 | 1,950 | 382 | 14 | 3 |
| 16 | | | | | | | 0 | 1,720 | 1,650 | 668 | 4 | 0 |
| 17 | | | | | | | 0 | 2,000 | 1,410 | 1,180 | 0 | 0 |
| 18 | | | | | | | 0 | 2,120 | 1,310 | 592 | 0 | 0 |
| 19 | | | | | | | 0 | 1,480 | 1,530 | 580 | 0 | 0 |
| 20 | | | | | | | 0 | 1,350 | 2,590 | 358 | 0 | 0 |
| 21 | | | | | | | 0 | 1,540 | 3,220 | 98 | 0 | 0 |
| 22 | | | | | | | 0 | 1,690 | 2,750 | 4 | 0 | 0 |
| 23 | | | | | | | 0 | 1,800 | 2,420 | 0 | 0 | 0 |
| 24 | | | | | | | 0 | 2,120 | 2,500 | 0 | 0 | 0 |
| 25 | | | | | | | 0 | 2,430 | 2,580 | 0 | 0 | 0 |
| 26 | | | | | | | 87 | 2,540 | 2,490 | 0 | 0 | 0 |
| 27 | | | | | | | 718 | 2,210 | 2,650 | 0 | 0 | 0 |
| 28 | | | | | | | 1,750 | 1,920 | 2,530 | 1 | 0 | 0 |
| 29 | | | | | — | | 1,510 | 1,400 | 1,970 | 0 | 0 | 0 |
| 30 | | | | | | | 1,330 | 1,300 | 1,630 | 0 | 0 | 0 |
| 31 | | | | | | | | 1,580 | | 14 | 0 | |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 5,395 | 49,955 | 53,018 | 24,473 | 14,767 | 927 |
| Mean | 0 | 0 | 0 | 0 | 0 | 0 | 180 | 1,611 | 1,767 | 789 | 476 | 30.9 |
| Ac-ft | 0 | 0 | 0 | 0 | 0 | 0 | 10,700 | 99,080 | 105,200 | 48,540 | 29,290 | 1,840 |
| (†) | 362 | 14,080 | 21,760 | 40,000 | 35,500 | 25,360 | 65,230 | 182,000 | 195,100 | 130,600 | 75,090 | 36,570 |

Calendar year 1964: Max 626 Min 0 Mean 3.36 Ac-ft 2,440 (†) Mean 233 Ac-ft 169,000
Water year 1964-65: Max 3,520 Min 0 Mean 407 Ac-ft 294,600 (†) Mean 1,135 Ac-ft 821,700

(†) Combined flow, in acre-ft and mean, in cfs, of floodway, and conveyance channel.

8-3583. Rio Grande conveyance channel at San Marcial, N. Mex.

Location.--Lat 33°41'20", long 106°59'35", in Pedro Armendaris Grant No. 34, 51 miles downstream from heading at San Acacia, 3.5 miles downstream from railroad bridge near Tiffany siding, 1.0 mile southwest of former site of San Marcial and 0.4 mile northwest of Atchison, Topeka and Santa Fe Railway Co. bridge over floodway channel, Socorro County.

Records available.--April 1950 to September 1965. Flow included in composite flow of Rio Grande at San Marcial prior to October 1964.

Gage.--Water-stage recorder. Datum of gage is 4,454.00 ft above mean sea level (levels by Bureau of Reclamation). Prior to April 29, 1958, at datum 4.19 ft higher. Apr. 14, 1950, to Feb. 28, 1954, bypass flow (included in composite) was measured in Tiffany channel at a site 4 miles upstream; prior to 1950 all flow through floodway.

Average discharge.--11 years, 390 cfs (282,300 acre-ft per year).

Extremes.--1954-65: Maximum daily discharge, 1,830 cfs Apr. 25, 1965; no flow at times.

Remarks.--Records fair except those for periods of no gage-height record, which are poor. Discharge measurements generally made once a week. Original design and plan was for conveyance channel to carry all flows up to about 2,000 cfs. Conveyance channel is 1 of 2 channels (see No. 8-3584) carrying flow in valley cross-section. For combined monthly flow in acre-ft of this channel and floodway see tabulation below daily table for No. 8-3584. Records of chemical analyses, suspended sediment loads, and water temperatures for the water year 1965 are published in part 2 of this report.

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 45 | 2.9 | 294 | 526 | 512 | 641 | 130 | 1,340 | 1,450 | 1,530 | a 1,200 | 240 |
| 2 | 32 | 19 | 326 | 592 | 525 | 501 | 182 | 1,330 | 1,480 | 1,520 | a 1,300 | 204 |
| 3 | a 20 | 37 | 280 | 501 | 610 | 582 | 322 | 1,340 | 1,450 | 1,530 | 1,330 | 370 |
| 4 | a 14 | 29 | 354 | 480 | 595 | 624 | 568 | 1,300 | 1,440 | 1,550 | 1,350 | 900 |
| 5 | a 8 | 16 | 420 | 504 | 610 | 676 | 972 | 1,290 | 1,410 | 1,520 | 1,350 | 428 |
| 6 | 4.1 | 12 | 386 | 473 | 655 | 638 | 1,110 | 1,310 | 1,400 | 1,510 | 1,410 | 312 |
| 7 | 2.4 | 12 | 364 | 459 | 676 | 476 | 1,010 | 1,320 | 1,460 | 1,510 | 1,440 | 493 |
| 8 | 2.0 | 14 | 375 | 480 | 690 | 392 | 840 | 1,330 | 1,440 | 1,510 | 1,460 | 804 |
| 9 | 1.8 | 14 | 358 | 550 | 725 | 448 | 809 | 1,350 | 1,470 | 1,510 | 1,390 | 1,210 |
| 10 | 1.4 | 13 | 333 | 630 | 736 | 403 | 750 | 1,320 | 1,490 | 1,480 | 1,360 | 1,410 |
| 11 | 1.2 | 11 | 308 | 1,450 | 746 | 340 | 554 | 1,300 | 1,520 | 1,530 | 1,120 | 1,090 |
| 12 | 1.2 | 12 | 291 | 1,440 | 742 | 333 | 933 | 1,320 | 1,520 | 1,520 | 870 | 1,130 |
| 13 | 1.2 | 14 | 302 | a 1,100 | 767 | 406 | 732 | 1,290 | 1,570 | 1,530 | 732 | 1,170 |
| 14 | 1.2 | 14 | 315 | a 850 | 694 | 484 | 585 | 1,320 | 1,550 | 1,510 | a 600 | 1,240 |
| 15 | 1.8 | 16 | 300 | a 750 | 595 | 473 | 638 | 1,300 | 1,570 | 1,570 | 630 | 760 |
| 16 | 2.4 | 124 | 350 | a 680 | 568 | 445 | 806 | 1,330 | 1,550 | 1,550 | a 500 | 506 |
| 17 | 2.2 | 307 | 340 | a 630 | 540 | 438 | 592 | 1,340 | 1,570 | 1,510 | 514 | 465 |
| 18 | 2.2 | 512 | 252 | a 600 | 582 | 438 | 690 | 1,340 | 1,580 | 1,490 | 400 | 400 |
| 19 | 1.8 | 698 | 238 | 582 | 588 | 400 | 944 | 1,360 | 1,620 | 1,500 | 440 | 320 |
| 20 | 2.2 | 996 | 266 | 585 | 578 | 350 | 655 | 1,380 | 1,630 | 1,530 | 498 | 296 |
| 21 | 2.2 | 909 | 263 | 592 | 596 | 354 | 568 | 1,380 | 1,610 | 1,690 | 400 | 320 |
| 22 | 2.4 | 606 | 280 | 588 | 599 | 420 | 1,010 | 1,370 | 1,510 | 1,340 | 388 | 280 |
| 23 | 2.6 | 417 | 358 | 599 | 606 | 347 | 1,520 | 1,350 | 1,510 | 1,170 | 412 | 308 |
| 24 | 2.9 | 378 | 386 | 588 | 638 | 308 | 1,620 | 1,330 | 1,510 | 712 | 408 | 368 |
| 25 | 3.2 | 350 | 438 | 585 | 630 | 263 | 1,830 | 1,330 | 1,510 | 650 | 280 | 380 |
| 26 | 6.6 | 330 | 448 | 574 | 630 | 238 | 1,800 | 1,360 | 1,510 | 860 | 260 | 514 |
| 27 | 3.8 | 316 | 448 | 578 | 666 | 288 | 1,350 | 1,430 | 1,490 | 1,130 | 200 | 304 |
| 28 | 2.9 | 312 | 456 | 571 | 798 | 322 | 1,290 | 1,440 | 1,500 | 980 | 220 | 404 |
| 29 | 2.9 | 305 | 473 | 578 | - | 249 | 1,350 | 1,410 | 1,510 | 732 | 179 | 412 |
| 30 | 2.4 | 305 | 487 | 536 | ---------- | 260 | 1,330 | 1,440 | 1,490 | 712 | 228 | 470 |
| 31 | 2.6 | ---------- | 484 | 515 | ---------- | 248 | ---------- | 1,450 | ---------- | a 1,000 | 220 | ---------- |
| Total | 182.6 | 7,100.9 | 10,973 | 20,166 | 17,897 | 12,785 | 27,490 | 41,800 | 45,320 | 41,386 | 23,089 | 17,508 |
| Mean | 5.89 | 237 | 354 | 651 | 639 | 412 | 916 | 1,348 | 1,511 | 1,335 | 745 | 584 |
| Ac-ft | 362 | 14,080 | 21,760 | 40,000 | 35,500 | 25,360 | 54,530 | 82,910 | 89,890 | 82,090 | 45,800 | 34,730 |

Calendar year 1964 : Max 1,270 Min 0 Mean 230 Ac-ft 166,600
Water year 1964-65 : Max 1,830 Min 1.2 Mean 728 Ac-ft 527,000

a No gage-height record.

8-3600. Alamosa River near Monticello, N. Mex.

Location.--Lat 33°34'10", long 107°36'20", in SW¼ sec.31, T.8 S., R.7 W., on left bank at Alamosa damsite and below Old Fort Ojo Caliente, just downstream from Wildhorse Creek, 15 miles northwest of Monticello.

Drainage area.--403 sq mi.

Records available.--October to December 1929, May 1931 to April 1942, July 1956 to June 1958 (annual maximum only), July 1958 to September 1965. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder and crest-stage gage. Datum of gage is 6,142.04 ft above mean sea level, datum of 1929. Prior to Aug. 17, 1930, at different datum. May 2, 1931, to Dec. 14, 1939, water-stage recorder at datum 0.20 ft lower and Dec. 15, 1939, to Apr. 17, 1942, at present datum. July 16, 1956, to July 27, 1958, crest-stage gage only at present site and datum.

Average discharge.--17 years (1931-41, 1958-65), 8.47 cfs (6,130 acre-ft per year).

Extremes.--Maximum discharge during year, 7,550 cfs July 31 (gage height, 11.30 ft); minimum, 5.2 cfs July 2, 3.
1931-42, 1956-65: Maximum discharge, 10,800 cfs Aug. 13, 1964 (gage height, 14.04 ft), from rating curve extended above 400 cfs on basis of slope-area measurements at gage heights 6.66 and 12.0 ft; minimum, 5.2 cfs Jan. 9, 1932, Sept. 3, 1938, July 2, 3, 1965.
Maximum flood known probably occurred in 1895, from information by local residents. A flood in August 1943 was highest since 1917.

Remarks.--Records good except those for period July 13 to September, which are poor. No diversion above station. Entire normal flow diverted below station for irrigation.

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7.4 | 6.7 | 7.4 | 6.4 | 5.5 | 7.1 | 6.2 | 6.7 | 8.0 | 6 | 15 | 8 |
| 2 | 6.4 | 6.7 | 7.4 | 6.4 | 5.5 | 7.1 | 6.2 | 6.4 | 7.8 | * 5.2 | 30 | 8 |
| 3 | 6.4 | 6.7 | 7.4 | 6.4 | 5.5 | 6.7 | 6.2 | 6.2 | * 8.0 | 5.4 | 10 | 10 |
| 4 | 6.4 | 6.7 | 7.1 | 6.7 | 5.5 | 6.7 | 6.2 | 6.2 | 8.0 | 5.6 | 8 | 7 |
| 5 | 6.7 | 6.7 | 7.1 | 6.7 | 5.7 | 6.4 | 6.2 | 6.2 | 7.8 | 5.6 | 8 | 7 |
| 6 | 6.7 | 6.7 | 7.1 | 6.7 | 5.7 | 6.4 | 6.7 | 6.2 | 7.8 | 5.6 | 8 | 50 |
| 7 | 6.7 | 6.7 | 7.4 | 6.7 | 5.5 | 6.4 | 6.7 | 6.2 | 8.0 | 5.6 | 7 | 20 |
| 8 | 6.7 | 6.7 | 7.1 | 6.7 | 5.5 | 6.7 | 6.7 | 6.2 | 8.0 | 5.6 | 7 | 30 |
| 9 | 6.7 | 6.7 | 7.1 | 6.4 | 5.7 | 7.1 | 6.7 | 6.2 | 7.8 | 5.4 | 7 | 10 |
| 10 | 6.7 | 6.7 | 6.7 | 6.4 | 5.7 | 6.7 | 6.7 | 6.4 | 8.3 | 5.4 | 7 | 8 |
| 11 | 6.7 | 7.1 | 6.7 | 6.7 | 5.9 | 6.7 | 7.1 | 6.4 | 6.6 | 5.4 | * 7.3 | 8 |
| 12 | 6.7 | 7.1 | 6.7 | 6.7 | 5.9 | 6.7 | 7.1 | 6.4 | 6.6 | 5.8 | 7.3 | 7 |
| 13 | 6.7 | 7.1 | 6.7 | 6.7 | 5.9 | 6.4 | 7.1 | 6.4 | 6.6 | 7.0 | 7.3 | 20 |
| 14 | 6.7 | 6.7 | 6.7 | 6.7 | 5.9 | 6.2 | 6.7 | 6.4 | 6.4 | 7.0 | 26 | 7 |
| 15 | 6.7 | 7.1 | 6.4 | 7.1 | 6.2 | 6.2 | 6.7 | 6.4 | 6.4 | 6.6 | 6.6 | 7 |
| 16 | 6.7 | 7.1 | 6.7 | 7.1 | 6.2 | 6.2 | 6.7 | 6.4 | 6.4 | 60 | 7.5 | 7 |
| 17 | 6.7 | 7.1 | 6.4 | 7.1 | 6.2 | 6.2 | 6.7 | 6.4 | 6.6 | 8 | 19 | * 6.4 |
| 18 | 7.4 | 7.1 | 6.4 | 6.7 | 6.2 | 6.2 | 6.7 | 6.4 | 6.6 | 7 | 6.4 | 6.4 |
| 19 | 6.7 | 7.1 | 6.4 | 6.7 | 6.2 | 6.4 | 6.7 | 7.1 | 6.6 | 7 | 14 | 6.4 |
| 20 | 7.1 | 7.1 | 6.4 | 6.4 | 6.2 | 6.4 | 6.7 | 6.4 | 6.8 | 6 | 7.5 | 6.6 |
| 21 | 6.7 | 7.4 | 6.4 | 6.4 | 6.2 | 6.4 | 6.7 | 6.4 | 7.0 | 6 | 6.6 | 7.0 |
| 22 | * 6.4 | 7.7 | 6.4 | * 6.4 | 6.4 | 6.4 | * 6.7 | 6.4 | 6.8 | 6 | 143 | 7.0 |
| 23 | 6.4 | 7.4 | * 5.9 | 6.2 | 6.4 | 6.4 | 6.7 | 6.4 | 6.8 | 10 | 15 | 7.0 |
| 24 | 6.4 | 7.4 | 5.9 | 6.2 | *6.4 | * 5.9 | 6.7 | 6.4 | 6.8 | 7 | 10 | 8.2 |
| 25 | 6.4 | * 7.1 | 5.9 | 6.2 | 6.7 | 5.7 | 7.1 | 6.4 | 6.6 | 6 | 8 | 6.4 |
| 26 | 6.4 | 7.4 | 5.9 | 6.2 | 7.1 | 6.2 | 7.1 | 6.4 | 6.4 | 20 | 7 | 6.6 |
| 27 | 6.4 | 7.7 | 6.4 | 6.2 | 7.1 | 6.4 | 6.7 | 6.4 | 6.6 | 10 | 7 | 6.2 |
| 28 | 6.4 | 7.7 | 6.2 | 6.2 | 7.1 | 6.2 | 7.1 | 6.4 | 6.6 | 7 | 7 | 6.4 |
| 29 | 6.4 | 7.7 | 6.2 | 5.9 | - | 6.2 | 6.7 | 6.4 | 4.3 | * 6.6 | 7 | 6.6 |
| 30 | 6.4 | 7.7 | 6.2 | 5.9 | ------- | 6.2 | 6.7 | 18 | 7 | 6.8 | 7 | 6.5 |
| 31 | 6.4 | ------ | 6.2 | 5.9 | ------- | 5.9 | ------ | 8.3 | ------ | 219 | 20 | ------- |
| Total | 205.6 | 212.8 | 204.9 | 201.1 | 170.0 | 198.8 | 200.9 | 211.5 | 248.7 | 479.6 | 453.5 | 307.7 |
| Mean | 6.63 | 7.09 | 6.61 | 6.49 | 6.07 | 6.41 | 6.70 | 6.82 | 8.29 | 15.5 | 14.6 | 10.3 |
| Ac-ft | 408 | 422 | 406 | 399 | 337 | 394 | 398 | 420 | 493 | 951 | 900 | 610 |

Calendar year 1964: Max 1,000 Min 5.9 Mean 12.8 Ac-ft 9,240
Water year 1964-65: Max 219 Min 5.2 Mean 8.48 Ac-ft 6,140

Peak discharge (base, 1,000 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 7-16 | 2145 | 6.00 | 1,870 | 8-22 | unknown | 8.9 | 4,830 |
| 7-31 | 1540 | 11.30 | 7,550 | | | | |

* Discharge measurement made on this day.
Note.--No gage-height record July 17-28, Aug. 1-10, Aug. 23 to Sept. 16, Sept. 30.

8-3605. Elephant Butte Reservoir at Elephant Butte, N. Mex.

Location.--Lat 33°09'15", long 107°11'30", in NW¼ sec.30, T.13 S., R.3 W. (survey by Bureau of Reclamation), at dam on Rio Grande, 1 mile west of Elephant Butte and 4 miles northeast of Truth or Consequences (Hot Springs), N. Mex.

Drainage area.--29,445 sq mi, approximately (includes 2,940 sq mi in closed basin in San Luis Valley, Colo.).

Records available.--March 1915 to September 1965. Prior to January 1940 published in WSP 1312.

Gage.--Water-stage recorder. Datum of gage is 43.3 ft above mean sea level, datum of 1929. Oct. 16, 1939, to May 2, 1940, and prior to September 1930, staff gages.

Extremes.--Maximum daily contents during year, 380,000 acre-ft July 14 (gage height, 4,323.01 ft); minimum daily, 48,700 acre-ft Oct. 1 (gage height, 4,277.46 ft).
1915-65: Maximum daily contents, 2,302,800 acre-ft June 16-18, 1942 (gage height, 4,409.19 ft); minimum daily after initial filling, 9,900 acre-ft Aug. 6, 1954 (gage height, 4,258.03 ft).

Remarks.--Reservoir is formed by concrete dam. Storage began Jan. 6, 1915. Dam completed May 13, 1916. Capacity, 2,195,000 acre-ft (survey of 1961) between gage heights 4,231.5 (sill of outlet gate) and 4,407.0 ft (crest of spillway). Capacity by original survey was 2,638,900 acre-ft. No adjustment made for decrease in capacity due to sedimentation between effective dates of capacity tables. No dead storage, surveys of 1957 and 1961. No storage allocated to flood control. Figures given herein represent usable contents. Water is used for power development and irrigation on Rio Grande Project of Bureau of Reclamation. Lake is major recreational area. Contents given herein are computed from mean daily gage heights.

Cooperation.--Records furnished by Bureau of Reclamation.

Month-end gage heights and contents, water year October 1964 to September 1965

| Date | Gage height (feet) | Contents (acre-feet) | Change in contents (acre-feet) |
|---|---|---|---|
| Sept. 30 | 4,277.42 | 48,600 | - |
| Oct. 31 | 4,277.86 | 50,100 | + 1,500 |
| Nov. 30 | 4,281.62 | 64,700 | + 14,600 |
| Dec. 31 | 4,286.57 | 87,300 | + 22,600 |
| Calendar year 1964 | - | - | - 24,700 |
| Jan. 31 | 4,293.52 | 125,800 | + 38,500 |
| Feb. 28 | 4,298.57 | 159,000 | + 33,200 |
| Mar. 31 | 4,296.49 | 144,800 | - 14,200 |
| Apr. 30 | 4,297.95 | 154,600 | + 9,800 |
| May 31 | 4,314.30 | 288,700 | + 134,100 |
| June 30 | 4,321.85 | 366,900 | + 78,200 |
| July 31 | 4,319.16 | 337,800 | - 29,100 |
| Aug. 31 | 4,314.20 | 287,800 | - 50,000 |
| Sept. 30 | 4,315.28 | 298,300 | + 10,500 |
| Water year 1964-65 | - | - | + 249,700 |

## 8-3610. Rio Grande below Elephant Butte Dam, N. Mex.

Location.--Lat 33°08'45", long 107°12'20", in SW¼ sec.25, T.13 S., R.4 W. (projected), in Pedro Armendaris Grant, on left bank 1.0 mile downstream from dam and 1½ miles upstream from Cuchillo Negro River.

Drainage area.--29,450 sq mi, approximately (includes 2,940 sq mi in closed basin in San Luis Valley, Colo.).

Records available.--April 1915 to September 1965.

Gage.--Water-stage recorder (digital). Datum of gage is 4,242.09 ft above mean sea level, datum of 1929. Prior to Jan. 1, 1931, at one of three sites 0.1 to 1.0 mile upstream at different datums. Jan. 1, 1931 to Jan. 16, 1939, at site 400 ft downstream from dam at datum 12.80 ft higher than present datum. Jan. 17, 1939, to Dec. 31, 1940, at site 0.7 mile upstream at datums 0.06 ft lower and 1.36 ft lower Jan. 17 to Mar. 29, 1939, and Mar. 30, 1939, to Dec. 31, 1940, respectively. Jan. 1, 1941 to Apr. 23, 1942, at site 128 ft upstream from preceding gage at datum 0.91 ft lower than present gage.

Average discharge.--50 years, 1,027 cfs (743,500 acre-ft per year).

Extremes.--Maximum discharge during year, 2,960 cfs July 9 (gage height, 7.28 ft); minimum, 1.6 cfs Nov. 20-22.
1915-65: Maximum daily discharge, 8,220 cfs May 22, 1942; no flow at times prior to 1929.

Remarks.--Records good except those for period of no gage-height record, which are poor. Discharge measurements generally made 2 to 3 times a month. Flow regulated by Elephant Butte Reservoir (see 8-3605). Diversion for irrigation of about 800,000 acres above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1964 TO SEPTEMBER 1965

| DAY | OCT. | NOV. | DEC. | JAN. | FEB. | MAR. | APR. | MAY | JUNE | JULY | AUG. | SEPT. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 4.7 | 3.0 | 2.8 | 3.5 | 2.8 | 36 | 733 | 518 | 1,220 | 1,910 | 2,040 | 1,750 |
| 2 | 4.4 | 3.0 | 3.2 | 2.8 | 2.8 | 9.6 | 744 | 508 | 1,220 | 1,910 | 2,030 | 1,530 |
| 3 | 4.7 | 2.8 | 3.5 | 2.8 | 2.8 | 10 | 737 | 506 | 1,220 | 1,910 | 2,050 | 1,460 |
| 4 | 4.7 | 2.6 | 3.0 | 2.8 | 2.8 | 9.6 | 744 | 511 | 1,220 | 1,910 | 2,030 | 1,550 |
| 5 | 4.7 | 2.6 | 3.0 | 2.8 | 2.8 | 669 | 741 | 510 | 1,210 | 1,910 | 2,010 | 1,510 |
| 6 | 4.7 | 2.6 | 2.8 | 3.0 | 3.2 | 696 | 738 | 505 | 1,210 | 2,350 | 2,000 | 1,530 |
| 7 | 4.7 | 2.6 | 2.8 | 3.8 | 3.5 | 708 | 742 | 514 | 1,210 | 2,700 | 2,030 | 1,560 |
| 8 | 5.0 | 2.6 | 2.8 | 4.1 | 3.2 | 727 | 737 | 514 | 1,210 | 2,700 | 2,030 | 250 |
| 9 | 5.0 | 2.6 | 2.6 | 3.2 | 3.8 | 704 | 741 | 505 | 1,210 | 2,800 | 2,030 | 38 |
| 10 | 5.0 | 2.8 | 2.6 | 3.2 | 4.4 | 718 | 747 | 503 | 1,470 | 2,750 | 2,030 | 18 |
| 11 | 5.0 | 2.8 | 2.6 | 3.2 | 4.4 | 718 | 745 | 502 | 1,760 | 2,740 | 2,020 | 17 |
| 12 | 4.7 | 2.6 | 2.6 | 3.2 | 4.1 | 718 | 746 | 508 | 1,760 | 2,710 | 2,280 | 22 |
| 13 | 4.4 | 2.8 | 2.6 | 3.2 | 3.8 | 717 | 741 | 515 | 1,770 | 2,650 | 2,600 | 19 |
| 14 | 4.7 | 2.8 | 2.6 | 3.5 | 3.8 | 716 | 741 | 515 | 1,780 | 2,500 | 2,750 | 18 |
| 15 | 4.7 | 2.4 | 2.6 | 3.5 | 3.8 | 724 | 751 | 514 | 1,790 | 2,590 | 2,650 | 17 |
| 16 | 4.7 | 2.8 | 2.6 | 3.5 | 3.8 | 721 | 748 | 521 | 1,800 | 2,510 | 2,480 | 17 |
| 17 | 4.4 | 2.2 | 2.8 | 3.5 | 3.8 | 724 | 748 | 517 | 1,820 | 2,560 | 2,290 | 20 |
| 18 | 3.8 | 2.0 | 4.6 | 3.5 | 3.8 | 718 | 750 | 518 | 1,830 | 2,610 | 2,210 | 17 |
| 19 | 3.5 | 1.8 | a3 | 3.5 | 4.4 | 726 | 750 | 534 | 1,830 | 2,630 | 2,160 | 18 |
| 20 | 3.8 | 1.6 | a3 | 3.5 | 4.7 | 726 | 738 | 923 | 1,840 | 2,640 | 2,090 | 16 |
| 21 | 3.8 | 1.6 | a3 | 3.5 | 4.7 | 723 | 736 | 918 | 1,840 | 2,630 | 1,860 | 14 |
| 22 | 3.8 | 1.6 | a3 | 3.5 | 5.0 | 730 | 751 | 922 | 1,840 | 2,680 | 1,860 | 14 |
| 23 | 3.5 | 2.0 | a3 | 3.0 | 5.0 | 733 | 749 | 927 | 1,840 | 2,670 | 1,860 | 12 |
| 24 | 3.5 | 3.2 | a3 | 3.2 | 12 | 741 | 685 | 917 | 1,840 | 2,630 | 1,840 | 10 |
| 25 | 3.5 | 3.2 | a3 | 4.1 | 11 | 731 | 740 | 924 | 1,840 | 2,610 | 1,520 | 8.5 |
| 26 | 3.0 | 3.0 | a3 | 3.0 | 11 | 738 | 742 | 923 | 1,840 | 2,620 | 1,520 | 7.5 |
| 27 | 3.0 | 3.0 | a3 | 3.0 | 11 | 739 | 734 | 923 | 1,840 | 2,550 | 1,520 | 8.0 |
| 28 | 3.2 | 3.0 | a3 | 3.0 | 12 | 741 | 738 | 918 | 1,840 | 2,500 | 1,520 | 7.5 |
| 29 | 3.0 | 3.0 | a3 | 3.0 | -- | 740 | 729 | 933 | 1,820 | 2,490 | 1,520 | 6.5 |
| 30 | 2.8 | 3.0 | a3 | 2.8 | ---------- | 738 | 731 | 961 | 1,870 | 2,490 | 1,520 | 5.1 |
| 31 | 3.2 | ---------- | 3.0 | 2.8 | ---------- | 735 | ---------- | 930 | ---------- | 2,470 | 1,520 | ---------- |
| TOTAL | 127.6 | 77.6 | 91.1 | 101.0 | 144.2 | 19,584.2 | 22,197 | 20,857 | 48,790 | 77,330 | 61,870 | 11,470.1 |
| MEAN | 4.12 | 2.59 | 2.94 | 3.26 | 5.15 | 632 | 740 | 673 | 1,626 | 2,495 | 1,996 | 382 |
| AC-FT | 253 | 154 | 181 | 200 | 286 | 38,840 | 44,030 | 41,370 | 96,770 | 153,400 | 122,700 | 22,750 |

CALENDAR YEAR 1964 MAX 1,380 MIN 1.6 MEAN 253 AC-FT 183,400
WATER YEAR 1964-65 MAX 2,800 MIN 1.6 MEAN 720 AC-FT 520,900

a No gage-height record.

8-3620. Caballo Reservoir near Arrey, N. Mex.

Location.--Lat 32°53'45", long 107°17'30", in SE¼SW¼ sec.19, T.16 S., R.4 W., in control tower of Caballo Dam on Rio Grande, 0.5 mile downstream from mouth of Apache Canyon, 0.9 mile upstream from Bojarquez Bridge, 2 miles upstream from Percha diversion dam, 3.5 miles northeast of Arrey, and 5½ miles south of Caballo, N. Mex.

Drainage area.--30,700 sq mi, approximately (includes 2,940 sq mi in closed basin in San Luis Valley, Colo.).

Records available.--February 1938 to September 1965.

Gage.--Water-stage recorder. Datum of gage is 43.3 ft above mean sea level, datum of 1929.

Extremes.--Maximum daily contents during year, 55,130 acre-ft June 30 (gage height, 4,144.18 ft); minimum daily, 7,340 acre-ft Oct. 1 (gage height, 4,125.50 ft).
1938-65: Maximum daily contents, 347,000 acre-ft Mar. 4, 1942 (gage height, 4,182.06 ft); minimum daily, 118 acre-ft Oct. 14, 1938 (gage height, 4,108.1 ft).

Remarks.--Reservoir is formed by earth-fill dam, completed Sept. 19, 1938. Storage began Feb. 8, 1938. Capacity (1958 survey), 344,000 acre-ft between gage heights 4,104 (bottom of tunnel entrance of gates) and 4,182 ft (gage height above which spillway gates operate automatically). No dead storage. Storage held for flood control, 100,000 acre-ft. Figures given herein represent usable contents. Water released from Elephant Butte Reservoir for power development is stored in Caballo Reservoir and released for irrigation on Rio Grande project of Bureau of Reclamation. Contents given herein are computed from mean daily gage heights.

Cooperation.-- Records furnished by Bureau of Reclamation.

Month-end gage heights and contents, water year October 1964 to September 1965

| Date | Gage height (feet) | Contents (acre-feet) | Change in contents (acre-feet) |
|---|---|---|---|
| Sept. 30 | 4,125.48 | 7,310 | - |
| Oct. 31 | 4,126.39 | 8,570 | + 1,260 |
| Nov. 30 | 4,127.12 | 9,650 | + 1,080 |
| Dec. 31 | 4,128.00 | 11,060 | + 1,410 |
| Calendar year 1964 | - | - | - 20,680 |
| Jan. 31 | 4,128.77 | 12,400 | + 1,340 |
| Feb. 28 | 4,129.28 | 13,340 | + 940 |
| Mar. 31 | 4,131.89 | 18,640 | + 5,300 |
| Apr. 30 | 4,131.29 | 17,350 | - 1,290 |
| May 31 | 4,143.77 | 53,550 | + 36,200 |
| June 30 | 4,135.92 | 28,400 | - 25,150 |
| July 31 | 4,137.16 | 31,790 | + 3,390 |
| Aug. 31 | 4,134.40 | 24,520 | - 7,270 |
| Sept. 30 | 4,128.26 | 11,510 | - 13,010 |
| Water year 1964-65 | - | - | + 4,200 |

## 8-3625. Rio Grande below Caballo Dam, N. Mex.

Location.--Lat 32°53'05", long 107°17'30", in NE¼SW¼ sec.30, T.16 S., R.4 W., on left bank 600 ft upstream from Bojarquez Bridge, 4,200 ft downstream from Caballo Dam, 1¼ miles downstream from Apache Canyon, 1 1/3 miles upstream from Percha diversion dam, 3 miles northeast of Arrey, and 5 miles south of Caballo.

Drainage area.--30,700 sq mi, approximately (includes 2,940 sq mi in closed basin in San Luis Valley, Colo.).

Records available.--January 1938 to September 1965.

Gage.--Water-stage recorder. Datum of gage is 4,140.9 ft above mean sea level, datum of 1929. Prior to Oct. 7, 1938, at datum 7.0 ft higher, Oct. 7-12, 1938, at datum 6.0 ft higher, and Oct. 13, 1938, to Dec. 31, 1945, at datum 5.0 ft higher than present datum.

Average discharge.--27 years, 900 cfs (651,600 acre-ft per year).

Extremes.--Maximum daily discharge during year, 2,840 cfs Aug. 14; minimum daily, 0.9 cfs Nov. 14-23.
1938-65: Maximum daily discharge, 7,650 cfs May 20, 1942; minimum daily, 0.1 cfs Oct. 31 to Nov. 14, 1954, Nov. 7 to Dec. 31, 1955.

Remarks.--Records good. Flow regulated by Caballo Reservoir (capacity, 344,000 acre-ft, 1958 survey) and Elephant Butte Reservoir (capacity, 2,195,000 acre-ft, 1961 survey). Diversions for irrigation of about 800,000 acres above station. Figures of daily discharge do not include Bonita ditch which diverts from Caballo Dam and bypasses station for irrigation below. See monthly table below for record of ditch.

Cooperation.--Records furnished by Bureau of Reclamation.

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.6 | 1.0 | 1.0 | 1.1 | 1.1 | 1.1 | 1,400 | 1.9 | 494 | 2,310 | 1,760 | 2,330 |
| 2 | 1.6 | 1.0 | 1.0 | 1.0 | 1.1 | 1.1 | 1,380 | 1.9 | 1,760 | 2,250 | 1,630 | 1,950 |
| 3 | 1.5 | 1.0 | 1.0 | 1.0 | 1.1 | 1.1 | 1,340 | 1.9 | 1,880 | 2,370 | 1,500 | 1,830 |
| 4 | 1.5 | 1.0 | 1.0 | 1.0 | 1.1 | 1.1 | 1,260 | 1.8 | 2,150 | 2,390 | 1,560 | 1,810 |
| 5 | 1.4 | 1.0 | 1.0 | 1.0 | 1.1 | 1.0 | 1,190 | 1.8 | 2,380 | 2,390 | 1,600 | 1,720 |
| 6 | 1.3 | 1.0 | 1.0 | 1.0 | 1.1 | 1.0 | 1,060 | 1.7 | 2,380 | 2,390 | 2,000 | 1,510 |
| 7 | 1.3 | 1.0 | 1.0 | 1.0 | 1.1 | 1.0 | 902 | 1.6 | 2,380 | 2,400 | 2,290 | 1,230 |
| 8 | 1.2 | 1.0 | 1.0 | 1.0 | 1.1 | 1.0 | 875 | 1.5 | 2,380 | 2,400 | 2,280 | 843 |
| 9 | 1.2 | 1.0 | 1.0 | 1.0 | 1.1 | 1.0 | 841 | 1.4 | 2,390 | 2,470 | 2,320 | 791 |
| 10 | 1.1 | 1.0 | 1.0 | 1.0 | 1.1 | 1.0 | 835 | 1.4 | 2,200 | 2,680 | 2,600 | 748 |
| 11 | 1.1 | 1.0 | 1.0 | 1.0 | 1.1 | 1.0 | 794 | 1.4 | 1,920 | 2,610 | 2,750 | 651 |
| 12 | 1.1 | 1.0 | 1.0 | 1.0 | 1.1 | 1.0 | 781 | 1.4 | 1,900 | 2,540 | 2,720 | 461 |
| 13 | 1.1 | 1.0 | 1.0 | 1.0 | 1.1 | 1.0 | 669 | 1.3 | 1,900 | 2,330 | 2,790 | 859 |
| 14 | 1.0 | .9 | 1.0 | 1.0 | 1.1 | 1.0 | 603 | 1.3 | 1,890 | 2,240 | 2,840 | 1,150 |
| 15 | 1.0 | .9 | 1.0 | 1.0 | 1.1 | 1.0 | 671 | 1.3 | 1,890 | 2,260 | 2,790 | 1,180 |
| 16 | 1.0 | .9 | 1.0 | 1.0 | 1.1 | 1.0 | 702 | 1.2 | 1,880 | 2,280 | 2,570 | 1,010 |
| 17 | 1.0 | .9 | 1.0 | 1.0 | 1.1 | 1.0 | 671 | 1.2 | 1,880 | 2,350 | 2,310 | 359 |
| 18 | 1.0 | .9 | 1.0 | 1.0 | 1.1 | 1.0 | 605 | 1.2 | 2,000 | 2,360 | 2,190 | 5.0 |
| 19 | 1.0 | .9 | 1.0 | 1.0 | 1.1 | 1.0 | 553 | 1.2 | 2,260 | 2,360 | 2,100 | 3.0 |
| 20 | 1.0 | .9 | 1.1 | 1.0 | 1.1 | 546 | 580 | 1.2 | 2,260 | 2,360 | 1,830 | 3.0 |
| 21 | 1.0 | .9 | 1.1 | 1.0 | 1.0 | 1,010 | 645 | 1.2 | 2,180 | 2,370 | 1,720 | 2.0 |
| 22 | 1.0 | .9 | 1.1 | 1.0 | 1.0 | 1,020 | 636 | 1.2 | 2,030 | 2,420 | 1,650 | 1.0 |
| 23 | 1.0 | .9 | 1.1 | 1.0 | 1.0 | 1,220 | 684 | 1.2 | 2,010 | 2,420 | 1,190 | 1.0 |
| 24 | 1.0 | 1.0 | 1.1 | 1.0 | 1.0 | 1,390 | 726 | 1.2 | 1,930 | 2,360 | 1,320 | 1.0 |
| 25 | 1.0 | 1.0 | 1.1 | 1.0 | 1.0 | 1,400 | 712 | 1.2 | 1,960 | 2,360 | 1,510 | 1.0 |
| 26 | 1.0 | 1.0 | 1.1 | 1.0 | 1.0 | 1,510 | 558 | 1.2 | 2,010 | 2,360 | 1,500 | 1.0 |
| 27 | 1.0 | 1.0 | 1.1 | 1.0 | 1.0 | 1,630 | 174 | 1.2 | 2,010 | 2,220 | 1,780 | 1.0 |
| 28 | 1.0 | 1.0 | 1.1 | 1.0 | 1.1 | 1,580 | 2.0 | 1.2 | 2,010 | 2,010 | 2,200 | 1.0 |
| 29 | 1.0 | 1.0 | 1.1 | 1.0 | - | 1,580 | 2.0 | 1.2 | 2,100 | 1,900 | 2,280 | 1.0 |
| 30 | 1.0 | 1.0 | 1.1 | 1.0 | ---------- | 1,500 | 1.9 | 1.2 | 2,310 | 1,820 | 2,260 | 1.0 |
| 31 | 1.0 | ---------- | 1.1 | 1.0 | ---------- | 1,390 | ---------- | 1.2 | ---------- | 1,770 | 2,320 | 1.0 |
| Total | 35.0 | 29.0 | 32.2 | 31.1 | 30.1 | 15,795.4 | 21,852.9 | 42.8 | 60,724 | 71,750 | 64,160 | 20,454.0 |
| Mean | 1.13 | 0.97 | 1.07 | 1.00 | 1.08 | 510 | 728 | 1.38 | 2,024 | 2,315 | 2,070 | 682 |
| Ac-ft | 69 | 58 | 64 | 62 | 60 | 31,330 | 43,340 | 85 | 120,400 | 142,300 | 127,300 | 40,570 |
| (†) | 0 | 0 | 0 | 0 | 0 | 125 | 146 | 0 | 215 | 218 | 256 | 88 |

Calendar year 1964 : Max 1,350 Min 0.9 Mean 284 Ac-ft 206,800
Water year 1964-65 : Max 2,840 Min 0.9 Mean 698 Ac-ft 505,600

† Diversion, in acre-feet, by Bonita ditch. Bonita ditch diverts directly from Caballo Dam and this diversion is not included in the river records.

8-3636. Las Cruces Arroyo near Las Cruces, N. Mex.

Location.--Lat 32°18'55", long 106°45'00", in SW¼SW¼ sec.9, T.23 S., R.2 E. (projected), on left bank in Dona Ana Bend Colony Grant, 1½ miles northeast of Las Cruces City Hall, and 100 ft upstream from Interstate Highway 25.

Drainage area.--13.5 sq mi, approximately.

Records available.--May 1958 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 4,035 ft (from topographic map). Prior to Aug. 17, 1960, at two sites about 670 ft upstream at datum 11.96 ft higher.

Average discharge.--7 years, 0.09 cfs (65.2 acre-ft per year).

Extremes.--Maximum discharge during year, 2,170 cfs Aug. 22 (gage height, 3.38 ft),on basis of slope-area measurement of peak flow; no flow for most of time.
1958-65: Maximum discharge, that of Aug. 22, 1965; no flow for most of time.
Greatest flood since about 1934 occurred Sept. 21, 1941 (discharge, 2,630 cfs, as determined by Corps of Engineers from newspaper accounts and rainfall-runoff studies). Another flood of about 1,900 cfs occurred Aug. 30, 1935.

Remarks.--Records poor. Discharge measurements or observations of no flow generally made once or twice a month.

Discharge, in cubic feet per second, water year October 1964 to September 1965

June 18 . . . . . 2
Aug. 19 . . . . . 1
21 . . . . . .2
22 . . . . . 40
23 . . . . . 10

| | Cfs-days | Maximum | Minimum | Mean | Runoff in Acre-feet |
|---|---|---|---|---|---|
| Calendar year 1964 | 13 | 13 | 0 | 0.04 | 26 |
| June | 2 | 2 | 0 | 0.07 | 4.0 |
| August | 50.2 | 40 | 0 | 1.62 | 100 |
| Water year 1964-65 | 52.2 | 40 | 0 | 0.14 | 104 |

Note.--No gage-height record June 18, Aug. 19.

8-3637. Tortugas Arroyo near Las Cruces, N. Mex.

Location.--Lat 32°17'20", long 106°43'45", in SE¼SW¼ sec.22, T.23 S., R.2 E. (projected), in Dona Ana Bend Colony Grant, 30 ft downstream from flood detention dam, 1.2 miles northeast of New Mexico State University and 3.3 miles southeast of Las Cruces Post Office, Dona Ana County.

Drainage area.--20.7 sq mi.

Records available.--October 1962 to September 1965.

Gage.--Water-stage recorder and Parshall flume at downstream end of reservoir outlet pipe. Datum of gage is 4,071.62 ft above mean sea level (SCS bench mark).

Extremes.--Maximum discharge during year, 68 cfs Aug. 22 (gage height, 2.05 ft); no flow for most of time.
1963-65: Maximum discharge, that of Aug. 22, 1965; no flow for most of time.

Remarks.--Records good. Discharge measurements or observations of no flow generally made once or twice a month. Records represent outflow from Tortugas Reservoir, completed in 1962. Records of suspended sediment loads for the water year 1965 are published in part 2 of this report.

Reservoir is designed to retard flood flows and detain silt. Dam is earth-fill, L-shaped, 3,400 ft long at crest and 44 ft high. Original capacity, 1,325 acre-ft at spillway crest. No dead storage, though deposition of silt is expected to reduce storage capacity. Outlet drop tower is 9'-2" x 4'-2" inside and 18'6" high. The tower has 9 rectangular outlet ports, each 8"x17", but 6 are presently closed. Tower is connected to downstream channel by a 30-inch diameter pipe. Records will be published in tabular form, as flow events.

Outflow during water year October 1964 to September 1965

| Flow event | Date | Outflow (hours) | Maximum (cfs) | Cfs-days | Runoff (acre-ft) |
|---|---|---|---|---|---|
| 7 | Aug. 21-26 | 118 | 68 | 125.4 | 249 |
| 8 | Sept. 7 | 12 | .8 | .1 | .2 |
| 9 | Sept. 7-8 | 25 | 26 | 8.6 | 17 |
| Totals | | 155 | - | 134.1 | 266.2 |

## 8-3779. Rio Mora near Terrero, N. Mex.

Location.--Lat 35°46'38", long 105°39'26", in E½NE¼ sec.22, T.18 N., R.12 E., on left bank 450 ft upstream from bridge on State Highway 63, 600 ft upstream from mouth, and 3.1 miles by road north of Terrero.

Drainage area.--53.2 sq mi.

Records available.--October 1963 to September 1965.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 7,890 ft (from topographic map).

Extremes.--Maximum discharge during year, 451 cfs July 29 (gage height, 3.56 ft); minimum, about 1.5 cfs Nov. 13, result of freezeup.
1963-65: Maximum discharge, that of July 29, 1965; minimum, 0.5 cfs Jan. 8, 1964.
Greatest flood since 1886 probably occurred Sept. 29, 1904 (based on statement for Pecos River near Pecos and history of that flood period).

Remarks.--Records good except those for periods of ice effect or no gage-height record and those for January, which are poor. This is a bench mark station established to define hydrologic trend of the contiguous area. About 90 percent of the drainage is in the Pecos Wilderness Area and not subject to development, watershed management, or the building of highways; there is limited cattle grazing by permit. Records of chemical analyses and water temperatures for the water year 1965 are published in part 2 of this report.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

| | | | |
|---|---|---|---|
| 0.7 | 3.2 | 1.8 | 61 |
| .8 | 4.8 | 2.1 | 97 |
| 1.0 | 9.5 | 2.4 | 142 |
| 1.2 | 18 | 2.8 | 217 |
| 1.5 | 36 | 3.2 | 321 |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7.7 | 4.5 | b 4.2 | 4.8 | 4.8 | a 5.5 | b 11 | 72 | 145 | 63 | 304 | 33 |
| 2 | 7.4 | 4.6 | b 5.0 | 4.6 | 4.6 | a 5.0 | * b 12 | 88 | 137 | 56 | 312 | 37 |
| 3 | 6.9 | 5.0 | b 4.8 | 4.5 | 4.5 | a 4.5 | b 13 | 98 | *129 | 50 | 250 | 32 |
| 4 | 6.7 | 4.5 | b 4.2 | 4.3 | 4.3 | a 4.0 | b 14 | 105 | 123 | 47 | 194 | 29 |
| 5 | 6.7 | b 4.0 | b 4.0 | 4.6 | 4.6 | a 4.5 | b 14 | 101 | 116 | 44 | 157 | 28 |
| 6 | 6.7 | * b 4.2 | b 3.8 | 4.8 | 4.8 | a 4.5 | 14 | 101 | 108 | 41 | 132 | 34 |
| 7 | 6.7 | 4.5 | b 3.6 | 5.0 | 4.8 | a 4.5 | 16 | 104 | 107 | 43 | 107 | 32 |
| 8 | 6.5 | 4.3 | b 3.8 | 4.8 | 4.6 | a 4.5 | 15 | *105 | 101 | 45 | 93 | 52 |
| 9 | 6.1 | 4.6 | b 4.0 | 4.3 | 4.0 | a 4.5 | 18 | 96 | 104 | 38 | * 85 | 49 |
| 10 | * 6.1 | 5.4 | b 4.0 | 4.8 | b3.5 | a 4.5 | 16 | 92 | 103 | 35 | 83 | 42 |
| 11 | 5.8 | 4.3 | b 4.0 | 5.0 | b3.5 | a 4.5 | 13 | 80 | 100 | 33 | 72 | 44 |
| 12 | 5.6 | b 3.0 | b 4.0 | 5.0 | b3.0 | a 4.5 | 13 | 82 | 94 | 32 | 63 | 45 |
| 13 | 5.6 | b 3.5 | b 3.6 | 5.0 | b3.0 | a 4.7 | 17 | 114 | 92 | * 37 | 61 | 39 |
| 14 | 5.6 | 5.2 | b 3.6 | 4.8 | b3.5 | a 4.7 | 19 | 112 | 88 | 42 | 61 | 37 |
| 15 | 5.6 | 5.4 | b 4.0 | 5.2 | b4.0 | a 4.8 | 18 | 105 | 98 | 41 | 59 | 35 |
| 16 | 5.4 | 5.0 | b 4.0 | 5.2 | * b4.2 | a 4.8 | 26 | 103 | 118 | 38 | 61 | *32 |
| 17 | 5.4 | b 4.8 | b 4.0 | 5.6 | b4.5 | a 4.7 | 36 | 112 | 129 | 38 | 58 | 34 |
| 18 | 5.4 | b 4.5 | b 3.6 | * 5.8 | b4.5 | a 4.6 | 44 | 136 | 119 | 36 | 58 | 37 |
| 19 | 6.3 | a 4.0 | b 3.8 | 5.8 | b4.8 | a 4.5 | * 47 | *152 | 173 | 35 | 57 | 35 |
| 20 | 5.2 | a 4.0 | b 4.0 | 5.4 | b5.4 | a 4.3 | 56 | 163 | 147 | 32 | 52 | 36 |
| 21 | 5.0 | * 4.5 | b 4.0 | 5.2 | b5.5 | a 4.4 | 66 | 175 | 128 | 30 | 49 | 33 |
| 22 | 5.0 | 4.6 | * b 4.0 | 4.6 | b6.0 | b4.5 | 84 | 194 | 100 | 28 | 65 | 30 |
| 23 | 5.0 | 5.0 | b 4.0 | 4.2 | b6.0 | b4.5 | 94 | 219 | 98 | 32 | 56 | 29 |
| 24 | 5.0 | 4.6 | b 4.5 | 4.5 | a5.0 | b4.6 | 94 | 209 | *105 | 30 | 52 | 28 |
| 25 | 4.8 | 5.4 | b 4.5 | 4.2 | a5.0 | b4.7 | 88 | 173 | 103 | 38 | 49 | 27 |
| 26 | 4.6 | 5.4 | b 5.0 | b 3.5 | a5.5 | b5.0 | 72 | 145 | 89 | *34 | 46 | 25 |
| 27 | 5.0 | 5.4 | 5.2 | b 3.5 | a6.0 | b5.8 | 58 | 128 | 80 | 43 | 43 | 24 |
| 28 | 5.0 | 4.5 | 5.2 | 4.0 | a6.0 | b7.2 | 50 | 117 | 70 | 57 | 41 | 24 |
| 29 | 5.0 | b 4.5 | 4.5 | 4.2 | - | b8.0 | 48 | 107 | 65 | 249 | 41 | 24 |
| 30 | 5.0 | * b 3.7 | 4.8 | 4.3 | ------ | b8.5 | 56 | 126 | 63 | 150 | 38 | *22 |
| 31 | 4.8 | ------ | 4.8 | 4.6 | ------ | b10 | ------ | 142 | ------ | 184 | *35 | ------ |
| Total | 177.6 | 136.9 | 130.5 | 146.1 | 129.9 | 159.3 | 1,142 | 3,856 | 3,232 | 1,701 | 2,834 | 1,008 |
| Mean | 5.73 | 4.56 | 4.21 | 4.71 | 4.64 | 5.14 | 38.1 | 124 | 108 | 54.9 | 91.4 | 33.6 |
| Ac-ft | 352 | 272 | 259 | 290 | 258 | 316 | 2,270 | 7,650 | 6,410 | 3,370 | 5,620 | 2,000 |

Calendar year 1964: Max 100 Min 0.9 Mean 13.7 Ac-ft 9,920
Water year 1964-65: Max 312 Min 3.0 Mean 40.1 Ac-ft 29,070

Peak discharge (base, 100 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 4-23 | 2300 | 2.17 | 107 | 7-29 | 0130 | 3.56 | 451 |
| 5-23 | 2300 | 2.87 | 233 | 8-1 | 2300 | 3.33 | 364 |
| 6-19 | 0300 | 2.84 | 226 | | | | |

* Discharge measurement made on this day.
a No gage-height record.
b Stage-discharge relation affected by ice.

8-3785. Pecos River near Pecos, N. Mex.

Location.--Lat 35°42'30", long 105°40'55", in NE¼NE¼ sec.17, T.17 N., R.12 E., on left bank at downstream side of bridge on private road, 600 ft upstream from Indian Creek, 2 miles downstream from Holy Ghost Creek, and 9 miles north of Pecos.

Drainage area.--189 sq mi (contributing area).

Records available.--August 1919 to September 1965. Monthly discharge only for some periods, published in WSP 1312. Published as "near Cowles" 1919-25, "at Irvins Ranch" 1926-29, and as "at Irvins Ranch, near Pecos" 1930-39.

Gage.--Water-stage recorder. Datum of gage is 7,502.94 ft above mean sea level, datum of 1929.

Average discharge.--46 years, 99.7 cfs (72,180 acre-ft per year).

Extremes.--Maximum discharge during year, 1,100 cfs June 19 (gage height, 4.27 ft); minimum daily, 14 cfs Feb. 13.
1919-65: Maximum discharge, about 4,500 cfs Sept. 21 or 22, 1929 (gage height, 6.2 ft, from floodmark), from rating curve extended above 1,600 cfs by logarithmic plotting; minimum daily, 6 cfs Dec. 22, 23, 1956, Jan. 18, 22, 30, 1957.
Flood of Sept. 29, 1904, was greatest since 1886, from information by local residents.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 75 acres (1959 determination) above station.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

| Oct. 1 to Apr. 16 | | Apr. 17 to Sept. 30 | |
|---|---|---|---|
| 1.8 | 8.0 | 2.3 | 72 |
| 1.9 | 16 | 2.6 | 138 |
| 2.2 | 54 | 3.0 | 255 |
| 2.5 | 109 | 3.5 | 480 |
| | | 4.0 | 830 |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 34 | 21 | b 25 | b 20 | 20 | b 22 | 47 | 216 | 385 | 222 | 534 | 112 |
| 2 | 32 | 22 | 22 | b 17 | b 20 | b 20 | 46 | 276 | 375 | 201 | 619 | 128 |
| 3 | 31 | 24 | b 21 | b 18 | b 20 | b 17 | 46 | 310 | *352 | 186 | 458 | 112 |
| 4 | 30 | 20 | b 20 | b 19 | b 20 | b 15 | 61 | 326 | 352 | 172 | 370 | 99 |
| 5 | 30 | 25 | b 20 | b 20 | b 20 | b 16 | 47 | 310 | 344 | 159 | 310 | 99 |
| 6 | 30 | * 22 | b 20 | b 21 | b 20 | b 16 | 44 | 302 | 314 | 148 | 266 | 112 |
| 7 | 30 | 21 | b 20 | b 24 | b 19 | b 17 | 47 | 306 | 310 | 151 | 232 | 110 |
| 8 | 28 | 24 | b 20 | b 22 | b 18 | b 17 | 44 | 306 | 310 | 164 | 207 | 195 |
| 9 | 27 | 25 | b 20 | b 18 | b 17 | b 17 | 53 | 280 | 326 | 131 | *198 | 170 |
| 10 | *27 | 26 | b 21 | b 19 | b 16 | b 18 | 50 | 266 | 314 | 126 | 201 | 143 |
| 11 | 26 | 25 | b 21 | b 20 | b 15 | 18 | 47 | * 238 | 314 | 119 | 184 | 141 |
| 12 | 26 | b 19 | b 23 | b 20 | b 15 | b 17 | 41 | 242 | 294 | 114 | 159 | 146 |
| 13 | 26 | b 22 | b 16 | b 19 | b 14 | b 17 | 50 | 339 | 290 | *126 | 164 | 131 |
| 14 | 26 | 24 | b 17 | b 19 | b 15 | b 19 | 54 | 318 | 283 | 159 | 172 | 119 |
| 15 | 26 | 24 | b 17 | b 21 | b 17 | b 20 | 56 | 314 | 322 | 154 | 164 | 110 |
| 16 | 25 | 24 | b 17 | b 20 | * b 20 | * b 20 | 74 | 272 | 395 | 141 | 167 | *105 |
| 17 | 25 | 22 | b 17 | b 20 | b 21 | b 19 | 101 | 286 | 447 | 133 | 170 | 112 |
| 18 | 25 | b 20 | b 16 | *b 20 | b 22 | b 18 | 131 | 326 | 452 | 128 | 216 | 148 |
| 19 | 26 | b 20 | b 17 | b 20 | b 23 | b 16 | *146 | *362 | 738 | 119 | 219 | 126 |
| 20 | 25 | b 20 | b 17 | b 19 | b 23 | b 17 | 178 | 400 | 586 | 112 | 192 | 138 |
| 21 | 25 | *b 20 | b 18 | b 19 | b 23 | b 19 | 213 | 447 | 474 | 107 | 172 | 121 |
| 22 | 24 | b 22 | *b 20 | b 18 | b 22 | b 19 | 272 | 492 | 410 | 99 | 224 | 114 |
| 23 | 24 | b 25 | b 20 | b 17 | b 21 | 19 | 306 | 540 | 362 | 110 | 186 | 107 |
| 24 | 22 | b 26 | b 20 | b 19 | b 18 | 18 | 310 | 516 | * 400 | 103 | 172 | 105 |
| 25 | 22 | a 28 | 21 | b 18 | b 21 | 18 | 283 | 442 | 390 | 131 | 156 | 96 |
| 26 | 21 | a 29 | b 20 | b 17 | b 22 | b 18 | 229 | 385 | 322 | *103 | 143 | 94 |
| 27 | 25 | a 31 | 20 | b 17 | b 24 | 21 | 184 | 334 | 286 | 112 | 133 | 90 |
| 28 | 24 | a 33 | 19 | b 18 | 24 | 26 | 156 | 314 | 255 | 128 | 133 | 90 |
| 29 | 24 | a 33 | b 20 | b 19 | - | 30 | 143 | 294 | 235 | 361 | 143 | 86 |
| 30 | 22 | a *33 | b 20 | 21 | ------ | 32 | 164 | 357 | 235 | 245 | 138 | * 86 |
| 31 | 22 | ------ | b 20 | 20 | ------ | 39 | ------ | 390 | ------ | 309 | *119 | ------ |
| Total | 810 | 730 | 605 | 599 | 550 | 615 | 3,613 | 10,506 | 10,872 | 4,773 | 6,921 | 3,545 |
| Mean | 26.1 | 24.3 | 19.5 | 19.3 | 19.6 | 19.8 | 120 | 339 | 362 | 154 | 223 | 118 |
| Ac-ft | 1,610 | 1,450 | 1,200 | 1,190 | 1,090 | 1,220 | 7,170 | 20,840 | 21,560 | 9,470 | 13,730 | 7,030 |

Calendar year 1964: Max 284 Min 12 Mean 50.1 Ac-ft 36,350
Water year 1964-65: Max 738 Min 14 Mean 121 Ac-ft 87,560

Peak discharge (base, 310 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 4-23 | 2300 | 3.23 | 344 | 6-19 | 0300 | 4.27 | 1,100 |
| 5-3 | 2300 | 3.27 | 362 | 7-29 | 0230 | 3.73 | 633 |
| 5-23 | 2200 | 3.67 | 586 | 8-1 | 2230 | 3.84 | 728 |
| 5-30 | 2000 | 3.47 | 464 | | | | |

* Discharge measurement made on this day.
a No gage-height record.
b Stage-discharge relation affected by ice.

8-3792. Tecolote Creek near San Pablo, N. Mex.

Location.--Lat 35°33'10", long 105°22'10", in Las Vegas Grant, on left bank half a mile downstream from San Pablo Creek and 1¾ miles northeast of San Pablo, San Miguel County.

Drainage area.--83 sq mi, approximately.

Records available.--June 1960 to September 1965 (discontinued).

Gage.--Water-stage recorder (digital). Altitude of gage is 6,674 ft, revised (from topographic map, 1961 edition).

Average discharge.--5 years, 9.48 cfs (6,860 acre-ft per year).

Extremes.--Maximum discharge during year, 5,340 cfs July 31 (gage height, 12.46 ft); no flow, Oct. 1-11.
1960-65: Maximum discharge, 10,900 cfs Aug. 17, 1961 (gage height, 15.57 ft), from rating curve extended above 320 cfs on basis of slope-area measurements at gage heights 10.50 and 15.57 ft; no flow, Sept. 2-9, 30, Oct. 1-11, 1964.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 250 acres (1960 determination) above station.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Aug. 9-18, Aug. 20 to Sept. 30)

| | | | |
|---|---|---|---|
| 0.16 | 0 | 1.0 | 22 |
| .3 | .3 | 1.3 | 40 |
| .4 | 1.1 | 1.6 | 67 |
| .5 | 2.9 | 2.0 | 117 |
| .6 | 5.3 | 2.5 | 203 |
| .8 | 12 | 3.3 | 400 |

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1964 TO SEPTEMBER 1965

| DAY | OCT. | NOV. | DEC. | JAN. | FEB. | MAR. | APR. | MAY | JUNE | JULY | AUG. | SEPT. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 0.10 | 0.60 | b1.4 | 1.1 | * 2.2 | 4.6 | 19 | 3.3 | 2.1 | 217 | 9.0 |
| 2 | 0 | * .10 | .70 | b1.4 | b 1.0 | b 1.7 | 5.1 | 20 | 3.2 | 2.0 | 156 | 10 |
| 3 | 0 | .10 | .80 | b1.4 | b 1.1 | b 1.5 | 4.9 | 19 | 2.7 | 14 | 83 | 9.5 |
| 4 | 0 | .10 | .70 | b1.7 | *b 1.1 | b 1.4 | 5.7 | 19 | 2.4 | 12 | 59 | 8.7 |
| 5 | 0 | .10 | b.50 | b2.0 | b 1.1 | b 1.5 | 6.0 | 17 | 2.7 | 3.3 | 38 | 8.6 |
| 6 | 0 | .10 | b.50 | b2.3 | 1.3 | b 1.6 | 5.4 | 16 | 2.2 | 2.0 | 28 | 11 |
| 7 | 0 | .10 | b.60 | a 2.4 | 1.2 | 1.7 | 4.9 | 14 | 1.4 | 6.5 | 22 | 9.9 |
| 8 | 0 | .10 | b.60 | a 2.0 | 1.1 | 1.7 | 4.4 | 13 | *1.4 | 6.0 | 19 | 30 |
| 9 | 0 | .10 | b.70 | a 1.5 | b 1.0 | 1.7 | 4.5 | 12 | 1.2 | * 2.3 | 16 | 9.9 |
| 10 | 0 | .20 | b.70 | a 1.0 | b .80 | 1.7 | 4.6 | 11 | 1.2 | 1.7 | 13 | 7.8 |
| 11 | 0 | .20 | b.70 | a 1.0 | b .60 | 2.1 | 4.4 | 9.9 | .90 | 1.3 | 11 | .33 |
| 12 | .10 | .30 | .70 | a 1.0 | b .50 | 2.4 | 4.0 | 18 | .70 | 1.1 | 9.0 | 11 |
| 13 | .10 | .20 | b.70 | a 1.0 | b .50 | 2.1 | 3.6 | 16 | .50 | 1.1 | 7.5 | 6.8 |
| 14 | * .10 | .20 | b.80 | a 1.0 | b .50 | 2.0 | 3.8 | 11 | .50 | 43 | 13 | 5.1 |
| 15 | .10 | .30 | b1.0 | a 1.0 | b .80 | 2.0 | 3.9 | 9.6 | 14 | 17 | 12 | 4.6 |
| 16 | .10 | .40 | 1.2 | a 1.0 | b 1.2 | 2.1 | * 4.2 | 8.6 | 5.4 | 3.8 | * 8.3 | 4.0 |
| 17 | .10 | .50 | b.70 | a 1.0 | b 1.4 | 1.8 | 4.4 | 7.3 | 7.6 | 2.7 | 6.2 | 4.0 |
| 18 | .10 | .70 | b.50 | a 1.0 | b 1.5 | b 1.3 | 5.0 | * 9.1 | 14 | 2.1 | 5.9 | 4.9 |
| 19 | .10 | .50 | 1.0 | a 1.0 | 1.6 | b 1.3 | 5.7 | 8.1 | 25 | 1.8 | 125 | 4.4 |
| 20 | .10 | .50 | .80 | a 1.0 | 1.6 | b 1.6 | 6.6 | 8.9 | 9.2 | 1.4 | 43 | 4.0 |
| 21 | .10 | .50 | .90 | a 1.0 | 1.6 | b 1.8 | 8.2 | 7.3 | 5.5 | .80 | 15 | 3.9 |
| 22 | .10 | .60 | .90 | *a 1.0 | 1.7 | * 2.0 | 9.0 | 6.7 | 4.3 | .30 | 20 | 3.8 |
| 23 | .10 | .50 | * .70 | b1.4 | b 1.5 | 2.0 | 10 | 5.5 | 3.3 | .10 | 14 | 3.7 |
| 24 | .10 | * .50 | 1.2 | 1.7 | b 1.3 | 2.2 | 9.7 | 5.4 | 3.3 | .10 | 13 | * 2.7 |
| 25 | .10 | .60 | 1.4 | 1.3 | b 1.6 | 2.5 | 9.2 | 5.1 | 5.6 | .20 | 12 | 2.0 |
| 26 | .10 | .50 | 1.4 | b1.0 | 1.9 | 2.6 | 13 | 4.8 | 4.8 | .20 | 11 | 1.9 |
| 27 | .10 | .50 | 1.6 | b1.0 | 1.9 | 2.5 | 11 | 4.6 | 3.1 | 35 | 11 | 1.8 |
| 28 | * .10 | .60 | 1.7 | b1.2 | 2.0 | 2.5 | 8.7 | 3.8 | 2.7 | 38 | 12 | 1.9 |
| 29 | .10 | .60 | 1.7 | b1.2 | ------ | 2.8 | 9.4 | 3.8 | 2.2 | 17 | 11 | 1.6 |
| 30 | .10 | .60 | b1.6 | 1.2 | ------ | 3.4 | 13 | 9.8 | 2.1 | 41 | 10 | 1.8 |
| 31 | .10 | ------ | b1.5 | 1.1 | ------ | 4.0 | ------ | 5.4 | ------ | 393 | 9.5 | ------ |
| TOTAL | 2.00 | 10.40 | 29.10 | 40.2 | 34.50 | 63.7 | 196.9 | 328.7 | 136.40 | 652.90 | 1,030.4 | 221.3 |
| MEAN | .07 | .35 | .94 | 1.30 | 1.23 | 2.06 | 6.56 | 10.6 | 4.55 | 21.1 | 33.2 | 7.38 |
| AC-FT | 4.0 | 21 | 58 | 80 | 68 | 126 | 391 | 652 | 271 | 1,300 | 2,040 | 439 |

CALENDAR YEAR 1964 MAX 37 MIN 0 MEAN 2.57 AC-FT 1,860
WATER YEAR 1964-65 MAX 393 MIN 0 MEAN 7.53 AC-FT 5,450

Peak discharge (base, 250 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 7-14 | 1230 | 3.33 | 408 | 7-31 | 1345 | 12.46 | 5,340 |
| 7-27 | 1400 | 4.25 | 675 | 8-19 | 2145 | 7.21 | 1,710 |
| 7-28 | 1800 | 3.69 | 507 | | | | |

* Discharge measurement made on this day.
a No gage-height record.
b Stage-discharge relation affected by ice.

8-3795. Pecos River near Anton Chico, N. Mex.

Location.--Lat 35°10'45", long 105°06'30", in Anton Chico Grant, on right bank 2 miles upstream from Canyon Blanco, 2½ miles southeast of Anton Chico, Guadalupe County, and 10 miles downstream from Tecolote Creek.
Drainage area.--1,050 sq mi, approximately (contributing area).
Records available.--April 1910 to May 1916, October 1916 to September 1924, August to December 1925, January 1927 to September 1965. Monthly discharge only for some periods, published in WSP 1312.
Gage.--Water-stage recorder (digital, and crest-stage indicator). Altitude of gage is 5,130 ft (from river-profile map). Prior to July 2, 1937, at five different sites from one-sixth mile to 8½ miles upstream at various datums. July 2, 1937, to June 21, 1951, at site 345 ft upstream at datum 2.42 ft higher.
Average discharge.--52 years (1910-15, 1916-24, 1926-65), 138 cfs (99,910 acre-ft per year).
Extremes.--Maximum discharge during year, 5,820 cfs July 31 (gage height, 9.28 ft); no flow at times.
1911-65: Maximum discharge, 40,300 cfs July 1, 1937 (gage height, 20.34 ft, from floodmarks, at site and datum then in use), by slope-area measurement; no flow at times.
The greatest flood since 1879 occurred Sept. 29, 1904 (discharge, about 73,000 cfs), from information by a local resident.
Remarks.--Records good except those for periods of ice effect and those below 10 cfs, which are poor. Diversions above station for irrigation of about 4,900 acres (1959 determination) above and below station. Acequia del Bodo Juan Paiz (see table below) diverts water about 8 miles above gage and bypasses this station on left bank; ditch flow not included in record. Discharge measurements made at point opposite regular gage. A portion of this flow may be returned to the river about five miles downstream.

Discharge measurements, in cubic feet per second, of Acequia del Bodo Juan Paiz, water year October 1964 to September 1965

| Date | Discharge | Date | Discharge | Date | Discharge |
|---|---|---|---|---|---|
| Oct. 6 | 4.41 | Mar. 16 | 0 | June 14 | 21.4 |
| 22 | 8.28 | Apr. 6 | 8.48 | July 24 | 35.1 |
| Nov. 18 | 10.4 | 21 | 27.0 | Aug. 17 | 4.97 |
| Dec. 14 | 1.53 | 28 | 30.5 | 30 | 14.2 |
| Jan. 5 | 7.25 | May 11 | 10.4 | Sept. 15 | 0 |
| Feb. 1 | 0 | June 1 | 37.4 | | |
| 25 | 0 | 9 | 20.4 | | |

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1964 TO SEPTEMBER 1965

| DAY | OCT. | NOV. | DEC. | JAN. | FEB. | MAR. | APR. | MAY | JUNE | JULY | AUG. | SEPT. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7.5 | 6.1 | 0.90 | 2.2 | *29 | b 20 | 21 | 139 | *364 | 167 | 1,360 | 168 |
| 2 | 9.8 | 4.4 | 1.4 | 7.6 | 24 | b 15 | 32 | 160 | 339 | 178 | 1,090 | 74 |
| 3 | 10 | 6.3 | 2.3 | 14 | 23 | b 17 | 51 | 234 | 318 | 848 | 950 | 82 |
| 4 | 9.2 | 9.2 | 4.1 | 11 | 23 | b 18 | 53 | 278 | 293 | 368 | 698 | 76 |
| 5 | 9.6 | 11 | 5.2 | * 7.6 | 23 | 20 | 56 | 299 | 271 | 192 | 568 | 49 |
| 6 | * 4.1 | 11 | 3.8 | 2.5 | 21 | 23 | * 59 | 277 | 262 | 159 | 455 | 41 |
| 7 | 5.2 | 7.1 | 2.7 | 15 | 20 | 31 | 61 | 263 | 238 | 154 | 385 | 255 |
| 8 | 5.5 | 2.5 | .30 | 19 | b18 | 28 | 56 | 262 | 226 | 191 | 327 | 368 |
| 9 | 2.3 | 15 | 1.0 | 16 | b20 | 28 | 61 | 268 | * 215 | 166 | 311 | 315 |
| 10 | 2.4 | 8.9 | 2.8 | 11 | b19 | 26 | 59 | 243 | 243 | 123 | 243 | 202 |
| 11 | 2.5 | 9.6 | 4.3 | 7.6 | b17 | 27 | 59 | *230 | 265 | 99 | 250 | 325 |
| 12 | 2.1 | 7.5 | 7.6 | 6.9 | b13 | 35 | 57 | 413 | 265 | 92 | 212 | 374 |
| 13 | 2.1 | 14 | b7.0 | 9.5 | b11 | 37 | 47 | 1,050 | 252 | 81 | 206 | 224 |
| 14 | 3.5 | 3.7 | *b8.0 | 15 | b13 | 31 | 44 | 402 | * 233 | 400 | 252 | 170 |
| 15 | 1.8 | 3.8 | 2.5 | 9.5 | b15 | 28 | 51 | 379 | 226 | 530 | 272 | * 151 |
| 16 | 1.7 | 8.9 | 6.2 | 6.9 | b20 | * 26 | 31 | 354 | 256 | 222 | 219 | 128 |
| 17 | 1.9 | 11 | b 4.0 | 14 | 27 | 25 | 33 | 311 | 330 | 201 | * 213 | 74 |
| 18 | 1.9 | *14 | b 6.0 | 14 | 29 | b 17 | 52 | 297 | 378 | 180 | 402 | 73 |
| 19 | 2.0 | 13 | b 10 | 14 | 28 | b 16 | 75 | 379 | 579 | 170 | 445 | 92 |
| 20 | 7.5 | 11 | b 13 | 20 | 30 | b 20 | 99 | 374 | 637 | 100 | 602 | 95 |
| 21 | 5.9 | 3.6 | 16 | 34 | 26 | 25 | * 132 | 403 | 526 | 60 | 251 | 83 |
| 22 | * 6.9 | 2.1 | 20 | 32 | 23 | 23 | 168 | 441 | 472 | 47 | 242 | 89 |
| 23 | 8.7 | 1.0 | 19 | 22 | 22 | 21 | 229 | 497 | 412 | 40 | 241 | 75 |
| 24 | 8.4 | 6.9 | 20 | 19 | b 20 | 23 | 272 | 519 | 374 | *32 | 189 | 67 |
| 25 | 7.5 | 3.4 | 19 | 22 | * 27 | 24 | 288 | 476 | 558 | 23 | 169 | 58 |
| 26 | 5.3 | 1.0 | 18 | 20 | 24 | 22 | 298 | 413 | 452 | 18 | 149 | 104 |
| 27 | 7.9 | 3.9 | 15 | 19 | 27 | 15 | 249 | 364 | 344 | 115 | 128 | 127 |
| 28 | 8.0 | 2.4 | 4.6 | 16 | 27 | 18 | * 201 | 318 | 296 | 262 | 121 | 83 |
| 29 | 8.8 | 2.7 | 6.3 | 25 | ------ | 16 | 163 | 296 | 245 | 310 | 134 | 67 |
| 30 | 9.1 | 2.5 | 6.9 | 29 | ------ | 17 | 139 | 346 | *187 | 332 | * 84 | 49 |
| 31 | 8.3 | ------ | 8.9 | 37 | ------ | 19 | ------ | 354 | ------ | 1,620 | 76 | ------ |
| TOTAL | 177.4 | 207.5 | 246.80 | 498.3 | 619 | 711 | 3,196 | 11,039 | 10,056 | 7,480 | 11,244 | 4,138 |
| MEAN | 5.72 | 6.92 | 7.96 | 16.1 | 22.1 | 22.9 | 107 | 356 | 335 | 241 | 363 | 138 |
| AC-FT | 352 | 412 | 490 | 988 | 1,230 | 1,410 | 6,340 | 21,900 | 19,950 | 14,840 | 22,300 | 8,210 |

CALENDAR YEAR 1964 MAX 241 MIN 0 MEAN 26.8 AC-FT 19,460
WATER YEAR 1964-65 MAX 1,620 MIN .30 MEAN 136 AC-FT 98,420

Peak discharge (base, 3,000 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 5-13 | 0530 | 7.74 | 3,090 | 7-31 | 2000 | 9.28 | 5,820 |
| 7-3 | 2100 | 8.84 | 5,030 | | | | |

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

## 8-3805. Gallinas Creek near Montezuma, N. Mex.

Location.--Lat 35°39'00", long 105°19'10", in Las Vegas Grant, on left bank 2 miles west of Montezuma, San Miguel County, and 6 miles northwest of Las Vegas.

Drainage area.--84 sq mi, approximately.

Records available.--March to September 1915, June 1916 to September 1965. Monthly discharge only for some periods, published in WSP 1312. Prior to October 1964 published as Gallinas River near Montezuma.

Gage.--Water-stage recorder. Altitude of gage is 6,950 ft (from topographic map).

Average discharge.--49 years (1916-65), 20.0 cfs (14,480 acre-ft per year).

Extremes.--Maximum discharge during year, 512 cfs July 31 (gage height, 3.45 ft); minimum, 0.2 cfs Dec. 13, result of freezeup. 1915-65: Maximum discharge, 5,400 cfs Aug. 4, 1957 (gage height, 8.25 ft), from rating curve extended above 530 cfs on basis of computation of peak flow over dam; minimum daily determined, 0.2 cfs Oct. 6-9, 1922, Sept. 21, Oct. 9-14, 1956, Dec. 13, 1965. The greatest flood since about 1900 occurred the night of Sept. 29, 1904 (discharge not determined), from information by local residents and G. B. Monk's report on floods.

Remarks.--Records good except those for periods of ice effect, which are poor. Diversions for irrigation of about 80 acres (1959 determination) above station.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

| | | | |
|---|---|---|---|
| 0.3 | 1.1 | 1.3 | 38 |
| .4 | 2.4 | 1.6 | 64 |
| .6 | 6.2 | 2.0 | 108 |
| .8 | 12 | 2.5 | 190 |
| 1.0 | 21 | 3.0 | 316 |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.6 | 2.2 | b2.0 | 2.2 | 2.8 | b 3.5 | 7.1 | 40 | 21 | 13 | 304 | 8.7 |
| 2 | 2.5 | 2.0 | 2.2 | b2.0 | b2.8 | b 3.0 | 7.1 | 43 | 21 | 12 | 286 | 11 |
| 3 | 2.6 | 2.0 | 2.4 | b2.3 | b2.8 | b 2.7 | 8.2 | 43 | 19 | 15 | 167 | 9.0 |
| 4 | 2.6 | 2.2 | b2.0 | b2.8 | b2.8 | b 2.7 | 8.4 | 42 | 18 | 15 | 114 | 7.6 |
| 5 | 2.6 | 2.5 | b1.5 | 3.3 | 2.8 | b 3.0 | 8.4 | 38 | 17 | 13 | 83 | 7.6 |
| 6 | 2.6 | 2.5 | b2.0 | 2.6 | 2.8 | b 3.3 | 7.4 | 33 | 15 | 13 | 64 | 9.7 |
| 7 | 2.6 | 2.4 | b2.2 | 2.8 | 3.0 | b 3.7 | 6.2 | 29 | 14 | 13 | 49 | 11 |
| 8 | 2.5 | 2.2 | b2.3 | b2.5 | 3.0 | 3.9 | 6.5 | 28 | *14 | 18 | 40 | 16 |
| 9 | 2.4 | 2.2 | *b2.5 | b2.3 | b2.7 | 3.9 | 7.1 | 26 | 12 | 15 | 33 | 16 |
| 10 | 2.5 | 2.4 | b2.8 | b2.5 | b2.5 | 3.9 | 7.6 | 26 | *14 | 12 | 29 | *14 |
| 11 | 2.5 | 2.4 | b3.0 | *b2.8 | b2.5 | 4.0 | 7.1 | 23 | 14 | 11 | 26 | 18 |
| 12 | 2.5 | * 2.4 | b3.2 | b2.5 | *b2.5 | 4.2 | 6.8 | 29 | 13 | 10 | 22 | 17 |
| 13 | 2.5 | 2.0 | b3.0 | b2.5 | b2.5 | 4.0 | * 6.5 | 37 | 11 | 9.3 | 19 | 14 |
| 14 | 2.4 | 2.2 | b3.5 | b2.7 | b2.5 | 4.0 | 7.4 | * 35 | 10 | 32 | 20 | 12 |
| 15 | * 2.2 | 2.2 | b3.7 | b2.8 | b2.5 | * 3.9 | 7.4 | 33 | 15 | 17 | 18 | 10 |
| 16 | 2.0 | 2.4 | b4.0 | b2.8 | b2.7 | 4.2 | 8.4 | 30 | 16 | 15 | 23 | 9.0 |
| 17 | 1.9 | 2.5 | b3.5 | b2.8 | b3.0 | 3.9 | 10 | 28 | 22 | *15 | * 23 | 9.7 |
| 18 | 2.0 | 3.0 | b3.0 | b2.8 | b3.0 | b 3.3 | 13 | 30 | 24 | 13 | 21 | 10 |
| 19 | 2.4 | b 2.8 | b3.5 | b2.8 | b3.1 | b 3.0 | 16 | 31 | 64 | 12 | 23 | 9.0 |
| 20 | 2.4 | 3.0 | b5.0 | b2.6 | b3.1 | b 3.5 | 18 | 33 | 40 | 11 | 22 | 7.9 |
| 21 | 2.2 | 2.6 | b6.0 | b2.8 | 3.3 | 3.9 | 20 | 33 | 30 | 10 | 22 | 8.7 |
| 22 | 2.2 | b 2.4 | 7.4 | b2.5 | 3.3 | 4.0 | 24 | 34 | 24 | 9.0 | 26 | 8.2 |
| 23 | 2.2 | b 2.4 | 6.2 | b2.8 | b3.0 | 4.2 | 28 | 37 | 20 | 7.9 | 22 | 7.6 |
| 24 | 2.0 | 2.6 | 4.4 | b3.0 | b2.8 | 4.4 | 30 | 37 | 21 | 7.9 | 19 | 7.1 |
| 25 | 2.4 | 2.4 | 2.6 | *3.3 | b3.3 | 4.6 | 28 | 32 | 30 | 11 | 16 | 6.5 |
| 26 | 2.4 | 2.4 | b2.2 | b3.0 | b3.7 | 4.2 | 29 | 28 | 23 | 21 | 14 | 6.2 |
| 27 | 2.2 | 2.5 | 3.0 | b3.0 | 3.5 | 4.6 | 25 | 25 | 18 | 21 | 12 | 6.5 |
| 28 | 2.2 | 2.5 | 1.9 | b3.5 | 3.9 | 4.9 | 24 | 21 | 16 | 34 | 11 | 6.2 |
| 29 | 2.2 | 2.4 | b2.0 | b4.0 | — | * 5.3 | 25 | 19 | 14 | 98 | 10 | 6.0 |
| 30 | 2.2 | 2.4 | b2.0 | 3.7 | ------ | 5.5 | 31 | 26 | 12 | 57 | 10 | 5.8 |
| 31 | 2.2 | ------ | b2.0 | 3.0 | ------ | 6.0 | ------ | 26 | ------ | 122 | 9.7 | ------ |
| Total | 72.7 | 72.1 | 97.0 | 87.0 | 82.2 | 123.2 | 438.6 | 975 | 602 | 683.1 | 1557.7 | 296.0 |
| Mean | 2.35 | 2.40 | 3.13 | 2.81 | 2.94 | 3.97 | 14.6 | 31.5 | 20.1 | 22.0 | 50.2 | 9.87 |
| Ac-ft | 144 | 143 | 192 | 173 | 163 | 244 | 870 | 1,930 | 1,190 | 1,350 | 3,090 | 587 |

Calendar year 1964: Max 110 Min 1.5 Mean 6.38 Ac-ft 4,630
Water year 1964-65: Max 304 Min 1.5 Mean 13.9 Ac-ft 10,080

Peak discharge (base, 250 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 7-14 | 1330 | 3.01 | 319 | 7-31 | 1400 | 3.45 | 512 |

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

## 8-3810. Gallinas Creek at Montezuma, N. Mex.

Location.--Lat 35°39'15", long 105°16'30", in Las Vegas Grant, at downstream end of middle pier of highway bridge, half a mile downstream from Montezuma, San Miguel County, and 5 miles northwest of Las Vegas.

Drainage area.--87 sq mi, approximately.

Records available.--August 1903 to September 1904 (gage heights only), October 1904 to May 1912, October 1912 to September 1965. Yearly estimate for water year 1912 (incomplete) and monthly discharge only for some periods, published in WSP 1312. Figures of daily discharge for the periods Oct. 8-22, 1904, and Jan. 1 to Feb. 20, 1906, published in WSP 177 and 213, respectively, have been found to be unreliable and should not be used. Prior to October 1964 published as Gallinas River at Montezuma.

Gage.--Water-stage recorder. Altitude of gage is 6,675 ft (from topographic map). Prior to Mar. 24, 1926, staff gage at site a quarter of a mile upstream. Gages at various datums prior to Sept. 3, 1942.

Average discharge.--61 years (1904-65), 19.3 cfs (13,970 acre-ft per year), includes revisions.

Extremes.--Maximum discharge during year, 438 cfs July 31 (gage height, 5.87 ft); minimum, 0.7 cfs Dec. 14.

1904-65: Maximum discharge, 9,140 cfs Aug. 4, 1957 (gage height, 11.8 ft, from floodmark), from rating curve extended above 450 cfs on basis of slope-area measurement of peak flow; no flow Oct. 4-7, 1934, July 27, 28, 29, 1956, several days in 1957, Aug. 4-8, 1963.

Flood of Sept. 30, 1904, is the highest since about 1900 (discharge, 11,600 cfs by slope-area method), from G. B. Monk's report on floods and WSP 147.

Revisions.--Figure of maximum discharge for the water year 1963 has been revised to 234 cfs June 1, 1963 (gage height, 5.35 ft) and gage height for the peak of July 18, 1964 has been revised to 7.75 ft, superseding figures published in Surface Water Records of New Mexico for 1963 and 1964 respectively.

Remarks.--Records fair. Flow partly regulated at low flows by reservoirs owned by Public Service Co. of New Mexico. Diversions above station for irrigation of about 180 acres (1959 determination) and for Las Vegas city water supply.

Revisions.--Revised figures of discharge, in cubic feet per second, for highwater periods in the water years 1963 and 1964, superseding previously published figures, are given herewith:

| | | | |
|---|---|---|---|
| June 1, 1963 | 18 | Sept. 21 | 46 |
| Aug. 25 | 65 | 22 | 96 |
| 26 | 87 | 23 | 56 |
| 30 | 59 | July 18, 1964 | 91 |

| Month | Cfs-days | Maximum | Minimum | Mean | Runoff in acre-feet |
|---|---|---|---|---|---|
| June 1963 | 100.5 | 18 | 1.3 | 3.35 | 199 |
| August | 484.6 | 87 | 0 | 15.6 | 961 |
| September | 514.9 | 96 | 3.5 | 17.2 | 1,020 |
| Water year 1962-63 | 2,302.5 | 96 | 0 | 6.31 | 4,560 |
| Calendar year 1963 | 2,276.1 | 96 | 0 | 6.24 | 4,510 |
| July 1964 | 165.5 | 91 | 1.0 | 5.34 | 328 |
| Water year 1963-64 | 1,719.7 | 91 | .9 | 4.70 | 3,410 |

Revised peak discharge.--1963: June 1 (2120) 234 cfs (5.35 ft).

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.5 | 1.0 | 0.9 | 1.0 | 1.1 | 2.2 | 4.2 | 39 | 20 | 9.2 | 337 | 9.2 |
| 2 | 1.5 | 1.0 | .9 | .9 | 1.1 | 1.6 | 4.0 | 51 | 19 | 8.6 | 325 | 8.6 |
| 3 | 1.4 | 1.0 | .9 | .9 | 1.2 | 1.5 | 5.2 | 51 | 18 | 11 | 211 | 5.2 |
| 4 | 1.5 | 1.0 | .9 | .9 | 1.4 | 1.4 | 5.6 | 47 | 15 | 12 | 144 | 4.9 |
| 5 | 1.6 | 1.0 | .9 | .9 | 1.4 | 1.8 | 6.0 | 41 | 15 | 9.8 | 104 | 5.2 |
| 6 | 1.8 | 1.0 | .9 | 1.0 | 1.5 | 2.0 | 13 | 35 | 14 | 11 | 75 | 7.6 |
| 7 | 1.6 | 1.0 | .9 | 1.0 | 1.5 | 2.0 | 2.2 | 27 | 12 | 12 | 55 | 10 |
| 8 | 1.6 | 1.0 | .9 | 1.0 | 1.5 | 2.0 | 1.8 | 24 | *9.8 | 16 | 47 | 14 |
| 9 | 1.6 | 1.0 | *.9 | 1.0 | 1.5 | 2.0 | 1.0 | 23 | 22 | 13 | 43 | 17 |
| 10 | 1.6 | 1.0 | .8 | 1.0 | 1.5 | 1.8 | 1.0 | 23 | *12 | 11 | 32 | *9.8 |
| 11 | 1.5 | 1.0 | .8 | *1.1 | 1.4 | 2.0 | 1.0 | 19 | 14 | 9.2 | 29 | 25 |
| 12 | 1.6 | *1.0 | .9 | 1.0 | *1.2 | 2.6 | 5.9 | 25 | 14 | 8.6 | 23 | 21 |
| 13 | 1.6 | 1.0 | .8 | 1.4 | 1.1 | 2.2 | *2.4 | 43 | 10 | 7.6 | 20 | 15 |
| 14 | 1.6 | .9 | .7 | 1.8 | 1.2 | 2.2 | 2.4 | *35 | 9.8 | 30 | 24 | 9.8 |
| 15 | *1.5 | .8 | .8 | 2.0 | 1.4 | *2.2 | 1.6 | 30 | 19 | 21 | 22 | 7.6 |
| 16 | 1.4 | .8 | .8 | 2.0 | 1.4 | 2.2 | 3.4 | 26 | 21 | 13 | 23 | 6.0 |
| 17 | 1.4 | .8 | .8 | 1.8 | 1.5 | 2.0 | 4.0 | 24 | 23 | *12 | *27 | 6.8 |
| 18 | 1.4 | 1.0 | .9 | 1.8 | 1.5 | 2.0 | 6.0 | 26 | 26 | 9.8 | 23 | 9.2 |
| 19 | 1.4 | .9 | .9 | 2.0 | 1.6 | 2.0 | 11 | 32 | 32 | 12 | 24 | 7.6 |
| 20 | 1.4 | .8 | .9 | 2.0 | 1.5 | 2.0 | 13 | 33 | 53 | 10 | 26 | 5.2 |
| 21 | 1.4 | .8 | .9 | 1.8 | 1.5 | 2.0 | 11 | 33 | 29 | 8.2 | 18 | 5.2 |
| 22 | 1.5 | .8 | .9 | 1.5 | 1.4 | 2.2 | 16 | 35 | 18 | 6.8 | 27 | 5.6 |
| 23 | 1.4 | .8 | .9 | 1.4 | 1.5 | 2.2 | 33 | 41 | 18 | 6.0 | 27 | 5.2 |
| 24 | 1.2 | .8 | .9 | 1.2 | 1.2 | 2.2 | 29 | 43 | 12 | 5.6 | 19 | 4.5 |
| 25 | 1.2 | .8 | .9 | *1.2 | 1.4 | 2.6 | 33 | 37 | 27 | 7.6 | 15 | 4.5 |
| 26 | 1.1 | .9 | .9 | 1.2 | 1.6 | 2.6 | 35 | 27 | 28 | 26 | 13 | 3.4 |
| 27 | 1.1 | .8 | 1.0 | 1.1 | 1.8 | 2.4 | 22 | 21 | 19 | 22 | 9.8 | 4.0 |
| 28 | 1.1 | .8 | 1.0 | 1.5 | 1.8 | 2.6 | 21 | 18 | 12 | 22 | 7.2 | 3.7 |
| 29 | 1.1 | .9 | .9 | 1.4 | - | *2.8 | 24 | 18 | 10 | 143 | 6.8 | 2.8 |
| 30 | 1.0 | .9 | 1.0 | 1.2 | ---------- | 3.4 | 19 | 29 | 8.2 | 82 | 5.6 | 2.4 |
| 31 | 1.0 | ---------- | 1.0 | 1.2 | ---------- | 3.7 | ---------- | 30 | ---------- | 162 | 6.8 | ---------- |
| Total | 43.6 | 27.3 | 27.5 | 41.2 | 39.7 | 68.4 | 337.7 | 986 | 559.8 | 738.0 | 1,769.2 | 246.0 |
| Mean | 1.41 | .91 | .89 | 1.33 | 1.42 | 2.21 | 11.3 | 31.8 | 18.7 | 23.8 | 57.1 | 8.20 |
| Ac-ft | 86 | 54 | 55 | 82 | 79 | 136 | 670 | 1,960 | 1,110 | 1,460 | 3,510 | 488 |

Calendar year 1964: Max 91 Min 0.7 Mean 4.24 Ac-ft 3,080
Water year 1964-65: Max 337 Min 0.7 Mean 13.4 Ac-ft 9,690

Peak discharge (base, 200 cfs).--July 31 (1500) 438 cfs (5.87 ft).

* Discharge measurement made on this day.

## 8-3825. Gallinas River near Colonias, N. Mex.

Location.--Lat 35°11'10", long 104°54'40", in Anton Chico Grant, on right bank 1½ miles upstream from mouth, 2 miles south of San Miguel - Guadalupe County line, and 6½ miles northwest of Colonias, Guadalupe County.

Drainage area.--610 sq mi, approximately.

Records available.--January 1951 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 4,940 ft (from river-profile map).

Average discharge.--14 years, 16.8 cfs (12,160 acre-ft per year).

Extremes.--Maximum discharge during year, 2,540 cfs June 16 (gage height, 9.00 ft); no flow for many days.
1951-65: Maximum discharge, 9,360 cfs June 16, 1963 (gage height, 16.65 ft), from rating curve extended above 1,900 cfs on basis of slope-area measurements at gage heights 8.64, 12.74, 16.65, and 27.2 ft; no flow for many days.
Maximum flood known occurred about June 1, 1937, when a stage of about 27.2 ft was reached; discharge determined as 26,700 cfs by slope-area measurement made in 1951. A flood of about the same magnitude occurred Sept. 29-30, 1904.

Remarks.--Records poor. Diversion for irrigation of about 7,000 acres (1959 determination) above station.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Aug. 22 to Sept. 8, Sept. 28-30)

| | | | |
|---|---|---|---|
| 1.4 | 0 | 2.5 | 49 |
| 1.5 | 1 | 3.0 | 98 |
| 1.7 | 3 | 3.5 | 160 |
| 1.9 | 9 | 4.0 | 233 |
| 2.1 | 19 | 5.1 | 485 |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | (*) | | | 0 | 3 | a 0 | 34 | 2 |
| 2 | | | | | | | | 0 | 2 | a 0 | 70 | 4 |
| 3 | | | | | | | | 0 | 1 | a 0 | 131 | 1 |
| 4 | | | | | | | | 0 | a 1 | a 0 | 66 | 0 |
| 5 | | | | (*) | | | | * 0 | a 0 | a 0 | 195 | 0 |
| 6 | (*) | | | | | | | 0 | a 0 | a 0 | 54 | 0 |
| 7 | | | | | | | | 0 | a 0 | a 0 | 15 | 0 |
| 8 | | | | | | | | 0 | 0 | 21 | 8 | 102 |
| 9 | | | | | | | | 0 | 0 | 32 | 4 | 19 |
| 10 | | | | | | | | 0 | 0 | 5 | 16 | 6 |
| 11 | | | | | | | | 0 | 0 | a 1 | 51 | 133 |
| 12 | | | | | | | | 0 | 0 | a 0 | 27 | 228 |
| 13 | | | | | | | | 396 | 0 | a 0 | 11 | 65 |
| 14 | | | (*) | | | | (*) | 88 | * 0 | 17 | 6 | 25 |
| 15 | | | | | | | | 26 | 0 | 106 | 65 | * 11 |
| 16 | | | | | | (*) | | 10 | 482 | 45 | 63 | 6 |
| 17 | | | | | | | | 4 | 80 | 9 | * 25 | 4 |
| 18 | | (*) | | | | | | 2 | 6 | a 2 | 9 | 4 |
| 19 | | | | | | | | * 1 | 189 | a 1 | 118 | 4 |
| 20 | | | | | | | | 25 | 11 | a 0 | 196 | 4 |
| 21 | | | | | | | | 3 | 18 | a 0 | 94 | 4 |
| 22 | (*) | | | | | | | 1 | 7 | a 0 | 237 | 3 |
| 23 | | | | | | | | 18 | 4 | a 0 | 53 | 3 |
| 24 | | | | | | | | 89 | 2 | * 0 | 36 | 2 |
| 25 | | | | | (*) | | | 37 | 159 | 0 | 12 | 2 |
| 26 | | | | | | | | 8 | 70 | 0 | 6 | 4 |
| 27 | | | | | | | | 3 | 16 | 0 | a 3 | 115 |
| 28 | | | | | | | | 1 | 6 | 66 | a 2 | 6 |
| 29 | | | | | - | | | 1 | 6 | 19 | a 1 | 2 |
| 30 | | | | | ---------- | | | 20 | a 1 | 12 | * 1 | 1 |
| 31 | | ---------- | | | ---------- | | ---------- | 28 | ---------- | 2 | 0 | ---------- |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 761 | 1,064 | 338 | 1,609 | 760 |
| Mean | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 24.5 | 35.5 | 10.9 | 51.9 | 25.3 |
| Ac-ft | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,510 | 2,110 | 670 | 3,190 | 1,510 |

Calendar year 1964: Max 261 Min 0 Mean 2.61 Ac-ft 1,890
Water year 1964-65: Max 482 Min 0 Mean 12.4 Ac-ft 8,990

Peak discharge (base, 1,700 cfs).--June 16 (2115) 2,540 cfs (9.00 ft).

* Discharge measurement or observation of no flow made on this day.
a No gage-height record.

8-3830. Pecos River at Santa Rosa, N. Mex.

Location.--Lat 34°56'35", long 104°41'55", in NW¼SE¼ sec.3, T.8N., R.21 E., on left bank 0.6 mile upstream from bridge on U. S. Highway 66 in Santa Rosa and 1.9 miles upstream from Rio Agua Negra Chiquita.

Drainage area.--2,650 sq mi, approximately (contributing area).

Records available.--May 1903 to December 1905 (gage heights only), January to December 1906, February 1910 to July 1911, September 1912 to December 1925, March to May 1927, July 1927, January 1928 to September 1965. Monthly discharge only for some periods, published in WSP 1312. Figures of daily discharge for Apr. 5-20, May 4-7, 11, Aug. 13, 16-18, 24, Sept. 7-9, 11, 13, 19, 21, 23, 25, 27, Oct. 1-31, Nov. 3, 4, 9, 11, 20, 22, 1910, and Feb. 1 to Mar. 31, June 1 to July 31, 1911, published in WSP 358 have been found to be unreliable and should not be used.

Gage.--Water-stage recorder. Datum of gage is 4,537.56 ft above mean sea level, datum of 1929. May 5, 1903, to Dec. 31, 1906, staff gage at site 0.5 mile downstream at datum 6.68 ft lower. Feb. 2, 1910, to May 4, 1922, chain gage at site 0.6 mile downstream at different datum. May 5, 1922, to Sept. 30, 1936, water-stage recorder at site 800 ft downstream at datum 3.56 ft lower. Oct. 1, 1936, to June 1, 1937, water-stage recorder at site 800 ft downstream at datum 4.62 ft lower. June 2, 1937 to June 30, 1958, water-stage recorder at site 0.6 mile downstream at datum 7.79 ft lower. July 1, 1958, to Sept. 30, 1963, water-stage recorder at site 800 ft downstream at datum 4.16 ft lower. Supplemental water-stage recorder at site 800 ft downstream 1964-65, datum 4.16 ft lower than primary gage.

Average discharge.--49 years (1912-24, 1928-65), 146 cfs (105,700 acre-ft per year).

Extremes.--Maximum discharge during year, 5,370 cfs Sept. 11 (gage height, 5.50 ft); minimum, 7.0 cfs Apr. 11, 12.
1930-65: Maximum discharge, 55,200 cfs June 2, 1937 (gage height, 25.7 ft, site and datum then in use), from rating curve extended above 32,000 cfs by logarithmic plotting; minimum, 3.0 cfs July 7, 1957.
The flood of June 2, 1937, is the greatest since about 1886. Flood of Sept. 30, 1904, reached a stage of 24.7 ft (site and datum then in use), discharge, 45,500 cfs, by Kutter's formula. Flood of June 9, 1903, reached a stage of 21.1 ft (same site and datum as in 1904), discharge, 34,000 cfs, by comparison with 1904 flood.

Remarks.--Records fair. Discharge measurements generally made two or more times a month. Diversions for irrigation of about 12,000 acres (1959 determination) above station. Records of water temperatures and suspended sediment loads for the water year 1965 are published in Part 2 of this report.

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 13 | 12 | 13 | 13 | 11 | 15 | 12 | 68 | 270 | 37 | 2,000 | 25 |
| 2 | 12 | 12 | 13 | 13 | 11 | 13 | 12 | 34 | 228 | 23 | 943 | 39 |
| 3 | 13 | 12 | 14 | 13 | 12 | 11 | 10 | 25 | 211 | 46 | 1,120 | 48 |
| 4 | 13 | 12 | 14 | 14 | 12 | 11 | 10 | 63 | 200 | 1,050 | 1,390 | 28 |
| 5 | 13 | 13 | 14 | 13 | 12 | 12 | 9.7 | 137 | 174 | 240 | 970 | 26 |
| 6 | 14 | 12 | 14 | 13 | 12 | 12 | 9.7 | 170 | 155 | 120 | 762 | 26 |
| 7 | 13 | 12 | 13 | 13 | 12 | 12 | 8.9 | 160 | 145 | 66 | 364 | 94 |
| 8 | 13 | 12 | 14 | 13 | 12 | 12 | 8.9 | 141 | 116 | 38 | 251 | 275 |
| 9 | 14 | 12 | 16 | 12 | 12 | 12 | 8.2 | 129 | 84 | 36 | 174 | 457 |
| 10 | 14 | 12 | 16 | 13 | 12 | 12 | 8.2 | 150 | 84 | 58 | 179 | 234 |
| 11 | 14 | 12 | 16 | 12 | 11 | 15 | 8.2 | 133 | 101 | 41 | 124 | 563 |
| 12 | 14 | 12 | 16 | 13 | 10 | 15 | 8.9 | 108 | 145 | 26 | 184 | 1,110 |
| 13 | 14 | 12 | 13 | 12 | 11 | 12 | 8.9 | 1,010 | 133 | 25 | 81 | 315 |
| 14 | 14 | 12 | 11 | 12 | 11 | 11 | 8.9 | 605 | 104 | 66 | 58 | 133 |
| 15 | 14 | 12 | 13 | 12 | 12 | 12 | 8.9 | 329 | 81 | 242 | 327 | 68 |
| 16 | 14 | 11 | 14 | 13 | 9.6 | 12 | 8.9 | 289 | 55 | 320 | 194 | 43 |
| 17 | 13 | 12 | 12 | 12 | 11 | 11 | 8.9 | 289 | 1,390 | 162 | 116 | 30 |
| 18 | 14 | 14 | 9.6 | 11 | 12 | 11 | 8.9 | 184 | 234 | 67 | 133 | 22 |
| 19 | 14 | 16 | 11 | 11 | 12 | 10 | 8.2 | 190 | 724 | 37 | 270 | 131 |
| 20 | 12 | 16 | 18 | 11 | 11 | 13 | 8.2 | 532 | 620 | 22 | 652 | 30 |
| 21 | 12 | 14 | 20 | 11 | 11 | 13 | 8.2 | 222 | 476 | 16 | 500 | 20 |
| 22 | 12 | 14 | 16 | 11 | 11 | 11 | 8.9 | 251 | 364 | 15 | 511 | 18 |
| 23 | 13 | 14 | 13 | 11 | 12 | 10 | 48 | 289 | 296 | 14 | 601 | 17 |
| 24 | 13 | 13 | 13 | 12 | 9.6 | 9.4 | 108 | 508 | 245 | 14 | 283 | 18 |
| 25 | 13 | 13 | 13 | 10 | 13 | 10 | 160 | 460 | 240 | 14 | 141 | 17 |
| 26 | 12 | 12 | 13 | 9.6 | 14 | 11 | 234 | 343 | 724 | 17 | 88 | 17 |
| 27 | 12 | 12 | 13 | 9.6 | 12 | 11 | 217 | 270 | 323 | 14 | 63 | 99 |
| 28 | 13 | 13 | 14 | 12 | 12 | 10 | 174 | 189 | 184 | 142 | 43 | 384 |
| 29 | 13 | 13 | 14 | 11 | - | 10 | 133 | 155 | 145 | 170 | 28 | 78 |
| 30 | 13 | 13 | 13 | 11 | ------- | 11 | 101 | 145 | 106 | 174 | 26 | 45 |
| 31 | 13 | ------ | 13 | 11 | ------- | 11 | ------ | 635 | ------ | 228 | 26 | ------ |
| Total | 408 | 381 | 429.6 | 368.2 | 323.2 | 361.4 | 1,376.6 | 8,213 | 8,357 | 3,540 | 12,602 | 4,410 |
| Mean | 13.2 | 12.7 | 13.9 | 11.9 | 11.5 | 11.7 | 45.9 | 265 | 279 | 114 | 407 | 147 |
| Ac-ft | 809 | 756 | 852 | 730 | 641 | 717 | 2,730 | 16,290 | 16,580 | 7,020 | 25,000 | 8,750 |

Calendar year 1964: Max 806 Min 8.2 Mean 22.6 Ac-ft 16,400
Water year 1964-65: Max 2,000 Min 8.2 Mean 112 Ac-ft 80,880

Peak discharge (base, 4,000 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 6-17 | 0150 | 4.96 | 4,400 | 8-1 | 0600 | 4.85 | 4,220 |
| 7- 4 | 0720 | 6.70 | 4,270(auxiliary | | gage at | datum 4.16 ft lower) | |

## 8-3835. Pecos River near Puerto de Luna, N. Mex.

Location.--Lat 34°44'00", long 104°31'30", in SE¼NW¼ sec.20, T.6N., R.23 E., on left bank 9 miles southeast of Puerto de Luna and 17½ miles upstream from Alamogordo Dam.

Drainage area.--3,970 sq mi, approximately (contributing area).

Records available.--April 1938 to September 1965.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 4,315 ft (from river-profile map). Prior to Apr. 15, 1954, at datum 1 ft higher.

Average discharge.--27 years, 224 cfs (162,200 acre-ft per year).

Extremes.--Maximum discharge during year, 5,870 cfs Aug. 5 (gage height, 5.54 ft); minimum, 64 cfs Apr. 21, 22.
1938-65: Maximum discharge, 48,600 cfs Sept. 1, 1942 (gage height, 17.00 ft), from rating curve extended above 7,400 cfs on basis of flow at Santa Rosa; minimum, 11 cfs Jan. 31, 1951.
Maximum flood known since at least 1886 occurred June 2, 1937, when peak at Santa Rosa was 55,200 cfs. Flood of July 24, 1895, was reported as "highest in 10 years." Other major floods occurred on June 9, 1903, Sept. 30, 1904, and May 1, 1914.

Remarks.--Records good except those for periods of no gage-height record and discharges above 1,000 cfs, which are fair. Diversions for irrigation of about 12,500 acres (1959 determination) above station. Discharge represents inflow to Alamogordo Reservoir (capacity, 122,100 acre-ft).

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

| | | | |
|---|---|---|---|
| 1.1 | 57 | 2.5 | 709 |
| 1.4 | 118 | 3.0 | 1,240 |
| 1.7 | 215 | 3.5 | 1,980 |
| 2.0 | 356 | | |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 78 | 86 | *88 | 94 | 90 | 99 | 90 | 168 | 325 | 168 | 1,910 | 92 |
| 2 | 76 | 86 | 88 | 94 | *88 | 96 | 92 | 140 | *285 | 140 | 955 | 90 |
| 3 | 78 | 86 | 88 | 94 | 88 | b 94 | * 90 | 108 | 280 | 126 | 1,060 | 108 |
| 4 | 76 | * 88 | 86 | *94 | 88 | b 92 | 90 | 108 | 257 | 1,130 | 1,280 | 111 |
| 5 | 76 | 94 | 88 | 96 | 88 | 92 | 84 | 162 | 223 | 434 | 1,890 | 101 |
| 6 | 74 | 88 | 88 | 94 | 90 | 94 | 84 | 223 | 200 | 302 | 797 | 160 |
| 7 | *76 | 86 | 88 | 92 | 92 | 94 | 80 | 228 | 185 | a150 | 427 | 163 |
| 8 | 76 | 88 | b 90 | 94 | 94 | 94 | 80 | 211 | 172 | a120 | 356 | 234 |
| 9 | 80 | 90 | b 88 | 94 | *94 | 92 | 80 | 196 | * 149 | *101 | 299 | 511 |
| 10 | 78 | 88 | 92 | 92 | 92 | 92 | 80 | 208 | 241 | 94 | 266 | 356 |
| 11 | 74 | 86 | 92 | 92 | b 92 | 92 | 80 | 211 | 418 | 121 | 257 | 431 |
| 12 | 78 | 86 | 90 | 90 | b 92 | 106 | 78 | 248 | 208 | 94 | a 230 | 1,570 |
| 13 | 80 | 86 | b 90 | 90 | b 90 | 99 | 78 | 742 | 215 | 94 | a 200 | 513 |
| 14 | 78 | 88 | b 88 | 94 | b 92 | 94 | 76 | 854 | 189 | 304 | a 180 | *314 |
| 15 | 80 | 90 | * b 88 | 94 | 90 | 92 | * 72 | 379 | *172 | 160 | 271 | 232 |
| 16 | 76 | 90 | 90 | 94 | b 96 | 92 | 72 | 299 | 159 | 449 | 327 | 162 |
| 17 | 78 | 92 | b 88 | 92 | 94 | 90 | 71 | 285 | 1,400 | 319 | 306 | 146 |
| 18 | 80 | 92 | a 90 | *90 | 94 | 86 | 69 | 232 | 402 | 215 | *219 | 146 |
| 19 | 82 | 92 | 96 | 92 | 94 | 86 | 72 | *236 | 633 | a150 | 288 | 228 |
| 20 | 82 | 90 | 94 | 92 | 94 | 90 | 71 | 524 | 625 | a120 | 467 | 152 |
| 21 | 84 | 86 | 96 | 90 | 94 | 88 | 67 | 295 | 571 | a100 | 633 | 106 |
| 22 | * 84 | 86 | 96 | 90 | 92 | 86 | 64 | 271 | 485 | a95 | 556 | 99 |
| 23 | 82 | 86 | 94 | b 88 | 92 | 84 | 66 | 386 | 408 | *86 | 1,050 | 101 |
| 24 | 82 | 86 | 92 | 88 | 104 | 82 | 108 | 492 | 373 | 76 | 368 | 104 |
| 25 | 82 | 86 | 92 | 90 | 92 | 84 | 196 | 465 | *314 | 106 | 276 | 101 |
| 26 | 84 | 86 | 92 | b 80 | *96 | 88 | 314 | 414 | 651 | 110 | 185 | 99 |
| 27 | 84 | 86 | 94 | b 82 | 94 | 86 | 299 | 325 | 414 | 90 | 143 | 96 |
| 28 | 84 | 84 | 96 | b 82 | 92 | 86 | 257 | 285 | 304 | 104 | 118 | 383 |
| 29 | 88 | 86 | 94 | 88 | -- | 88 | *236 | 257 | *253 | *223 | 106 | 204 |
| 30 | 84 | 86 | 94 | 92 | ---------- | * 90 | 196 | 219 | 200 | 196 | 104 | *124 |
| 31 | 84 | ---------- | 94 | 90 | ---------- | 90 | ---------- | 512 | ---------- | 352 | * 99 | ---------- |
| Total | 2,478 | 2,630 | 2,824 | 2,818 | 2,588 | 2,818 | 3,392 | 9,683 | 10,711 | 6,329 | 15,623 | 7,237 |
| Mean | 79.9 | 87.7 | 91.1 | 90.9 | 92.4 | 90.9 | 113 | 312 | 357 | 204 | 504 | 241 |
| Ac-ft | 4,920 | 5,220 | 5,600 | 5,590 | 5,130 | 5,590 | 6,730 | 19,210 | 21,240 | 12,550 | 30,990 | 14,350 |

Calendar year 1964: Max 1,660 Min 64 Mean 97.8 Ac-ft 71,020
Water year 1964-65: Max 1,910 Min 64 Mean 189 Ac-ft 137,100

Peak discharge (base 5,500 cfs).--Aug. 5 (0030) 5,870 cfs (5.54 ft).

* Discharge measurement made on this day.
a No gage-height record.
b Stage-discharge relation affected by ice.

8-3840. Alamogordo Reservoir near Fort Sumner, N. Mex.

Location.--Lat 34°36'30", long 104°23'10", in SW¼ sec.34, T.5 N., R.24 E., at dam on Pecos River, 5 miles northeast of Guadalupe and 12 miles northwest of Fort Sumner.

Drainage area.--4,390 sq mi (contributing area).

Records available.--January 1939 to September 1965.

Gage.--Staff gage. Datum of gage is at mean sea level, Bureau of Reclamation datum.

Extremes.--Maximum contents at 0800 during year, 43,200 acre-ft Sept. 20-24 (elevation, 4,251.50 ft); minimum, 3,250 acre-ft Apr. 23 (elevation, 4,218.10 ft).
1939-65: Maximum contents, 138,300 acre-ft May 23-30, June 1-10, July 21, Sept. 22, 23, 30, Oct. 12, Nov. 4, 5, 30, 1941 (elevation, 4,275.00 ft); maximum elevation, 4,276.10 ft June 3, Sept. 8, 1958; no storage July 28 to Aug. 2, 1951 (elevation, 4,200.70 ft).

Remarks.--Reservoir is formed by Alamogordo Dam, completed and storage began in August 1937. Capacity, 122,100 acre-ft at elevation 4,275.0 ft (top of spillway gates). No dead storage. No storage allocated for flood control. Figures given herein represent total contents and are computed from elevations at 0800.

Cooperation.--Elevation record furnished by Bureau of Reclamation and Carlsbad Irrigation District. Capacity table based on data furnished by Bureau of Reclamation, Corps of Engineers, and Carlsbad Irrigation District.

Month-end elevation and contents, water year October 1964 to September 1965

| Date | Elevation (feet) | Contents (acre-feet) | Change in contents (acre-feet) |
|---|---|---|---|
| Sept. 30 | 4,229.80 | 11,100 | - |
| Oct. 31 | 4,229.05 | 10,480 | - 620 |
| Nov. 30 | 4,235.25 | 16,220 | + 5,740 |
| Dec. 31 | 4,240.00 | 22,170 | + 5,950 |
| Calendar year 1964 | - | - | - 24,110 |
| Jan. 31 | 4,243.50 | 27,590 | + 5,420 |
| Feb. 28 | 4,246.30 | 32,500 | + 4,910 |
| Mar. 31 | 4,219.75 | 4,110 | - 28,390 |
| Apr. 30 | 4,224.50 | 7,000 | + 2,890 |
| May 31 | 4,242.40 | 25,800 | + 18,800 |
| June 30 | 4,239.50 | 21,470 | - 4,330 |
| July 31 | 4,225.60 | 7,790 | - 13,680 |
| Aug. 31 | 4,248.10 | 35,950 | + 28,160 |
| Sept. 30 | 4,251.40 | 42,970 | + 7,020 |
| Water year 1964-65 | - | - | + 31,870 |

8-3845. Pecos River below Alamogordo Dam, N. Mex.

Location.--Lat 34°36'20", long 104°23'10", in lot 1, sec.2, T.4 N., R.24 E., on left bank 1,200 ft downstream from Alamogordo Dam, 1½ miles downstream from Alamogordo Creek, and 4½ miles northeast of Guadalupe.

Drainage area.--4,390 sq mi, approximately (contributing area).

Records available.--October 1912 to April 1926, August 1926 to September 1965. Monthly discharge only for some periods, published in WSP 1312. Prior to October 1944, published as "near Guadalupe."

Gage.--Water-stage recorder (digital) and Parshall flume, with concrete control above top of flume. Datum of gage is 4,142.67 ft above mean sea level (Bureau of Reclamation datum). Prior to Sept. 10, 1936, at site 1½ miles upstream at different datum. Sept. 14, 1936, to Mar. 8, 1941, and June 11 to Sept. 21, 1941, at site a quarter of a mile downstream at different datums.

Average discharge.--23 years (1912-25, 1926-36), 236 cfs (170,900 acre-ft per year), prior to completion of Alamogordo Dam; 29 years (1936-65), 220 cfs (159,300 acre-ft per year).

Extremes.--Maximum daily discharge during year, 1,190 cfs June 28 (gage height, 3.31 ft); no flow for part of Jan. 25.
1912-65: Maximum discharge, 42,800 cfs Sept. 1, 1942, by computation of flow over spillway and through outlet gates of Alamogordo Dam by Bureau of Reclamation; maximum gage height, 15.5 ft May 1, 1914, site and datum then in use; no flow at times.

Remarks.--Records good. Diversion for irrigation of about 12,500 acres (1959 determination) above station. Flow regulated by Alamogordo Reservoir (see 8-3840 ). Records of chemical analyses and water temperatures for the water year 1965 are published in Part 2 of this report.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used May 12-16)

| | | | | | |
|---|---|---|---|---|---|
| 0.07 | 0.1 | 0.7 | 24 | 2.4 | 215 |
| .1 | .6 | 1.0 | 44 | 2.6 | 330 |
| .2 | 3.0 | 1.5 | 86 | 3.0 | 725 |
| .3 | 5.8 | 2.0 | 142 | 3.3 | 1,160 |
| .4 | 9.3 | | | | |

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1964 TO SEPTEMBER 1965

| DAY | OCT. | NOV. | DEC. | JAN. | FEB. | MAR. | APR. | MAY | JUNE | JULY | AUG. | SEPT. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 67 | 0.4 | 0.4 | 0.3 | 0.3 | 0.5 | 94 | 80 | 70 | 1,150 | 92 | 99 |
| 2 | 67 | .3 | .5 | .3 | .3 | .4 | 95 | 82 | *84 | 1,140 | 81 | 99 |
| 3 | 67 | 13 | .5 | .3 | .3 | .4 | 96 | 83 | 98 | 1,140 | 76 | 99 |
| 4 | 67 | .4 | .5 | .3 | .3 | *.3 | 96 | 83 | 100 | 1,140 | .9 | 98 |
| 5 | 68 | *.3 | .5 | .3 | .3 | .3 | 89 | 80 | 101 | 1,150 | .6 | 98 |
| 6 | 76 | .3 | .5 | *.3 | .3 | .3 | 83 | 81 | 103 | 1,140 | .5 | 98 |
| 7 | *87 | .3 | .5 | .4 | .4 | .4 | *83 | 82 | 104 | 1,140 | .5 | 98 |
| 8 | 87 | .3 | .3 | .4 | .4 | .3 | 85 | 82 | 101 | 1,130 | 20 | 97 |
| 9 | 80 | .3 | .3 | .4 | *.3 | .3 | 86 | 83 | 100 | 173 | 97 | 96 |
| 10 | 77 | .3 | .3 | .5 | .3 | .5 | 86 | 79 | 101 | 99 | 98 | 89 |
| 11 | 78 | .3 | .3 | .5 | .3 | .7 | 86 | 78 | 101 | 92 | 98 | 75 |
| 12 | 78 | .3 | .3 | .5 | .3 | .6 | 86 | *77 | 102 | 98 | 98 | 76 |
| 13 | 78 | .4 | .3 | .5 | .4 | .6 | 87 | 28 | 102 | 98 | 99 | *77 |
| 14 | 78 | .5 | .3 | .5 | .4 | .6 | 87 | 1.7 | 102 | 98 | 100 | 78 |
| 15 | 78 | .5 | *.3 | .5 | .4 | *649 | 87 | 1.7 | 99 | 98 | 100 | 78 |
| 16 | *78 | .5 | .3 | .5 | .3 | 1,010 | 88 | 1.7 | 97 | 100 | 100 | 78 |
| 17 | 78 | .5 | .3 | .5 | .3 | 1,000 | 88 | 27 | 98 | 101 | 100 | 46 |
| 18 | 78 | .5 | .2 | *.5 | .3 | 998 | 83 | 101 | 102 | 101 | *100 | 29 |
| 19 | 78 | .4 | .2 | .3 | .3 | 994 | 81 | 100 | 101 | 102 | 101 | 83 |
| 20 | 78 | .4 | .3 | .3 | .3 | 990 | 82 | 101 | 101 | 102 | 101 | 71 |
| 21 | 78 | .5 | .3 | .3 | .3 | 971 | 80 | 101 | 768 | 102 | 102 | 71 |
| 22 | 78 | .4 | .3 | .3 | .4 | 982 | *80 | 102 | 1,150 | 102 | 102 | 71 |
| 23 | 73 | .4 | .3 | .3 | .5 | 1,000 | 23 | 93 | 1,160 | 102 | 99 | 72 |
| 24 | 71 | .5 | .3 | .3 | .5 | 1,000 | 2.0 | 27 | *1,160 | 97 | 99 | 72 |
| 25 | 71 | .6 | .4 | .3 | .3 | 983 | 2.6 | .8 | 1,130 | 97 | 99 | 71 |
| 26 | 71 | .5 | .3 | .3 | .4 | 997 | 2.7 | .8 | 1,140 | 98 | 100 | 71 |
| 27 | 71 | .5 | .3 | .3 | .4 | 982 | 44 | 43 | 1,020 | 97 | 100 | 71 |
| 28 | 71 | .5 | .3 | .3 | .4 | 1,000 | 82 | 67 | 1,190 | 98 | 101 | 71 |
| 29 | 71 | .5 | .3 | .3 | ------ | *1,050 | 77 | 68 | *1,180 | *97 | 100 | *71 |
| 30 | 72 | *.5 | .3 | .3 | ------ | 905 | 78 | 69 | 1,160 | 98 | 100 | 71 |
| 31 | 40 | ------ | .3 | .3 | ------ | 93 | ------ | 70 | ------ | 98 | 98 | ------ |
| TOTAL | 2,290 | 25.1 | 10.5 | 11.4 | 9.7 | 15,610.2 | 2,219.3 | 1,973.7 | 13,025 | 11,478 | 2,563.5 | 2,374 |
| MEAN | 73.9 | .84 | .34 | .37 | .35 | 504 | 74.0 | 63.7 | 434 | 370 | 82.7 | 79.1 |
| AC-FT | 4,540 | 50 | 21 | 23 | 19 | 30,960 | 4,400 | 3,910 | 25,830 | 22,770 | 5,080 | 4,710 |

CALENDAR YEAR 1964 MAX 1,110 MIN .20 MEAN 117 AC-FT 84,875
WATER YEAR 1964-65 MAX 1,190 MIN .20 MEAN 141 AC-FT 102,312

* Discharge measurement made on this day.

8-3850. Fort Sumner main canal near Fort Sumner, N. Mex.

Location.--Lat 34°30'30", long 104°16'45", in SW¼SW¼ sec.1, T.3N., R.25 E., on right bank 200 ft downstream from diversion dam on Pecos River, and 3¾ miles northwest of Fort Sumner.

Records available.--March 1939 to November 1943 (gage heights only March to November 1943), April 1954 to September 1965. Monthly discharge only for some periods, published in WSP 1732. Published as "Fort Sumner Irrigation District canal" 1939-40.

Gage.--Water-stage recorder. Datum of gage is 4,034.7 ft (from Bureau of Reclamation Bench Mark). April 1954 to March 1965 at site 0.45 mile downstream at datum 1.7 ft lower.

Extremes.--1939-43, 1954-65: Maximum daily discharge, 174 cfs July 22, 1941; no flow at times.

Remarks.--Records fair Oct. 1 to Nov. 16, good thereafter. Discharge measurements generally made one or more times a month during periods of flow. Canal diverts water from Pecos River for irrigation of about 6,600 acres (1961 determination) by the Fort Sumner Irrigation District.

Monthly discharge, in cubic feet per second, water year October 1964 to September 1965

| Month | Maximum | Minimum | Mean | Runoff in acre-feet |
|---|---|---|---|---|
| October | 87 | 60 | 77.1 | 4,740 |
| November | 10 | 0 | .4 | 26 |
| December | 0 | 0 | 0 | 0 |
| Calendar year 1964 | 103 | 0 | 52.7 | 38,250 |
| January | 0 | 0 | 0 | 0 |
| February | 0 | 0 | 0 | 0 |
| March | 88 | 0 | 9.48 | 583 |
| April | 90 | 0 | 71.9 | 4,280 |
| May | 95 | 0 | 54.6 | 3,360 |
| June | 96 | 68 | 88.6 | 5,270 |
| July | 96 | 61 | 91.5 | 5,620 |
| August | 96 | 0 | 75.6 | 4,650 |
| September | 93 | 22 | 74.9 | 4,460 |
| Water year 1964-65 | 96 | 0 | 45.6 | 32,990 |

## 8-3860. Pecos River near Acme, N. Mex.

Location.--Lat 33°32'10", long 104°22'40", in NW¼ sec.14, T.9 S., R.25 E., on right bank 1 mile southeast of Melena railroad station, 3 miles (corrected) south of U. S. Highway 70, 3½ miles downstream from Salt Creek, 5 miles southwest of Acme, and 13 miles northeast of Roswell.

Drainage area.--11,380 sq mi, approximately (contributing area).

Records available.--September 1921 to June 1923, July 1937 to September 1965. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Altitude of gage is 3,500 ft (from river-profile map). Prior to Nov. 1, 1938, at site on highway bridge 3 miles (corrected) upstream at various datums. Auxiliary water-stage recorder since Oct. 25, 1963, at site opposite base gage at same datum.

Average discharge.--28 years (1937-65), 208 cfs (150,600 acre-ft per year).

Extremes.--Maximum discharge during year, 5,340 cfs July 30 (gage height, 8.22 ft); no flow for many days.
1937-65: Maximum discharge, 45,000 cfs Sept. 23, 1941 (gage height, 13.71 ft), from rating curve extended above 26,000 cfs by logarithmic plotting; no flow at times.
The flood of May 28, 1937, reached a discharge of 53,000 cfs (gage height, 14.82 ft, from floodmarks, site and datum then in use), by slope-area method, but may have been exceeded by the flood of Oct. 1, 1904. For other peaks prior to 1937, see Pecos River below Alamogordo Dam.

Remarks.--Records fair except those subsequent to Aug. 3 and those for periods of ice effect or no gage-height record, which are poor. Discharge measurements or observations of no flow generally made two or more times a month. Flow regulated by Alamogordo Reservoir (see 8-3840). Diversions for irrigation of about 20,000 acres (1959 determination) above station. Records of chemical analyses and water temperatures for the water year 1965 are published in Part 2 of this report.

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 0 | 6 | 3 | 0 | 3 | 502 | 20 | 47 | 830 | 353 | 0 |
| 2 | | 0 | 6 | 3 | 0 | 3 | 207 | 12 | 38 | 830 | 178 | 0 |
| 3 | | 0 | 7 | 3 | 0 | 3 | 118 | 7 | 28 | 890 | 75 | 35 |
| 4 | | 0 | 8 | 3 | 0 | 1 | 84 | 4 | 19 | 1,220 | 28 | 156 |
| 5 | | 0 | 9 | 4 | 0 | 1 | 66 | 3 | 14 | 890 | 20 | 60 |
| 6 | | 0 | 9 | 4 | 0 | 0 | 51 | 1 | 9 | 960 | 12 | 24 |
| 7 | | 2 | 9 | 4 | 0 | 0 | 45 | 1 | 2 | 1,010 | 14 | 99 |
| 8 | | 3 | 7 | 4 | 1 | 1 | 37 | 0 | 0 | 960 | 22 | 30 |
| 9 | | 5 | 8 | 4 | 6 | 1 | 32 | 0 | 0 | 900 | 17 | 9 |
| 10 | | 5 | 8 | 3 | 11 | 0 | 26 | 0 | 73 | 772 | 15 | 3 |
| 11 | | 3 | 6 | 2 | 11 | 1 | 21 | 0 | 84 | 280 | 8 | 1 |
| 12 | | 2 | 6 | 3 | 9 | 1 | 20 | 0 | 77 | 128 | 3 | 2 |
| 13 | | 1 | 4 | 3 | 7 | 1 | 16 | 106 | 45 | 82 | 1 | 1 |
| 14 | | 0 | 3 | 3 | 6 | 1 | 14 | 548 | 28 | 50 | 0 | 5 |
| 15 | | 0 | b 1 | 3 | 5 | 1 | 13 | 203 | 16 | 36 | 0 | 2 |
| 16 | | 56 | b 1 | 4 | 4 | 1 | 13 | 118 | 5 | 27 | 0 | 0 |
| 17 | | 459 | b 1 | 4 | 4 | 147 | 12 | 75 | 0 | 27 | 0 | 8 |
| 18 | | 130 | 2 | 4 | 4 | 697 | 16 | 45 | 0 | 30 | 0 | 428 |
| 19 | | 70 | 2 | 4 | 3 | 762 | 16 | 30 | 0 | 13 | 0 | 216 |
| 20 | | 41 | 2 | 3 | 3 | 820 | 13 | 22 | 0 | 6 | 49 | 73 |
| 21 | | 32 | 5 | 3 | 2 | 810 | 12 | 16 | 0 | 1 | 120 | 39 |
| 22 | | 24 | 11 | 3 | 2 | 800 | 10 | 10 | 0 | 0 | 51 | 24 |
| 23 | | 20 | 13 | 1 | 2 | 800 | 8 | 10 | 2 | 0 | 40 | 18 |
| 24 | | 17 | 13 | 1 | 5 | 810 | 7 | 82 | 760 | 0 | 18 | 17 |
| 25 | | 15 | 8 | 1 | 2 | 772 | 6 | 629 | 782 | 0 | 24 | 14 |
| 26 | | 13 | 4 | 0 | 1 | 762 | 11 | 223 | 850 | 0 | 8 | 15 |
| 27 | | 11 | 3 | 0 | 1 | 744 | 19 | 122 | 820 | 0 | 8 | 14 |
| 28 | | 9 | 3 | 0 | 0 | 753 | 24 | 86 | 772 | 16 | 3 | 14 |
| 29 | | 7 | 2 | 0 | — | 753 | 20 | 66 | 625 | 25 | 0 | 9 |
| 30 | | 6 | 2 | 0 | ------- | 762 | 26 | 50 | 850 | 3,090 | 0 | 5 |
| 31 | | ------ | 3 | 0 | ------ | 830 | ------ | 45 | ------ | 1,140 | 0 | ------ |
| Total | 0 | 931 | 172 | 77 | 89 | 11,041 | 1,465 | 2,534 | 5,946 | 14,213 | 1,067 | 1,321 |
| Mean | 0 | 31.0 | 5.5 | 2.5 | 3.2 | 356 | 48.8 | 81.7 | 198 | 458 | 34.4 | 44.0 |
| Ac-ft | 0 | 1,850 | 341 | 153 | 177 | 21,900 | 2,910 | 5,030 | 11,790 | 28,190 | 2,120 | 2,620 |

Calendar year 1964: Max 860 Min 0 Mean 56.5 Ac-ft 40,990
Water year 1964-65: Max 3,090 Min 0 Mean 106 Ac-ft 77,080

Peak discharge (base, 2,500 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 7-4 | 1330 | 6.96 | 2,730 | 7-30 | 1030 | 8.22 | 5,340 |

Note.-No gage height record Nov. 7-11, Feb. 24 to Mar. 10.
b Stage-discharge relation affected by ice.

8-3870. Rio Ruidoso at Hollywood, N. Mex.

Location.--Lat 33°19'50", long 105°36'25", in NE¼ sec.30, T.11 S., R.14 E., on right upstream end of bridge on road leading to Ruidoso Downs, 0.9 mile east of Hollywood, 2⅜ miles downstream from Carrizo Creek, and 2½ miles east of Ruidoso.

Drainage area.--120 sq mi, approximately.

Records available.--March 1953 to September 1965.

Gage.--Water-stage recorder (digital). Datum of gage is 6,365.42 ft above mean sea level, datum of 1929. Prior to October 14, 1961, at datum 0.30 ft higher. Oct. 14, 1961, to Mar. 8, 1962, at datum 0.60 ft higher. Mar. 9, 1962, to June 18, 1965, at datum 1.0 ft higher.

Average discharge.--12 years, 10.3 cfs (7,460 acre-ft per year).

Extremes.--Maximum discharge during year, 1,340 cfs June 17 (gage height, 9.05 ft), from rating curve extended above 110 cfs on basis of slope-area measurement of peak flow; minimum, 1.9 cfs Dec. 28.
1953-65: Maximum discharge, that of June 17, 1965; minimum, 0.3 cfs Jan. 1, 1962, May 8-9, 1964.
The flood of Sept. 29, 1941, is probably the highest since at least 1904 (discharge not determined).

Remarks.--Records good except those for periods of ice effect, which are poor. Figures of discharge do not include F. Herrera ditch-S., which diverts from right bank 1½ miles upstream and bypasses station for irrigation of 75 acres (1959 determination) below. See monthly table below for record of ditch. Village of Ruidoso diverts from right bank 7 miles upstream for municipal use and returns a portion of this to river as effluent from sewage disposal plant 1½ miles upstream from station. Records of chemical analyses and water temperatures for the water year 1965 are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1964 TO SEPTEMBER 1965

| DAY | OCT. | NOV. | DEC. | JAN. | FEB. | MAR. | APR. | MAY | JUNE | JULY | AUG. | SEPT. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3.9 | 2.2 | 2.7 | 2.9 | 3.9 | 7.9 | 18 | 19 | 9.3 | 6.0 | *24 | 24 |
| 2 | 3.6 | 2.2 | * 2.7 | 2.9 | 3.9 | 6.6 | 20 | 23 | 8.7 | 6.0 | 20 | 23 |
| 3 | 3.4 | 2.4 | 3.4 | b 2.7 | 3.6 | b 6.0 | 20 | 28 | 8.3 | 7.0 | *19 | 44 |
| 4 | 3.4 | 2.7 | 3.4 | 2.7 | 3.6 | b 4.5 | 21 | 29 | 7.1 | 6.8 | 35 | 35 |
| 5 | 3.4 | 2.7 | b 2.9 | 2.9 | 3.9 | b 5.0 | 21 | 28 | 6.6 | 6.5 | 36 | 34 |
| 6 | 3.1 | 2.7 | 3.4 | 2.9 | 4.2 | b 6.0 | 19 | 26 | 6.8 | 5.8 | 31 | 39 |
| 7 | 2.9 | 2.4 | 3.4 | 7.8 | 5.4 | 6.7 | 17 | 24 | 6.5 | 6.3 | 28 | 95 |
| 8 | 2.7 | 2.2 | b 3.1 | 12 | 4.8 | 6.5 | * 17 | 22 | *6.2 | 6.3 | 26 | 150 |
| 9 | 2.4 | 2.2 | 2.9 | 7.4 | 4.5 | * 6.5 | 18 | 20 | 6.2 | 5.5 | 23 | 127 |
| 10 | 2.2 | 2.2 | 2.9 | 6.0 | *4.8 | 7.5 | 17 | 19 | 8.0 | 5.9 | 19 | * 101 |
| 11 | 2.2 | 2.4 | 2.7 | 5.4 | b4.0 | 12 | 16 | 17 | 6.9 | 5.2 | 17 | 81 |
| 12 | 2.4 | * 2.4 | 3.1 | 5.1 | b3.0 | 9.7 | 15 | 17 | 6.4 | 5.0 | 15 | 66 |
| 13 | 2.4 | 2.7 | b 2.4 | *4.8 | b3.5 | 8.4 | 15 | 19 | 6.0 | 4.9 | 15 | 55 |
| 14 | 2.4 | 2.7 | b 2.2 | 5.1 | b4.0 | 8.0 | 16 | 17 | 5.8 | 4.9 | 19 | 48 |
| 15 | 2.4 | 2.9 | b 2.2 | 5.1 | b4.5 | 7.9 | 16 | 17 | 5.7 | 4.9 | 20 | * 52 |
| 16 | 2.2 | 2.7 | 2.7 | 5.1 | b5.0 | 8.5 | 18 | 16 | 5.5 | 5.6 | 16 | 37 |
| 17 | 2.7 | 2.7 | * 2.4 | 4.8 | b5.0 | 8.1 | 19 | * 15 | *161 | 5.2 | *16 | 41 |
| 18 | 2.7 | 2.7 | b 2.2 | 4.5 | 5.2 | 8.3 | 20 | 15 | *13 | 4.6 | 19 | 34 |
| 19 | * 2.7 | 2.7 | 2.7 | 5.1 | 4.7 | 8.1 | 22 | 15 | 13 | 4.0 | 30 | 31 |
| 20 | 2.7 | 2.4 | 2.4 | 5.1 | 5.0 | 7.9 | 23 | 17 | 8.7 | 3.8 | 21 | 28 |
| 21 | 2.7 | 2.7 | 2.2 | 5.1 | 5.1 | 8.2 | * 25 | 15 | 6.9 | 3.7 | 41 | 26 |
| 22 | 2.7 | 2.7 | 2.2 | 4.8 | 5.6 | 8.0 | 27 | 15 | *7.1 | *4.2 | 45 | 24 |
| 23 | 2.4 | 2.7 | 2.2 | b 4.2 | 5.8 | 8.0 | 30 | 15 | 7.5 | 4.1 | 72 | 22 |
| 24 | 2.4 | 2.4 | 2.4 | 4.5 | b5.0 | 8.6 | 29 | 13 | 7.6 | 3.9 | 95 | 20 |
| 25 | 2.7 | 2.4 | 2.4 | 4.2 | b6.0 | 9.2 | 26 | 11 | 7.2 | 3.7 | 81 | 19 |
| 26 | 2.4 | 2.7 | 2.7 | b 3.9 | 6.6 | 9.1 | 25 | 11 | 6.7 | 6.2 | 65 | 17 |
| 27 | 2.4 | 2.7 | 2.7 | b 3.9 | 6.8 | 9.3 | 23 | 8.9 | 6.5 | 1.8 | 50 | * 16 |
| 28 | 2.2 | 2.9 | 2.2 | b 4.2 | 7.5 | 9.9 | * 22 | 6.7 | 6.3 | 3.5 | 41 | 15 |
| 29 | 2.2 | 2.7 | 2.7 | 4.2 | ------- | 11 | 18 | 7.2 | 6.4 | 11 | 37 | 15 |
| 30 | 2.2 | 2.4 | 2.7 | 4.2 | ------- | 13 | 18 | 15 | 6.3 | 6.5 | 32 | 14 |
| 31 | 2.2 | ------- | 2.7 | 3.9 | ------- | 14 | ------- | 11 | ------- | 35 | *27 | ------- |
| TOTAL | 82.3 | 76.5 | 82.9 | 147.4 | 134.9 | 258.4 | 611 | 531.8 | 374.2 | 193.8 | 1,035 | 1,333 |
| MEAN | 2.66 | 2.55 | 2.67 | 4.76 | 4.82 | 8.34 | 20.4 | 17.2 | 12.5 | 6.25 | 33.4 | 44.4 |
| AC-FT | 163 | 152 | 164 | 292 | 268 | 513 | 1,210 | 1,050 | 742 | 384 | 2,050 | 2,640 |
| (†) | 107 | 51 | 27 | 24 | 24 | 54 | 90 | 156 | 61 | 2.2 | 1.2 | 1.4 |

Calendar year 1964 Max 23 Min 0.4 Mean 3.57 Ac-ft 2,590
WATER YEAR 1964-65 MAX 161 MIN 1.8 MEAN 13.3 AC-FT 9,630

Peak discharge (base, 100 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 6-17 | 1540 | 9.05 | 1,340 | 8-21 | 1530 | 2.78 | 179 |
| 7-31 | 1715 | 6.96 | 999 | 9-7 | 2000 | 3.16 | 234 |
| 8-4 | 1930 | 3.20 | 240 | | | | |

* Discharge measurement made on this day.
† Diversion, in acre-feet, by F. Herrera ditch-S.
b Stage-discharge relation affected by ice.

8-3905. Rio Hondo at Diamond A Ranch, near Roswell, N. Mex.

Location.--Lat 33°20'55", long 104°51'05", in NE¼NE¼ sec.20, T.11 S., R.21 E., on left bank on downstream side of road bridge at Diamond A Ranch, 21 miles (corrected) upstream from mouth of Rocky Arroyo and 18 miles west of Roswell.

Drainage area.--947 sq mi (contributing area).

Records available.--May 1939 to September 1965.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 4,185 ft (from topographic map).

Average discharge.--26 years, 25.9 cfs (18,750 acre-ft per year).

Extremes.--Maximum discharge during year, 54,800 cfs June 18 (gage height, 26.40 ft), from rating curve extended above 3,000 cfs on basis of slope-area measurement of peak flow; no flow for most of year.
1939-65: Maximum discharge, that of June 18, 1965; maximum gage height, 28.78 ft, Sept. 22, 1941; no flow at times in each year. A flood on June 1, 1937, reached a discharge of 24,900 cfs at Riverside about 13 miles upstream. Other major floods occurred Oct. 31, 1901, Sept. 29, 30, 1904, and July 25, 1905.

Remarks.--Records poor. Diversions and ground-water withdrawals above station for irrigation of about 6,500 acres (1959 determination) above and below station.

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 59 | 0 | *0 | | | | | 0 | 0 | 22 | *558 | *157 |
| 2 | 1 | 0 | 0 | | | | | 0 | 0 | 16 | 162 | *26 |
| 3 | 0 | 0 | 0 | | | | | 0 | 0 | 11 | *129 | 22 |
| 4 | 0 | 0 | 0 | | | | | 0 | 0 | 38 | 79 | 79 |
| 5 | 0 | 0 | 0 | | | | | 0 | 0 | 30 | 76 | 52 |
| 6 | 0 | 0 | 0 | (*) | | | | 0 | 0 | 26 | 91 | 103 |
| 7 | 0 | 0 | 0 | | | | | 0 | 0 | 22 | 38 | *385 |
| 8 | 0 | 0 | 0 | | | | | 0 | 0 | 22 | 38 | 323 |
| 9 | 0 | 0 | 0 | | | | | 0 | *0 | 22 | 38 | *471 |
| 10 | 0 | 0 | 0 | | (*) | (*) | | 0 | 0 | 22 | 34 | *204 |
| 11 | 0 | 0 | 0 | | | | | 0 | 0 | 20 | 26 | 169 |
| 12 | 0 | *0 | 0 | | | | | 0 | 0 | 10 | 21 | 142 |
| 13 | 0 | 0 | 0 | | | | | *114 | 0 | 10 | 16 | *263 |
| 14 | 0 | 0 | 0 | | | | | *9 | 0 | 0 | 34 | 204 |
| 15 | 0 | 75 | 0 | | | | | 0 | 0 | 0 | 19 | *74 |
| 16 | 0 | 30 | 0 | | | | | 0 | 0 | *119 | 30 | 74 |
| 17 | 0 | 0 | *0 | | | | | 0 | 19 | 26 | 57 | 68 |
| 18 | 0 | 0 | 0 | | | | | 0 | *4,270 | 19 | *47 | 85 |
| 19 | 0 | *0 | 0 | | | | | 0 | *60 | 12 | 291 | 74 |
| 20 | *0 | 0 | 0 | | | | (*) | 0 | 26 | 8 | 87 | 52 |
| 21 | 0 | 0 | 0 | | | | | 0 | *26 | 5 | 5 | *47 |
| 22 | 0 | 0 | 0 | | | | | 0 | 15 | *4 | 5 | 47 |
| 23 | 0 | 0 | 0 | | | | | 0 | 10 | 1 | 9 | 40 |
| 24 | 0 | 0 | 0 | | | | | 0 | 7 | 1 | *68 | 39 |
| 25 | 0 | 0 | 1 | | | | | 0 | *6 | 0 | 49 | 36 |
| 26 | 0 | 0 | 1 | | | | | 0 | 5 | 1 | 45 | 36 |
| 27 | 0 | 0 | 0 | | | | | 0 | 1 | 0 | 30 | 30 |
| 28 | 0 | 0 | 0 | | | | (*) | 0 | *775 | 574 | 20 | 27 |
| 29 | 0 | 0 | 0 | | | | | 0 | *221 | 2,170 | 6 | *24 |
| 30 | 0 | 0 | 0 | | | | | 0 | 30 | *64 | 55 | 22 |
| 31 | 0 | | 0 | | | (*) | | 0 | | *92 | 60 | |
| Total | 60 | 105 | 2 | 0 | 0 | 0 | 0 | 123 | 5,471 | 3,367 | 2,223 | 3,875 |
| Mean | 1.9 | 3.5 | 0.06 | 0 | 0 | 0 | 0 | 4.0 | 182 | 109 | 71.7 | 129 |
| Ac-ft | 119 | 208 | 4 | 0 | 0 | 0 | 0 | 244 | 10,850 | 6,680 | 4,410 | 7,690 |

Calendar year 1964: Max 90 Min 0 Mean 1.8 Ac-ft 1,280
Water year 1964-65: Max 4,270 Min 0 Mean 41.7 Ac-ft 30,200

Peak discharge (base, 1,000 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 6-18 | 0040 | 26.40 | 54,800 | 8-19 | 2110 | 17.90 | 1,930 |
| 6-28 | 2200 | 24.98 | 8,160 | 9-8 | 2145 | 21.65 | 2,920 |
| 7-29 | 1030 | 25.35 | 11,600 | 9-13 | 2245 | 14.90 | 1,430 |
| 8-1 | 0720 | 14.00 | 1,220 | | | | |

* Discharge measurement or observation of no flow made on this day.

8-3906. Two Rivers Reservoir near Roswell, N. Mex.

Location.--Lat 33°17'55", long 104°43'20", in SW¼SE¼NE¼ sec.4, T.12 S., R.22 E., near center of Diamond A Dam on Rio Hondo, 13 miles southwest of Roswell, and lat 33°16'20", long 104°43'20", in NW¼SE¼NE¼ sec.16, T.12 S., R.22 E., at left end of Rocky Dam on Rocky Arroyo, 14 miles southwest of Roswell.

Drainage area.--1,030 sq mi (Rio Hondo, 963 sq mi; Rocky Arroyo, 64 sq mi).

Records available.--July 1963 to September 1965.

Gage.--Water-stage recorders. Datum of gages is at mean sea level, datum of 1929.

Extremes.--Maximum contents at 0800 of Rio Hondo Reservoir during year, 1,260 acre-ft July 29 (elevation, 3,985.7 ft); no contents most of period. Maximum contents at 0800 of Rocky Arroyo Reservoir during year, 6,090 acre-ft June 18 (elevation, 3,970.7 ft); no contents most of period.
1963-65: Maximum contents of both reservoirs, those of 1965; no contents for long periods.

Remarks.--Two Rivers Reservoir, completed July 16, 1963, is formed by earth-fill dams on Rio Hondo, which forms Rio Hondo Reservoir, and Rocky Arroyo, which forms Rocky Arroyo Reservoir. Above elevation 3,980.0 ft the pools of the two reservoirs combine to form Two Rivers Reservoir with a total capacity of 167,900 acre-ft at elevation 4,032.0 ft (crest of ungated spillway). Capacity of Rio Hondo Reservoir, 550 acre-ft between elevations 3,957.0 (sill of outlet gate) and 3,980.0 ft. Capacity of Rocky Arroyo Reservoir, 14,240 acre-ft between elevations 3,945.0 (sill of outlet gate) and 3,980.0 ft. No appreciable dead storage in Rio Hondo Reservoir. Dead storage in Rocky Arroyo Reservoir, 39 acre-ft. Primary objective of project is flood control. Outlet conduits in Rocky Dam have fixed openings. Figures given herein represent total contents (in table, reservoirs separated as indicated).

Cooperation.--Records furnished by Corps of Engineers.

Month-end elevations and contents, water year October 1964 to September 1965

| Date | Elevation (feet)† | | Contents (acre-feet) | | Change in contents (acre-feet) | |
|---|---|---|---|---|---|---|
| | Hondo | Rocky | Hondo | Rocky | Hondo | Rocky |
| Sept. 30 | - | - | 0 | 0 | - | - |
| Oct. 31 | - | - | 0 | 0 | 0 | 0 |
| Nov. 30 | - | - | 0 | 0 | 0 | 0 |
| Dec. 31 | - | - | 0 | 0 | 0 | 0 |
| Calendar year 1964 | - | - | 0 | 0 | 0 | 0 |
| Jan. 31 | - | - | 0 | 0 | 0 | 0 |
| Feb. 28 | - | - | 0 | 0 | 0 | 0 |
| Mar. 31 | - | - | 0 | 0 | 0 | 0 |
| Apr. 30 | - | - | 0 | 0 | 0 | 0 |
| May 31 | - | - | 0 | 0 | 0 | 0 |
| June 30 | 3,978.8 | 3,949.0 | 445 | 154 | +445 | +154 |
| July 31 | 3,972.0 | - | 75 | 0 | -370 | -154 |
| Aug. 31 | - | - | 0 | 0 | -75 | 0 |
| Sept. 30 | - | - | 0 | 0 | 0 | 0 |
| Water year 1964-65 | - | - | - | - | 0 | 0 |

† Elevation at 0800. Rio Hondo Reservoir had storage June 18-22, 28-30, July 28 to Aug. 7, Aug. 9, 19, Sept. 7-15; elevations for Aug. 1-10 are from staff gage. Rocky Arroyo had storage June 18-25, 29, 30, Sept. 9.

8-3908. Rio Hondo below Diamond A Dam, near Roswell, N. Mex.

Location.--Lat 33°18'05", long 104°43'10", in NE¼SE¼NE¼ sec.4, T.12 S., R.22 E., on left bank, 500 ft downstream from outlet conduit of Diamond A Dam (Two Rivers Reservoir) and 13 miles southwest of Roswell.

Drainage area.--963 sq mi (contributing area).

Records available.--October 1963 to September 1965.

Gage.--Water-stage recorder and concrete control. Datum of gage is 3,949.68 ft above mean sea level, datum of 1929 (Corps of Engineers bench mark).

Extremes.--Maximum discharge during year, 659 cfs July 29 (gage height, 4.91 ft); no flow many days.
1963-65: Maximum discharge, that of July 29, 1965; no flow for long periods.
The flood of Oct. 7, 1954, reached a discharge of 7,250 cfs, by slope-area method, at site about ¼ mile upstream. This same flood produced a peak of 23,000 cfs at Rio Hondo at Diamond A Ranch, near Roswell (see No. 3905), 11 miles upstream. A portion of this peak overflowed into Rocky Arroyo at a point about one mile upstream and contributed to a peak of 6,620 cfs, by slope-area measurement, at a point about three miles downstream from the present site of Rocky Dam.

Remarks.--Records fair except those for periods of no gage-height record, which are poor. Diversions and ground-water withdrawals for irrigation of about 6,500 acres (1959 determination) above station. This record represents the outflow from Two Rivers Reservoir through Diamond A Dam.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

| | | | |
|---|---|---|---|
| 1.0 | 0 | 2.4 | 52 |
| 1.3 | 1 | 2.8 | 94 |
| 1.5 | 4 | 3.5 | 212 |
| 1.7 | 11 | 4.5 | 490 |
| 2.0 | 25 | | |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | *32 | 0 | (*) | | | | | 0 | 0 | 113 | a250 | *121 |
| 2 | 5 | 0 | | | (*) | | | 0 | 0 | 0 | *228 | *31 |
| 3 | a0 | 0 | | | | | | 0 | 0 | 0 | *202 | 26 |
| 4 | 0 | 0 | | | | | | 0 | 0 | 5 | 170 | 50 |
| 5 | 0 | 0 | | | | | | 0 | 0 | 16 | 49 | 47 |
| 6 | 0 | 0 | | | | | | 0 | 0 | 4 | 74 | 60 |
| 7 | 0 | 0 | | | | | | 0 | 0 | 1 | 46 | *177 |
| 8 | 0 | 0 | | | | | | 0 | 0 | a0 | 34 | 459 |
| 9 | 0 | 0 | | | | | | 0 | *0 | a0 | 27 | *411 |
| 10 | 0 | 0 | | | | (*) | | 0 | 0 | 0 | 23 | 296 |
| 11 | 0 | 0 | | | | | | 0 | 0 | 0 | 16 | 155 |
| 12 | 0 | *0 | | | | | | 0 | 0 | 0 | 21 | 113 |
| 13 | 0 | 0 | | (*) | | | | *77 | 0 | 0 | 18 | 128 |
| 14 | 0 | 0 | | | | | | *9 | 0 | 0 | 25 | *241 |
| 15 | 0 | 0 | | | | | | 0 | 0 | 0 | 27 | 100 |
| 16 | 0 | 73 | | | | | | 0 | 0 | *79 | 34 | 56 |
| 17 | 0 | 0 | (*) | | | | | 0 | 0 | 24 | 34 | 46 |
| 18 | 0 | *0 | | | | | | 0 | *309 | a5 | 30 | 51 |
| 19 | 0 | *0 | | | | | | 0 | 307 | a0 | 55 | 50 |
| 20 | *0 | 0 | | | | | (*) | 0 | 122 | 0 | 175 | a40 |
| 21 | 0 | 0 | | | | | | 0 | *4 | 0 | 70 | *32 |
| 22 | 0 | 0 | | | | | | 0 | 6 | *0 | 32 | 23 |
| 23 | 0 | *0 | | | | | | 0 | 27 | 0 | 36 | 12 |
| 24 | 0 | 0 | | | | | | 0 | 3 | 0 | 94 | 7 |
| 25 | 0 | 0 | | | | | | 0 | 0 | 0 | 126 | 5 |
| 26 | 0 | 0 | | | | | | 0 | 0 | 0 | 102 | 22 |
| 27 | 0 | 0 | | | | | | 0 | 0 | *0 | 74 | 14 |
| 28 | 0 | 0 | | (*) | | | | 0 | 0 | 103 | 56 | 3 |
| 29 | 0 | 0 | | | | | | 0 | *92 | 414 | 50 | *1 |
| 30 | 0 | 0 | | | ------- | | | 0 | 150 | 140 | 43 | 0 |
| 31 | 0 | ------ | | | ------- | (*) | ------ | 0 | ------ | a100 | 99 | ------ |
| Total | 37 | 73 | 0 | 0 | 0 | 0 | 0 | 86 | 1,020 | 1,004 | 2,320 | 3,777 |
| Mean | 1.2 | 2.4 | 0 | 0 | 0 | 0 | 0 | 2.8 | 34.0 | 32.4 | 74.8 | 92.6 |
| Ac-ft | 73 | 145 | 0 | 0 | 0 | 0 | 0 | 171 | 2,020 | 1,990 | 4,600 | 5,510 |

Calendar year 1964: Max 85 Min 0 Mean 1.1 Ac-ft 790
Water year 1964-65: Max 459 Min 0 Mean 20.0 Ac-ft 14,510

* Discharge measurement or observation of no flow made on this day.
a No gage-height record.

8-3911. Rocky Arroyo below Rocky Dam, near Roswell, N. Mex.

Location.--Lat 33°15'55", long 104°42'05", in SE¼NE¼SE¼ sec.15, T.12 S., R.22 E., on left bank, 1½ miles downstream from Rocky Dam (Two Rivers Reservoir) and 13 miles southwest of Roswell.

Drainage area.--65 sq mi.

Records available.--May 1963 to September 1965.

Gage.--Water-stage recorder and concrete control. Datum of gage is 3,906.90 ft above mean sea level, datum of 1929 (Corps of Engineers bench mark).

Extremes.--Maximum discharge during year, 259 cfs June 19 (gage height, 3.77 ft); no flow for most of time.
1963-65: Maximum discharge, 383 cfs Sept. 26, 1964 (gage height, 3.89 ft), from rating curve extended above 115 cfs by logarithmic plotting; no flow for most of time.
The flood of Oct. 7, 1954, reached a discharge of 6,620 cfs, by slope-area measurement, at site about 2 miles downstream near Lambert's Well. At the same site the flood of 1941 (probably September) was estimated at 9,000 cfs from old drift marks.

Remarks.--Records good. No diversions above station. This record represents the outflow from Two Rivers Reservoir through Rocky Dam plus any runoff in the 1½ miles of intervening area between the dam and the gage. Outlet conduits in Rocky Dam remain open.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

| | | | |
|---|---|---|---|
| 1.95 | 0 | 2.8 | 24 |
| 2.2 | .4 | 3.0 | 48 |
| 2.4 | 3.3 | 3.3 | 104 |
| 2.6 | 10 | 3.8 | 274 |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | (*) | | | | | | 0 | 21 | *167 | 0 |
| 2 | | | | | | | | | 0 | .8 | 104 | 0 |
| 3 | | | | | | | | | 0 | .1 | 3.1 | 0 |
| 4 | | | | | | | | | 0 | 0 | 0 | 0 |
| 5 | | | | | | | | | 0 | 0 | 0 | 0 |
| 6 | | | | | | | | | 0 | 0 | 0 | 3.3 |
| 7 | | | | | | | | | 0 | 0 | 0 | 24 |
| 8 | | | | | | | | | 0 | 0 | 0 | 17 |
| 9 | | | | | | | | | * 0 | 0 | 0 | *114 |
| 10 | | | | | | (*) | | | 1.0 | 0 | 0 | 116 |
| 11 | | | | | | | | | 0 | 0 | 0 | 2.8 |
| 12 | | (*) | | | | | | | 0 | 0 | 0 | .1 |
| 13 | | | | (*) | | | | (*) | 0 | 0 | 0 | 0 |
| 14 | | | | | | | | | 0 | 0 | 0 | 15 |
| 15 | | | | | | | | | 0 | 0 | 0 | * .3 |
| 16 | | | | | | | | | 0 | 0 | 27 | 0 |
| 17 | | | (*) | | | | | | 0 | 0 | 27 | 0 |
| 18 | | | | | | | | | *168 | 0 | * .4 | 0 |
| 19 | | | | | | | | | *257 | 0 | 0 | 0 |
| 20 | (*) | | | | | | (*) | | 245 | 0 | 24 | 0 |
| 21 | | | | | | | | | 232 | 0 | .6 | 0 |
| 22 | | | | | | | | | 221 | * 0 | 0 | 0 |
| 23 | | | | | | | | | *205 | 0 | 0 | 0 |
| 24 | | | | | | | | | 187 | 0 | 0 | 0 |
| 25 | | | | | | | | | *163 | 0 | 0 | 0 |
| 26 | | | | | | | | | 54 | 0 | 0 | 0 |
| 27 | | | | | | | | | .6 | 0 | 0 | 0 |
| 28 | | | | | | | | | 0 | 17 | 0 | 0 |
| 29 | | | | | - | | | | 125 | 109 | 0 | * 0 |
| 30 | | | | | | | | | 151 | 205 | 0 | 0 |
| 31 | | | | | | (*) | | | | 191 | 0 | |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2,009.6 | 543.9 | 353.1 | 292.5 |
| Mean | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 67.0 | 17.5 | 11.4 | 9.75 |
| Ac-ft | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3,990 | 1,080 | 700 | 580 |

Calendar year 1964: Max 124 Min 0 Mean 0.6 Ac-ft 438
Water year 1964-65: Max 257 Min 0 Mean 8.76 Ac-ft 6,350

* Discharge measurement or observation of no flow made on this day.

8-3936. North Spring River at Roswell, N. Mex.

Location.--Lat 33°23'45", long 104°32'55", in NW¼SW¼SE¼ sec.31, T.10 S., R.24 E., in Roswell Municipal Golf Course, on left bank 2,400 ft upstream from Montana Avenue, in Roswell.

Drainage area.--19.5 sq mi.

Records available.--May 1958 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 3,570 ft (from topographic map).

Average discharge.--7 years, 0.03 cfs (22 acre-ft per year), includes revisions.

Extremes.--Maximum discharge during year, 81 cfs July 29 (gage height, 3.48 ft), from rating curve extended above 80 cfs on basis of slope area measurement of peak flow; no flow for most of year.
1958-65: Maximum discharge, 387 cfs June 13, 1964 (gage height, 4.65 ft); no flow for most of time.
Revisions.--Figures of maximum discharge for water years 1962 and 1963 have been revised to 22 cfs Sept. 24, 1962 (gage height, 2.97 ft) and 33 cfs Aug. 31, 1963 (gage height, 3.09 ft), superseding figures published in Surface Water Records of New Mexico for 1962 and 1963 respectively.

Remarks.--Records good. No diversions above station.

Revisions.--Revised figures of discharge, in cubic feet per second, for periods of flow in the water years 1962-64, superseding previously published figures, are given herewith:

| | |
|---|---|
| Sept. 24, 1962 | 0.8 |
| Aug. 31, 1963 | 2.1 |
| June 13, 1964 | *40 |
| 14 | 1 |

| Month | Cfs-days | Maximum | Minimum | Mean | Runoff in acre-feet |
|---|---|---|---|---|---|
| September 1962 | 0.8 | 0.8 | 0 | 0.03 | 1.6 |
| Water year 1961-62 | .8 | .8 | 0 | .002 | 1.6 |
| Calendar year 1962 | .8 | .8 | 0 | .002 | 1.6 |
| August 1963 | 2.1 | 2.1 | 0 | .07 | 4.2 |
| Water year 1962-63 | 2.1 | 2.1 | 0 | .006 | 4.2 |
| Calendar year 1963 | 2.1 | 2.1 | 0 | .006 | 4.2 |
| June 1964 | 41 | 40 | 0 | 1.4 | 81 |
| Water year 1963-64 | 41 | 40 | 0 | .1 | 81 |

Rating table (gage height, in feet, and discharge, in cubic feet per second)

| | | | |
|---|---|---|---|
| 2.64 | 0 | 2.9 | 7.4 |
| 2.7 | .4 | 3.0 | 15 |
| 2.8 | 2.5 | 3.1 | 25 |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| | |
|---|---|
| June 10 | 0.1 |
| July 29 | *20 |
| 30 | *1.0 |

| Month | Cfs-days | Maximum | Minimum | Mean | Runoff in acre-feet |
|---|---|---|---|---|---|
| June 1965 | 0.1 | 0.1 | 0 | 0.003 | 0.2 |
| July | 21.0 | 20 | 0 | .68 | 42 |
| Calendar year 1964 | - | 20 | 0 | .06 | 42 |
| Water year 1964-65 | - | 40 | 0 | .1 | 81 |

* Discharge measurement made on this day.
Note.-Flow occurred only on days listed above. Observations of no flow generally made at least once a month.

8-3945. Rio Felix at old highway bridge, near Hagerman, N. Mex.

Location.--Lat 33°07'30", long 104°20'40", in SW¼ sec.4, T.14 S., R.26 E., near left bank on downstream side of abandoned bridge pier, 0.6 mile upstream from U. S. Highway 285, 1¼ miles northwest of Hagerman, and 2½ miles upstream from mouth.

Drainage area.--932 sq mi (contributing area).

Records available.--April 1939 to September 1965. March 1932 to April 1939 at site 1 mile downstream; records for periods of low flow not equivalent.

Gage.--Water-stage recorder. Datum of gage is 3,403.40 ft above mean sea level, datum of 1929.

Average discharge.--26 years, 16.5 cfs (11,950 acre-ft per year).

Extremes.--Maximum discharge during year, 17,900 cfs July 29 (gage height, 21.10 ft); no flow for most of year.
1939-65: Maximum discharge, 74,000 cfs Oct. 7, 1954 (gage height, 27.5 ft, from floodmarks), from rating curve extended above 12,000 cfs on basis of slope-area measurement at point 5½ miles upstream from gage (adjusted for channel storage); no flow for many periods.
Flood in 1954 is the highest since 1894, from information by local residents. Flood of Oct. 1, 1904, is probably second highest. Another major flood occurred in April 1915.

Remarks.--Records fair. Diversions for irrigation of about 350 acres (1959 determination) above station.

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | 0 | 13 | 3 | 7 | *0 |
| 2 | | | | | | | | 0 | 0 | 0 | 7 | *224 |
| 3 | | | | | | | | 0 | 0 | 0 | 4 | 4 |
| 4 | | | | | | | | 0 | 0 | 0 | 1 | 0 |
| 5 | | | | | | | | 0 | 0 | 0 | 0 | 0 |
| 6 | | | | | | | | 0 | 0 | 0 | 0 | 0 |
| 7 | | | | | | | | 0 | 0 | 0 | 1 | 0 |
| 8 | | | | | | | | 0 | 0 | 0 | 6 | 29 |
| 9 | | | | | | | | 0 | 0 | 0 | 0 | 0 |
| 10 | | | | | | | | 0 | *0 | 0 | 0 | 0 |
| 11 | | (*) | | (*) | (*) | (*) | | 0 | 185 | 0 | 0 | 0 |
| 12 | | | | | | | | 0 | 97 | 0 | 0 | 0 |
| 13 | | | | | | | | 0 | 6 | 0 | 0 | 0 |
| 14 | | | | | | | | 0 | 0 | 0 | 0 | 0 |
| 15 | | | | | | | | 0 | 0 | 0 | 0 | 0 |
| 16 | | | | | | | | 0 | 0 | 0 | 0 | 0 |
| 17 | | | | | | | | 0 | 0 | 0 | 0 | 0 |
| 18 | | | | | | | | *0 | 0 | 0 | 0 | 1 |
| 19 | | | | | | | | 0 | 0 | 0 | 0 | 4 |
| 20 | (*) | | | | | | | 0 | 0 | 0 | *0 | 2 |
| 21 | | | | | | | | 0 | 0 | 0 | 2 | 1 |
| 22 | | | | | | | | 0 | 0 | 0 | 0 | 0 |
| 23 | | | | | | | | 0 | 0 | 0 | 0 | 0 |
| 24 | | | | | | | | 0 | 0 | 0 | 0 | 0 |
| 25 | | | | | | | | 0 | 39 | 0 | *0 | 0 |
| 26 | | | | | | | | 0 | 8 | 0 | 0 | 0 |
| 27 | | | | | | | | 0 | 0 | 0 | 0 | 0 |
| 28 | | | | | | | | 0 | 0 | 0 | 0 | 0 |
| 29 | | | | | – | | | 0 | 494 | 3,800 | 0 | 0 |
| 30 | | (*) | | | ------- | | | 0 | *40 | *341 | 0 | 0 |
| 31 | | ------ | | | ------- | | ------ | 5 | ------ | *5 | 0 | ------ |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 882 | 4,149 | 28 | 265 |
| Mean | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.16 | 29.4 | 134 | 0.90 | 8.83 |
| Ac-ft | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9.9 | 1,750 | 8,230 | 56 | 526 |

Calendar year 1964: Max 0 Min 0 Mean 0 Ac-ft 0
Water year 1964-65: Max 3,800 Min 0 Mean 14.6 Ac-ft 10,570

Peak discharge (base, 500 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 6-11 | 0540 | 8.37 | 562 | 7-29 | 1035 | 21.10 | 17,900 |
| 6-29 | 0430 | 12.55 | 2,530 | 9- 2 | 0145 | 9.37 | 862 |

* Discharge measurement or observation of no flow made on this day.

8-3955. Pecos River near Lake Arthur, N. Mex.

Location.--Lat 32°59'18", long 104°19'20", in SW¼NE¼ sec.27, T.15 S., R.26 E., on left bank 400 ft upstream from county bridge, 2½ miles east of Lake Arthur, 7 miles upstream from Cottonwood Creek, and 11 miles northeast of Artesia.

Drainage area.--14,760 sq mi, approximately (contributing area).

Records available.--August 1938 to September 1965.

Gage.--Water-stage recorder (digital) and rock control. Datum of gage is 3,327.07 ft above mean sea level, datum of 1929.

Average discharge.--27 years, 277 cfs (200,500 acre-ft per year).

Extremes.--Maximum discharge during year, 8,230 cfs July 29 (gage height, 11.84 ft); minimum, 0.5 cfs Oct. 9, 10.
1938-65: Maximum discharge, 49,600 cfs Sept. 24, 1941 (gage height, 21.90 ft), from rating curve extended above 16,100 cfs on basis of slope-area measurement at gage height 21.77 ft and logarithmic plotting; no flow at times in 1947, 1953-4, 1962, 1964.
Flood of May 30, 1937, reached a stage of 21.77 ft (discharge, 51,500 cfs, on basis of slope-area measurement of peak flow), but may have been exceeded by floods in 1904 and 1919.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Discharge measurements generally made two or more times a month. Flow partly regulated by Alamogordo Reservoir (see 8-3840 ). Diversions and ground-water withdrawals for irrigation of about 124,000 acres (1959 determination) above station.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used July 2, 3, 10-15, Aug. 1 to Sept. 30)

| | | | | | |
|---|---|---|---|---|---|
| 1.1 | 0.5 | 1.7 | 28 | 3.3 | 438 |
| 1.2 | 1.7 | 2.0 | 65 | 4.0 | 825 |
| 1.3 | 4.2 | 2.4 | 141 | 5.0 | 1,520 |
| 1.4 | 8.0 | 2.8 | 249 | 6.7 | 2,900 |
| 1.5 | 13 | | | | |

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1964 TO SEPTEMBER 1965

| DAY | OCT. | NOV. | DEC. | JAN. | FEB. | MAR. | APR. | MAY | JUNE | JULY | AUG. | SEPT. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.2 | 6.9 | 31 | 39 | 28 | 26 | 745 | 28 | 30 | 783 | 1,080 | 2.8 |
| 2 | 1.0 | 11 | 30 | 39 | 26 | 21 | 420 | 25 | 18 | 780 | 497 | 73 |
| 3 | .80 | 11 | 32 | 39 | 26 | 20 | 177 | 29 | 14 | 745 | 326 | 54 |
| 4 | .80 | 10 | 31 | 39 | 26 | 21 | 119 | 24 | 20 | 774 | 256 | 3.7 |
| 5 | .70 | 14 | 37 | 40 | 25 | 24 | 99 | 17 | 10 | 1,200 | 147 | 17 |
| 6 | .80 | 11 | 37 | 39 | 27 | 27 | 74 | 12 | 5.0 | 755 | 139 | 65 |
| 7 | 1.1 | 8.0 | 38 | 39 | 28 | 23 | 65 | 8.5 | 3.7 | 837 | 63 | 22 |
| 8 | 1.2 | 6.5 | 36 | 38 | 31 | 23 | 55 | 6.5 | 3.3 | 774 | 28 | 18 |
| 9 | .70 | 14 | 36 | 35 | 32 | 21 | 48 | 13 | 2.7 | 838 | 19 | 81 |
| 10 | .90 | 12 | 31 | 34 | 32 | 20 | 43 | 18 | 6.1 | 747 | 13 | 53 |
| 11 | 1.9 | 8.0 | 30 | 36 | 28 | 19 | 49 | 13 | 18 | 611 | 18 | 39 |
| 12 | 5.3 | 8.5 | 34 | 36 | 28 | 21 | 46 | 19 | 89 | 214 | 20 | 117 |
| 13 | 4.2 | 3.6 | 33 | 34 | 31 | 18 | 36 | 26 | 74 | 107 | 12 | 114 |
| 14 | 5.0 | 3.6 | 33 | 36 | 31 | 18 | 36 | 22 | 31 | 67 | 6.1 | 44 |
| 15 | 4.6 | 7.2 | 31 | 35 | 28 | 20 | 32 | 483 | 13 | 47 | 4.3 | 17 |
| 16 | 4.2 | 6.9 | 28 | 34 | 26 | 17 | 24 | 178 | 4.5 | 31 | 4.6 | 16 |
| 17 | 3.0 | 12 | 33 | 33 | 24 | 18 | 17 | 96 | 4.5 | 26 | 5.0 | 24 |
| 18 | 1.4 | 286 | 32 | 34 | 22 | 23 | 18 | 57 | 4.9 | 22 | 4.7 | 30 |
| 19 | 1.7 | 174 | 38 | 35 | 27 | 506 | 22 | 47 | 2.2 | 24 | 4.8 | 266 |
| 20 | 3.9 | 113 | 43 | 35 | 26 | 619 | 19 | 36 | 2.2 | 19 | 6.5 | 208 |
| 21 | 3.6 | 83 | 40 | 35 | 23 | a 670 | 17 | 22 | 3.5 | 14 | 5.0 | 100 |
| 22 | 3.9 | 61 | 39 | 35 | 23 | a 690 | 16 | a 15 | 15 | 9.5 | 58 | 61 |
| 23 | 7.2 | 49 | 37 | 33 | 24 | a 670 | 12 | a 13 | 49 | 7.1 | 95 | 38 |
| 24 | 8.0 | 47 | 38 | 31 | 23 | a 670 | 11 | a 11 | 40 | 6.8 | 51 | 27 |
| 25 | 7.6 | 44 | 43 | 33 | 27 | a 690 | 12 | a 150 | 672 | 6.4 | 10 | 16 |
| 26 | 8.0 | 40 | 43 | 29 | 25 | a 720 | 18 | a 250 | 819 | 6.4 | 2.9 | 12 |
| 27 | 7.2 | 38 | 40 | 29 | 21 | a 750 | 21 | a 150 | 842 | 6.3 | 1.5 | 16 |
| 28 | 7.6 | 37 | 39 | 29 | 26 | a 740 | a 28 | 80 | 682 | 6.9 | 1.1 | 16 |
| 29 | 6.5 | 35 | 38 | 29 | ------ | a 740 | a 30 | 55 | 769 | 2,840 | 1.9 | 18 |
| 30 | 8.0 | 33 | 39 | 30 | ------ | 764 | a 33 | 48 | 908 | 1,600 | 2.7 | 17 |
| 31 | 8.5 | ------ | 39 | 29 | ------ | 711 | ------ | 50 | ------ | 2,480 | 4.0 | ------ |
| TOTAL | 120.5 | 1,194.2 | 1,109 | 1,071 | 744 | 9,320 | 2,342 | 2,002.0 | 5,155.6 | 16,384.4 | 2,887.1 | 1,585.5 |
| MEAN | 3.89 | 39.8 | 35.8 | 34.5 | 26.6 | 301 | 78.1 | 64.6 | 172 | 529 | 93.1 | 52.9 |
| AC-FT | 239 | 2,370 | 2,200 | 2,120 | 1,480 | 18,490 | 4,650 | 3,970 | 10,230 | 32,500 | 5,730 | 3,140 |

CALENDAR YEAR 1964 MAX 760 MIN .10 MEAN 58.5 AC-FT 42,460
WATER YEAR 1964-65 MAX 2,840 MIN .70 MEAN 120 AC-FT 87,119

Peak discharge (base 2,500 cfs).--July 29 (2045) 8,230 cfs (11.84 ft).

a No gage-height record.

8-3960. Cottonwood Creek near Lake Arthur, N. Mex.

Location.--Lat 32°54'55", long 104°22'00", in SW¼SE¼ sec.15, T.16 S., R.26 E., on right bank 75 ft upstream from road bridge, 1½ miles upstream from mouth, and 6 miles south of town of Lake Arthur.

Drainage area.--199 sq mi (contributing area).

Records available.--March 1932 to January 6, 1965 (discontinued). All figures of discharge above 150 cfs prior to June 1937 and daily discharges Sept. 24-30, 1932, June 13, 14, Sept. 5, 1935, and May 29, 1937, as published in previous Water Supply Papers have been found to be unreliable and should not be used.

Gage.--Water-stage recorder (digital) and concrete control. Datum of gage is 3,316.3 ft above mean sea level (river-profile survey). At site 75 ft downstream at different datum Mar. 7, 1932, to Mar. 28, 1935, and at datum 1.36 ft and 2.10 ft lower than present datum Mar. 29, 1935, to Sept. 30, 1936, and Oct. 1, 1936, to Aug. 29, 1938, respectively. Aug. 30, 1938, to May 22, 1948, at present site at datum 1.54 ft lower.

Average discharge.--30 years (1932-34, 1935-36, 1937-64), 5.61 cfs (4,060 acre-ft per year).

Extremes.--Maximum daily discharge during period,0.3 cfs; minimum, 0.1 cfs.
1932-65: Maximum discharge not determined, occurred June 13, 1935; maximum gage height, 12.0 ft May 30, 1937, present datum, from floodmarks (backwater from Pecos River); no flow at times.

Remarks.--Records excellent. Diversions and ground-water withdrawals for irrigation of about 4,500 acres (1959 determination) above station. Capacity of original excavated channel at and above gage has been progressively reduced by salt-cedar growth, blow sand, and bank erosion. Since 1957 a compacted earth plug in channel (forms pond for pump diversion) 1 mile above gage has reduced low-flow record to leakage through or under plug, ground-water inflow, and irrigation return entering channel in the 1-mile reach above gage. Higher sustained discharges originating above plug (moderate rises can originate below) will overflow banks and levees into swamps, farm areas, and Pecos River flood plain, most of over-bank flow remaining ponded or bypassing gage. Low-flow record represents contribution to Pecos River, based on comparative discharge measurements of March 1961.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

| | |
|---|---|
| 2.0 | 0.1 |
| 2.1 | .2 |
| 2.2 | .4 |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.1 | 0.2 | 0.2 | 0.2 | | | | | | | | |
| 2 | .1 | .2 | .2 | .2 | | | | | | | | |
| 3 | .1 | .2 | .2 | .2 | | | | | | | | |
| 4 | .1 | .1 | .2 | .2 | | | | | | | | |
| 5 | .1 | .1 | .2 | .2 | | | | | | | | |
| 6 | .1 | .2 | .2 | .2 | | | | | | | | |
| 7 | .1 | .1 | .2 | - | | | | | | | | |
| 8 | .1 | .2 | .2 | - | | | | | | | | |
| 9 | .1 | .2 | .2 | - | | | | | | | | |
| 10 | .1 | .2 | .2 | - | | | | | | | | |
| 11 | .1 | .2 | .2 | - | | | | | | | | |
| 12 | .1 | .2 | .2 | - | | | | | | | | |
| 13 | .2 | .2 | .2 | - | | | | | | | | |
| 14 | .2 | .2 | .2 | - | | | | | | | | |
| 15 | .2 | .2 | .2 | - | | | | | | | | |
| 16 | .2 | .2 | .2 | - | | | | | | | | |
| 17 | .2 | .2 | .2 | - | | | | | | | | |
| 18 | .2 | .2 | .2 | - | | | | | | | | |
| 19 | .2 | .2 | .2 | - | | | | | | | | |
| 20 | .2 | .2 | .2 | - | | | | | | | | |
| 21 | .2 | .3 | .2 | - | | | | | | | | |
| 22 | .2 | .3 | .2 | - | | | | | | | | |
| 23 | .2 | .3 | .2 | - | | | | | | | | |
| 24 | .2 | .3 | .2 | - | | | | | | | | |
| 25 | .2 | .3 | .2 | - | | | | | | | | |
| 26 | .2 | .2 | .2 | - | | | | | | | | |
| 27 | .2 | .2 | .2 | - | | | | | | | | |
| 28 | .2 | .2 | .2 | - | | | | | | | | |
| 29 | .2 | .2 | .2 | - | | | | | | | | |
| 30 | .2 | .2 | .2 | - | ---------- | | ---------- | | ---------- | | | ---------- |
| 31 | ---------- | ---------- | .2 | - | ---------- | | | | | | | |
| Total | 5.0 | 6.2 | 6.2 | - | | | | | | | | |
| Mean | 0.16 | 0.21 | 0.20 | - | | | | | | | | |
| Ac-ft | 9.9 | 12 | 12 | - | | | | | | | | |

Calendar year 1964: Max 10 Min 0.1 Mean 0.84 Ac-ft 606
Water year 1964-65: Max - Min - Mean - Ac-ft -

* Discharge measurement made on this day.

## 8-3965. Pecos River near Artesia, N. Mex.

Location.--Lat 32°50'25", long 104°19'25", in NW¼NW¼ sec.18, T.17 S., R.27 E., near left bank on downstream end of bridge pier on State Highway 83, 4.3 miles east of Artesia, 7.0 miles north of mouth of Rio Penasco, and 17 miles north of McMillan Dam.

Drainage area.--15,300 sq mi, approximately (contributing area).

Records available.--September 1905 to June 1909, August 1909 to September 1936, May 1937 to September 1965. Monthly discharge only for some periods, published in WSP 1312. Records for Aug. 22-31, 1934, and October 1936 to April 1937, published in WSP 763 and 828, respectively, have been found to be unreliable and monthly figures only should be used. Prior to February 1936, published as "near Dayton."

Gage.--Water-stage recorder. Datum of gage is 3,291.05 ft (Bureau of Reclamation bench mark). Prior to Aug. 27, 1914, staff gage and Aug. 27, 1914, to Feb. 20, 1936, water-stage recorder at site 6½ miles downstream at different datum. Feb. 21, 1936, to Apr. 4, 1941, water-stage recorder at site 600 ft downstream at different datum.

Average discharge.--30 years (1905-8, 1909-36), 365 cfs (264,200 acre-ft per year), prior to completion of Alamogordo Reservoir; 29 years (1936-65), 299 cfs (216,500 acre-ft per year).

Extremes.--Maximum discharge during year, about 4,500 cfs July 30 (gage height, 12.34 ft, flow bypassing gage); no flow Oct. 5.

1905-65: Maximum discharge probably occurred May 30, 1937, when a discharge of 51,500 cfs was measured by slope-area method at a point 15 miles upstream (gage height, 14.7 ft, site and datum then in use); maximum gage height, 17.4 ft Sept. 30, 1932, site and datum then in use (discharge, 19,000 cfs); no flow at times in 1934, 1946-47, 1953-54, 1957, 1964-65.

Greatest flood known since at least 1893 occurred Oct. 2, 1904 (discharge not determined). (The peak inflow to Lake McMillan, which includes Rio Penasco and Fourmile Draw, was estimated as 82,000 cfs). The second highest flood occurred July 25, 1905 (discharge below Rio Penasco, 50,300 cfs, based on gain in storage and spill from Lake McMillan). The floods in August 1893 and October 1904 damaged McMillan Dam and washed out Avalon Dam.

Remarks.--Records fair except those for period of bypass flow, which are poor. Discharge measurements or observations of no flow generally made two or more times a month. Flow partly regulated by Alamogordo Reservoir (see 8-3840 ) since August 1937. Diversions and ground-water withdrawals for irrigation of about 154,000 acres (1959 determination) above station. Discharge represents inflow to Lake McMillan which is part of the storage system for the irrigation of about 25,000 acres of the Carlsbad project. Records of chemical analyses, water temperatures, and suspended sediment loads for the water year 1965 are published in Part 2 of this report.

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 11 | 30 | 39 | 28 | 27 | 705 | 30 | 47 | 762 | 1,250 | 7 |
| 2 | 1 | 10 | 26 | 38 | 28 | 27 | 600 | 28 | 37 | 788 | 650 | 7 |
| 3 | 1 | 8 | 26 | 38 | 28 | 22 | 267 | 26 | 23 | 762 | 348 | 74 |
| 4 | 1 | 10 | 24 | 39 | 28 | 22 | 135 | 28 | 17 | 738 | 291 | 28 |
| 5 | 0 | 10 | 28 | 40 | 29 | 24 | 105 | 17 | 19 | 1,070 | 184 | 10 |
| 6 | 1 | 14 | 33 | 39 | 30 | 27 | 82 | 16 | 12 | 875 | 169 | 23 |
| 7 | 1 | 13 | 33 | 39 | 32 | 29 | 65 | 13 | 9 | 800 | 110 | 44 |
| 8 | 1 | 8 | 35 | 38 | 34 | 26 | 60 | 9 | 6 | 800 | 52 | 22 |
| 9 | 1 | 7 | 32 | 37 | 39 | 28 | 52 | 9 | 6 | 806 | 34 | 33 |
| 10 | 1 | 10 | 32 | 35 | 39 | 25 | 43 | 10 | 7 | 750 | 23 | 65 |
| 11 | 1 | 11 | 27 | 34 | 38 | 25 | 43 | 15 | 9 | 700 | 17 | 49 |
| 12 | 0 | 7 | 28 | 35 | 34 | 22 | 48 | 14 | 76 | 325 | 20 | 49 |
| 13 | 0 | 8 | 31 | 35 | 38 | 22 | 43 | 18 | 60 | 122 | 17 | 122 |
| 14 | 1 | 6 | 31 | 34 | 41 | 20 | 38 | 23 | 39 | 82 | 14 | 67 |
| 15 | 2 | 4 | 32 | 35 | 36 | 20 | 38 | 300 | 22 | 64 | 13 | 31 |
| 16 | 2 | 6 | 30 | 34 | 32 | 24 | 34 | 265 | 11 | 42 | 11 | 9 |
| 17 | 2 | 9 | 29 | 33 | 29 | 21 | 30 | 116 | 7 | 26 | 11 | 6 |
| 18 | 2 | 132 | 28 | 33 | 28 | 23 | 21 | 68 | 5 | 20 | 10 | 26 |
| 19 | 2 | 205 | 26 | 34 | 29 | 246 | 26 | 47 | 5 | 14 | 9 | 53 |
| 20 | 2 | 120 | 44 | 34 | 28 | 538 | 25 | 42 | 4 | 12 | 11 | 280 |
| 21 | 3 | 90 | 43 | 34 | 26 | 615 | 21 | 28 | 5 | 8 | 10 | 99 |
| 22 | 3 | 69 | 41 | 34 | 24 | 660 | 19 | 17 | 3 | 8 | 8 | 60 |
| 23 | 3 | 56 | 40 | 33 | 24 | 650 | 21 | 15 | 9 | 3 | 64 | 39 |
| 24 | 3 | 45 | 38 | 32 | 23 | 652 | 15 | 19 | 36 | 3 | 66 | 26 |
| 25 | 4 | 43 | 41 | 31 | 25 | 668 | 14 | 12 | 342 | 2 | 39 | 17 |
| 26 | 5 | 40 | 44 | 33 | 32 | 712 | 18 | 355 | 650 | 2 | 15 | 11 |
| 27 | 5 | 37 | 46 | 32 | 27 | 725 | 21 | 202 | 715 | 1 | 9 | 12 |
| 28 | 5 | 36 | 43 | 31 | 22 | 708 | 26 | 105 | 690 | 1 | 3 | 21 |
| 29 | 5 | 36 | 41 | 30 | - | 705 | 29 | 72 | 612 | 1,410 | 2 | 17 |
| 30 | 5 | 35 | 39 | 29 | ------- | 725 | 31 | 60 | 805 | 3,010 | 4 | 17 |
| 31 | 6 | ------ | 39 | 31 | ------ | 725 | ------ | 60 | ------ | 2,610 | 8 | ------ |
| Total | 70 | 1,096 | 1,060 | 1,073 | 851 | 8,763 | 2,675 | 2,039 | 4,288 | 16,616 | 3,472 | 1,324 |
| Mean | 2.3 | 36.5 | 34.2 | 34.6 | 30.4 | 283 | 89.2 | 65.8 | 143 | 536 | 112 | 44.1 |
| Ac-ft | 139 | 2,170 | 2,100 | 2,130 | 1,690 | 17,380 | 5,310 | 4,040 | 8,510 | 32,960 | 6,890 | 2,630 |

Calendar year 1964: Max 1,000 Min 0 Mean 60.8 Ac-ft 44,120
Water year 1964-65: Max 3,010 Min 0 Mean 119 Ac-ft 85,950

Peak discharge (base, 2,000 cfs).--July 30 (0330) about 4,500 (12.34 ft).

Note.-Overbank flow bypassed gage part time on July 30, 31.

8-3985. Rio Penasco at Dayton, N. Mex.

Location.--Lat 32°44'30", long 104°22'30", in SW¼SW¼ sec.15, T.18 S., R.26 E., on right bank 3 ft upstream from crest of abandoned diversion dam, 1 mile northeast of old Dayton railway station, 3½ miles upstream from mouth, and 7 miles southeast of Artesia.

Drainage area.--1,070 sq mi, approximately.

Records available.--April 1951 to September 1965. Prior to October 1953, published as "near Dayton."

Gage.--Water-stage recorder and concrete control. Datum of gage is 3,340.89 ft above mean sea level, datum of 1929.

Average discharge.--14 years, 4.7 cfs (3,400 acre-ft per year).

Extremes.--Maximum discharge during year, 6,180 cfs May 31 (gage height, 5.13 ft); no flow for extended periods.
1951-65: Maximum discharge, 23,700 cfs Oct. 7, 1954 (gage height, 6.82 ft), from rating curve extended above 6,000 cfs on basis of slope-area measurement of peak flow; no flow for extended periods.
The greatest flood known occurred about Sept. 22, 1941, when a stage of about 9 ft (from old logs) was reached, and peak discharge for station near Dunken (about 50 miles upstream) was 70,000 cfs (as determined for that station in 1956, from floodmarks and rating curve extended above 36,300 cfs).

Remarks.--Records fair. Diversions and ground-water withdrawals for irrigation of about 3,200 acres (1959 determination) above station. Records of water temperatures and suspended sediment loads for the water year 1965 are published in Part 2 of this report.

Discharge, in cubic feet per second, water year October 1964 to September 1965

| | | |
|---|---|---|
| May | 31 | 1,270 |
| June | 1 | 5 |
| July | 29 | *51 |
| | 30 | 1 |

| Month | Cfs-days | Maximum | Minimum | Mean | Runoff in acre-feet |
|---|---|---|---|---|---|
| May 1965 | 1,270 | 1,270 | 0 | 41.0 | 2,520 |
| June | 5 | 5 | 0 | .2 | 10 |
| July | 52 | 51 | 0 | 1.7 | 103 |
| Calendar year 1964 | - | 157 | 0 | 1.3 | 943 |
| Water year 1964-65 | - | 1,270 | 0 | 3.6 | 2,630 |

Peak discharge (base, 750 cfs).--May 31 (0510) 6,180 cfs (5.13 ft).

* Discharge measurement made on this day.
Note.--Flow occurred only on days listed above. Observations of no flow generally made once a month.

8-3995. Pecos River (Kaiser Channel) near Lakewood, N. Mex.

Location.--Lat 32°41'22", long 104°17'53", in NW¼SE¼ sec.5, T.19 S., R.27 E., on left bank 3 miles upstream from high-water line of Lake McMillan, 6 miles northeast of Lakewood, 7 miles northeast of gates in McMillan Dam, and 12 miles southeast of Artesia.

Records available.--May 1950 to September 1965. Prior to October 1954, published as Kaiser Lake-McMillan Channel near Lakewood.

Gage.--Water-stage recorder. Datum of gage is 3,268.53 ft above mean sea level (Bureau of Reclamation bench mark). Prior to Mar. 23, 1955, at site 3 miles downstream at datum 7.83 ft lower. Mar. 23, 1955, to Sept. 30, 1963, at present site at datum 2.00 ft higher.

Average discharge.--15 years, 157 cfs (113,700 acre-ft per year).

Extremes.--Maximum daily discharge during year, 1,560 cfs July 30; no flow at times.
1950-65: Maximum daily discharge, 2,920 cfs July 12, 1960; no flow at times in most years.

Remarks.--Records good. Flow partly regulated by Alamogordo Reservoir (see 8-3840). Diversions and ground-water withdrawals for irrigation of about 170,000 acres (1959 determination) above station. Above about 1,500 cfs flow will begin bypassing station and, depending on the magnitude and duration of flow, may reach Lake McMillan.

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 0 | 27 | 34 | 26 | 20 | *715 | 24 | 64 | *741 | 1,450 | 3 |
| 2 | | * 0 | 22 | 34 | 25 | * 24 | 647 | 24 | * 37 | 738 | 775 | 2 |
| 3 | | 0 | 22 | 34 | 24 | 22 | 310 | *20 | 22 | 728 | *434 | 46 |
| 4 | | 0 | 20 | 34 | 24 | 19 | 170 | 25 | 12 | 682 | 373 | 44 |
| 5 | (*) | 0 | 21 | 37 | 25 | 20 | *106 | 19 | 7 | 1,030 | * 254 | 10 |
| 6 | | 0 | 27 | 35 | 24 | 22 | 88 | 13 | 7 | 830 | 191 | 3 |
| 7 | | 0 | 28 | 35 | 25 | 25 | 71 | 12 | 2 | 718 | 159 | 39 |
| 8 | | 0 | 29 | 35 | 28 | 25 | 59 | 7 | 0 | 761 | 92 | 21 |
| 9 | | 0 | *28 | 33 | 32 | 22 | * 53 | 6 | 0 | 751 | 56 | 12 |
| 10 | | 0 | 28 | 32 | 33 | 24 | 45 | 6 | 1 | 715 | 45 | 62 |
| 11 | | * 0 | 25 | 31 | 32 | 21 | 38 | 9 | *0 | 663 | 32 | 47 |
| 12 | | 2 | 22 | 31 | 31 | 19 | 47 | 12 | 29 | * 390 | 24 | 33 |
| 13 | | 1 | 25 | 32 | 31 | 19 | 47 | 11 | 74 | 150 | 26 | 110 |
| 14 | | 0 | 26 | 31 | 35 | 18 | 37 | 16 | 51 | 90 | 15 | *92 |
| 15 | | 0 | 26 | 32 | 33 | 17 | 37 | 199 | 15 | * 68 | 428 | 33 |
| 16 | | 0 | 25 | 31 | 28 | * 20 | 33 | 282 | 7 | 41 | 70 | 13 |
| 17 | | 0 | 22 | 29 | 26 | 20 | 28 | *123 | 1 | 24 | * 24 | 4 |
| 18 | | 32 | 21 | 29 | 25 | 19 | 22 | 82 | 0 | 14 | 18 | 7 |
| 19 | | 213 | 22 | 31 | 25 | 134 | * 18 | 54 | 0 | *14 | 12 | 18 |
| 20 | | *127 | 42 | 29 | 26 | 551 | 22 | 44 | 0 | 8 | 12 | *269 |
| 21 | | 86 | 41 | 29 | 25 | 619 | 19 | 31 | 0 | 4 | 14 | 135 |
| 22 | | 66 | 37 | 31 | 22 | * 666 | 16 | 19 | 0 | 2 | 15 | 73 |
| 23 | | * 53 | 35 | 29 | 21 | 647 | 16 | 15 | 0 | 2 | 42 | 42 |
| 24 | | 41 | 33 | 29 | 21 | * 634 | 14 | 12 | 10 | 0 | 80 | 27 |
| 25 | | 40 | 33 | 28 | 20 | 657 | 9 | 10 | 240 | 0 | 50 | 17 |
| 26 | | 38 | 37 | 31 | 27 | 705 | 11 | 278 | 609 | 0 | 17 | 12 |
| 27 | | 34 | 40 | *31 | 27 | 738 | 15 | 203 | 735 | 0 | 8 | 5 |
| 28 | | 32 | 38 | 31 | 22 | 721 | 17 | 117 | 738 | 0 | 2 | 12 |
| 29 | | 31 | *35 | 29 | — | 718 | 22 | 104 | 606 | 773 | 1 | 11 |
| 30 | | * 29 | 34 | 28 | ---------- | 738 | 26 | 54 | 938 | 1,560 | *1 | 13 |
| 31 | | ---------- | 35 | 28 | ---------- | 741 | ---------- | 61 | ---------- | *1,550 | 2 | ---------- |
| Total | 0 | 825 | 906 | 973 | 743 | 8,645 | 2,758 | 1,892 | 4,205 | 13,047 | 4,722 | 1,215 |
| Mean | 0 | 27.5 | 29.2 | 31.4 | 26.5 | 279 | 91.9 | 61.0 | 140 | 421 | 152 | 40.5 |
| Ac-ft | 0 | 1,640 | 1,800 | 1,930 | 1,470 | 17,150 | 5,470 | 3,750 | 8,340 | 25,880 | 9,370 | 2,410 |

Calendar year 1964 : Max 754 Min 0 Mean 592 Ac-ft 42,980
Water year 1964-65 : Max 1,550 Min 0 Mean 109 Ac-ft 79,210

* Discharge measurement or observation of no flow made on this day.

8-4000. Fourmile Draw near Lakewood, N. Mex.

Location.--Lat 32°40'22", long 104°22'10" in SE¼NE¼SW¼ sec.10, T.19 S., R.26 E., on right bank 50 ft upstream from ford on Lakewood - Dayton road, 1.8 miles downstream from U. S. Highway 285, 2.8 miles north of Lakewood, 3¾ miles upstream from mouth, and 11½ miles south of Artesia.

Drainage area.--265 sq mi, approximately.

Records available.--October 1951 to September 1965. Prior to October 1964, published as Four Mile Draw near Lakewood.

Gage.--Water-stage recorder. Datum of gage is 3,305.22 ft above mean sea level, datum of 1929. Prior to June 19, 1962, at site 1.8 miles upstream at datum 24.53 ft higher.

Average discharge.--14 years, 1.2 cfs (869 acre-ft per year).

Extremes.--Maximum discharge during year, 464 cfs May 31 (gage height, 4.02 ft); no flow for most of time.
1951-65: Maximum discharge, 7,650 cfs Oct. 7, 1954 (gage height, 13.30 ft), from rating curve extended above 1,400 cfs on basis of slope-area measurement of peak flow; no flow for most days.

Remarks.--Records fair. No known diversions above station.

Discharge, in cubic feet per second, water year October 1964 to September 1965

| | | |
|---|---|---|
| May | 30 | 3 |
| | 31 | 84 |
| June | 1 | 6 |
| Aug. | 15 | 2 |

| Month | Cfs-days | Maximum | Minimum | Mean | Runoff in acre-feet |
|---|---|---|---|---|---|
| May 1965 | 87 | 84 | 0 | 2.8 | 173 |
| June | 6 | 6 | 0 | .2 | 12 |
| August | 2 | 2 | 0 | .06 | 4 |
| Calendar year 1964 | - | 46 | 0 | .3 | 195 |
| Water year 1964-65 | - | 84 | 0 | .3 | 189 |

Peak discharge (base, 200 cfs).--No peak above base.

Note.-Flow occurred only on days listed above. Observations of no flow generally made at least once a month.

8-4005. Lake McMillan near Lakewood, N. Mex.

Location.--Lat 32°35'45", long 104°20'55", in SE¼ sec.2, T.20 S., R.26 E., near outlet gates of dam on Pecos River, 3 miles southeast of Lakewood.

Drainage area.--16,990 sq mi (contributing area).

Records available.--January 1939 to September 1965. Gage heights since January 1918 published in reports of Pecos River Commission.

Gage.--Float-tape gage. Datum of gage is 3,241.6 ft above mean sea level, Bureau of Reclamation datum.

Extremes.--Maximum contents at 0800 during year, 18,880 acre-ft Aug. 5, 6 (gage height, 23.05 ft), from revised capacity table No. 3 used since Oct. 1; no storage Oct. 1 to Nov. 21.
1939-65: Maximum contents observed, 68,500 acre-ft Sept. 26, 1941 (gage height, 29.95 ft); no storage for periods in 1944-54, 1957, 1964, 1965.

Remarks.--Lake is formed by McMillan Dam, completed and storage began in 1893. The structure was damaged by floods of October 1893 and Oct. 2, 1904. Capacity, 27,300 acre-ft (from revised table based on survey of August 1964 made by Carlsbad Irrigation District) between gage heights 0.0 ft (sill of outlet gate) and 24.9 (crest of spillway 2). Flashboards may be used to increase this capacity. Maximum capacity without spill, 33,620 acre-ft (revised) at gage height 26.1 ft (crest of spillway 1). No dead storage. No storage allocated to flood control. Figures given herein represent usable contents and are computed from daily readings at 0800. Gage heights may be affected by variable drawdown due to flow through gates. Water is used for irrigation by Carlsbad Irrigation District.

Cooperation.--Gage-height record and capacity table furnished by Carlsbad Irrigation District.

Month-end gage heights and contents, water year October 1964 to September 1965

| Date | Gage height (feet) | Contents (acre-feet) | Change in contents (acre-feet) |
|---|---|---|---|
| Sept. 30 | - | 0 | - |
| Oct. 31 | - | 0 | 0 |
| Nov. 30 | 15.15 | 210 | + 210 |
| Dec. 31 | 15.85 | 743 | + 533 |
| Calendar year 1964 | - | - | (†) - 15,780 |
| Jan. 31 | 16.35 | 1,370 | + 627 |
| Feb. 28 | 16.50 | 1,590 | + 220 |
| Mar. 31 | 21.40 | 12,980 | + 11,390 |
| Apr. 30 | 17.90 | 4,120 | - 8,860 |
| May 31 | 17.75 | 3,810 | - 310 |
| June 30 | 18.55 | 5,520 | + 1,710 |
| July 31 | 21.05 | 11,910 | + 6,390 |
| Aug. 31 | 20.45 | 10,180 | - 1,730 |
| Sept. 30 | 18.30 | 4,970 | - 5,210 |
| Water year 1964-65 | - | - | + 4,970 |

† This figure results from use of capacity table No. 2 for Dec. 31, 1963 and capacity table No. 3 for Dec. 31, 1964. Capacity table No. 3 applied to gage height for Dec. 31, 1963 gives 12,210 acre-ft, and resultant change for calendar year 1964 would be about 11,500 acre-ft.

8-4010. Pecos River below McMillan Dam, N. Mex.

Location.--Lat 32°35'40", long 104°21'00", in NE¼ sec.11, T.20 S., R.26 E., on left bank 700 ft downstream from gates in McMillan Dam and 3 miles southeast of Lakewood.

Drainage area.--16,990 sq mi, approximately (contributing area).

Records available.--January 1906 to March 1908, January 1909 to December 1911, August 1939 to December 1940, December 1946 to September 1965 (January 1906 and January 1910 to December 1911, gage heights and discharge measurements only). Published as "near Lakewood" 1906-11, and as "below McMillan Dam, near Lakewood" 1939-40.

Gage.--Water-stage recorder and rock control. Datum of gage is 3,238.21 ft above mean sea level, datum of 1929. January 1906 to December 1911 staff gage at three different sites within half a mile of present gage at different datums. August 1939 to December 1940 water-stage recorder at site 30 ft downstream at datum 0.10 ft higher; December 1946 to Mar. 11, 1957, at present site at datum 1.09 ft higher. Supplemental water-stage recorders on McMillan Dam spillways, Nos. 1 and 2, since July 9, 1960, and Apr. 6, 1960, respectively.

Average discharge.--20 years (1906-7, 1939-40, 1947-65), 101 cfs (73,120 acre-ft per year).

Extremes.--Maximum discharge during year, 384 cfs April 5-7 (gage height, 3.64 ft); no flow for many days.
1939-40, 1947-65: Maximum discharge, 16,100 cfs Oct. 11, 1954, includes flow of two spillways; no flow for many periods.
Flood of Oct. 2, 1904, may have reached 60,000 cfs; figure of 82,000 cfs previously published has been found to be "inflow to McMillan Reservoir," and is considered too high. This station may have had a higher discharge in August 1893 when part of McMillan Dam was blasted to prevent total destruction of the dam (that flood was described as "highest in 50 years" and it also destroyed Avalon Dam).

Remarks.--Records good. Flow regulated by Alamogordo Reservoir and Lake McMillan (see 8-3840, 8-4005). No flow over McMillan Dam spillways during year. Diversions and ground-water withdrawals for irrigation of about 171,000 acres (1959 determination) above station.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

| | | | | | |
|---|---|---|---|---|---|
| 1.4 | 0 | 2.0 | 24 | 3.0 | 190 |
| 1.5 | 1 | 2.3 | 56 | 3.5 | 340 |
| 1.6 | 2 | 2.6 | 104 | 4.0 | 540 |
| 1.8 | 11 | | | | |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | (*) | | * 48 | 52 | 0 | * 380 | 0 | 256 |
| 2 | | (*) | | | | (*) | 203 | 52 | ** 0 | 296 | 0 | 173 |
| 3 | | | | | | | 277 | 52 | 0 | 154 | ** 0 | 125 |
| 4 | | | | | | | 277 | 52 | 0 | 104 | 0 | 48 |
| 5 | (*) | | | | | | 351 | * 52 | 0 | 105 | 22 | 48 |
| 6 | | | | | | | 384 | 84 | 0 | 219 | 173 | 48 |
| 7 | | | | | | | 323 | 100 | 0 | 256 | 166 | 126 |
| 8 | | | | | | | 287 | 100 | 0 | 180 | 150 | 236 |
| 9 | | | | | | | 284 | 100 | 0 | 143 | 150 | 230 |
| 10 | | | | | | | 284 | 72 | 0 | 98 | 175 | 230 |
| 11 | | | | | | | 313 | 53 | 0 | 53 | 268 | 163 |
| 12 | | | | | | | * 351 | 53 | 0 | 195 | 287 | 96 |
| 13 | | | | | | | 280 | 33 | 0 | 253 | 340 | 96 |
| 14 | | | | | | | 193 | 1 | 0 | 250 | 188 | * 96 |
| 15 | | | | | | | 100 | 1 | 0 | * 211 | 60 | 98 |
| 16 | | | | | | (*) | 100 | 1 | 0 | 190 | 1 | 154 |
| 17 | | | | | | | 100 | 1 | 0 | 190 | 1 | 106 |
| 18 | | | | | | | 100 | 1 | 0 | 190 | 20 | 0 |
| 19 | | | | | | | 100 | 1 | 0 | 190 | 185 | 0 |
| 20 | | | | | | | 127 | 1 | 0 | 190 | 309 | 0 |
| 21 | | | | | | | 200 | 1 | 0 | 190 | 213 | 0 |
| 22 | | | | | | | 200 | 1 | 0 | 253 | 81 | 0 |
| 23 | | | | | | | 256 | 1 | 0 | 287 | 50 | 0 |
| 24 | | | | | | | 208 | 0 | 0 | 227 | 61 | 0 |
| 25 | | | | | | | 127 | 0 | 0 | 170 | 104 | 0 |
| 26 | | | | | | | * 69 | 0 | 39 | 72 | 121 | 61 |
| 27 | | | | | | | 53 | 0 | 166 | 50 | 193 | 168 |
| 28 | | | | | | | 52 | 0 | 265 | 52 | 193 | 73 |
| 29 | | | | | — | | 52 | 0 | 340 | 50 | 125 | 0 |
| 30 | | (*) | | | | | 52 | 0 | 376 | 50 | 122 | 0 |
| 31 | | | | | | | | 0 | | 17 | * 247 | |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 5,751 | 865 | 1,186 | 5,265 | 4,005 | 2,631 |
| Mean | 0 | 0 | 0 | 0 | 0 | 0 | 192 | 27.9 | 39.5 | 170 | 129 | 87.7 |
| Ac-ft | 0 | 0 | 0 | 0 | 0 | 0 | 11,410 | 1,720 | 2,350 | 10,440 | 7,940 | 5,220 |

Calendar year 1964: Max 467 Min 0 Mean 42.0 Ac-ft 30,510
Water year 1964-65: Max 384 Min 0 Mean 54.0 Ac-ft 39,080

* Discharge measurement or observation of no flow made on this day.
** Field estimate made on this day.

8-4012. South Seven Rivers near Lakewood, N. Mex.

Location.--Lat 32°35'20", long 104°25'20", in SE¼SE¼NW¼ sec.7, T.20 S., R.26 E., on downstream side of bridge on U. S. Highway 285, 0.4 mile south of Seven Rivers, 3 miles upstream from mouth, and 4 miles southwest of Lakewood.

Drainage area.--220 sq mi, approximately.

Records available.--October 1963 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 3,276 ft (from topographic map). Prior to July 8, 1965, at site 400 ft upstream at datum 0.57 ft higher.

Extremes.--Maximum discharge during year, 18,000 cfs May 30 (gage height, 21.8 ft, from floodmarks), by slope-area measurement of peak discharge; no flow for most of year.

1963-65: Maximum discharge, that of May 30, 1965; no flow most of time.

Maximum discharge since at least 1941, about 20,000 cfs (gage height, 22.8 ft, from old debris on left bank, former site and datum), from rating curve extended above 1,000 cfs on basis of slope-area measurement of 18,000 cfs and logarithmic plotting. Probable date of flood, Oct. 7, 1954.

Remarks.--Records poor. No known diversions above gage.

Discharge, in cubic feet per second, water year October 1964 to September 1965

May 30..... * a 2,500
31..... a 100

| Month | Cfs-days | Maximum | Minimun | Mean | Runoff in acre-feet |
|---|---|---|---|---|---|
| May 1965..... | 2,600 | 2,500 | 0 | 83.9 | 5,160 |
| Calendar year 1964..... | - | 150 | 0 | .7 | 531 |
| Water year 1964-65..... | - | 2,500 | 0 | 7.1 | 5,160 |

Peak discharge (base, 450 cfs).--May 30 (about 1600) 18,000 cfs (21.8 ft).

* Discharge measurement made on this day.
a No gage-height record.
Note.-Flow occurred only on days listed above. Observations of no flow usually made once a month

8-4019. Rocky Arroyo at highway bridge, near Carlsbad, N. Mex.

Location.--Lat 32°30'20", long 104°22'28", in SE¼SE¼ sec.3, T.21 S., R.25 E., at downstream end of bridge pier nearest left bank on U. S. Highway 285, 2 miles upstream from mouth, and 10 miles northwest of Carlsbad.

Drainage area.--285 sq mi, approximately.

Records available.--October 1963 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 3,248 ft (from topographic map).

Extremes.--1963-64: Maximum discharge during year, 9,760 cfs July 11 (gage height, 13.40 ft), from rating curve extended above 130 cfs on basis of slope-area measurement at gage height 11.7 ft and logarithmic plotting; no flow for most of time.
1964-65: Maximum discharge during year, 7,450 cfs May 30 (gage height, 11.70 ft), on basis of slope-area measurement of peak flow.
Since about 1941 the highest peak probably occurred Oct. 7, 1954; discharge not determined, but gage height was 22 ft as determined from debris on bridge piers.

Remarks.--Records good. Diversions for irrigation of 220 acres (from Agricultural Stabalization and Conservation Service) above station.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

| | | | | | |
|---|---|---|---|---|---|
| 1.6 | 0 | 2.4 | 15 | 4.0 | 360 |
| 1.8 | 1 | 2.7 | 38 | 5.0 | 910 |
| 2.0 | 3 | 3.0 | 75 | 5.5 | 1,240 |
| 2.2 | 7 | 3.4 | 155 | | |

Discharge, in cubic feet per second, water years October 1963 to September 1964, October 1964 to September 1965

| | | | |
|---|---|---|---|
| July 11, 1964 | *587 | May 30, 1965 | *1,050 |
| 12 | *12 | 31 | 99 |
| April 26, 1965 | *45 | Sept. 17 | 173 |

| Month | Cfs-days | Maximum | Minimum | Mean | Runoff in acre-feet |
|---|---|---|---|---|---|
| July 1964 | 599 | 587 | 0 | 19.3 | 1,190 |
| Water year 1963-64 | - | 587 | 0 | 1.6 | 1,190 |
| April 1965 | 45 | 45 | 0 | 1.5 | 89 |
| May | 1,149 | 1,050 | 0 | 37.1 | 2,280 |
| September | 173 | 173 | 0 | 5.8 | 343 |
| Calendar year 1964 | - | 587 | 0 | 1.6 | 1,190 |
| Water year 1964-65 | - | 1,050 | 0 | 3.7 | 2,710 |

Peak discharge (base, 1,000 cfs)

| Date | Time | Gage Height | Discharge |
|---|---|---|---|
| 7-11-64 | 1930 | 13.40 | 9,760 |
| 5-30-65 | 1730 | 11.70 | 7,450 |
| 9-17-65 | 1630 | 8.50 | 3,800 |

* Discharge measurement or observation of no flow made on this day.
Note.-Flow occurred only on days listed above. Observations of no flow made at least once a month.

## 8-4020. Pecos River at damsite 3, near Carlsbad, N. Mex.

Location.--Lat 32°30'40", long 104°20'00", in lot 14, sec.6, T.21 S., R.26 E., on right bank at damsite 3 of Carlsbad project of Bureau of Reclamation, about 1 mile upstream from flow line of Lake Avalon, 1.3 miles downstream from Rocky Arroyo, and 8 miles northwest of Carlsbad.

Drainage area.--17,980 sq mi, approximately (contributing area).

Records available.--August 1939 to December 1940, August 1944 to September 1965.

Gage.--Water-stage recorder. Datum of gage is 3,172.31 ft above mean sea level (Bureau of Reclamation datum). Prior to Aug. 10, 1944, at site 1,000 ft downstream at same datum.

Average discharge.--22 years, 172 cfs (124,500 acre-ft per year).

Extremes.--Maximum discharge during year, 21,700 cfs May 30 (gage height, 14.33 ft); minimum, 8.5 cfs Oct. 19.

1939-40, 1944-65: Maximum discharge, 53,000 cfs Oct. 7, 1954 (gage height, 18.53 ft), from rating curve extended above 15,000 cfs on basis of slope-area measurement of peak flow; minimum, 4.3 cfs Aug. 5, 1954.

Peaks which probably exceeded 40,000 cfs occurred in August 1893, Oct. 2, 1904, July 25, 1905, Apr. 17, 1915, Aug. 7, 1916, and May 30, 1937, based primarily on records for station at Carlsbad. Floods of 1893 and 1904 originated above McMillan Dam and contributed to the two failures of Avalon Dam. The flood of Oct. 2, 1904, probably did not exceed 60,000 cfs; the estimate of 82,000 cfs erroneously published as flow over McMillan Dam was actually inflow to Lake McMillan, and is thought to be high.

Remarks.--Records good. Flow regulated by Alamogordo Reservoir and Lake McMillan (see 8-3840, 8-4005). Diversions and ground-water withdrawals for irrigation of about 173,000 acres (1959 determination) above station. Discharge represents inflow to Lake Avalon. Records of chemical analyses and water temperatures for the water year 1965 are published in Part 2 of this report.

Rating tables (gage height, in feet, and discharge, in cubic feet per second)

| Oct. 1 to Jan. 31 | | Feb. 1 to Sept. 30 | | | |
|---|---|---|---|---|---|
| -0.2 | 8.5 | -0.1 | 14 | 1.5 | 352 |
| -.1 | 13 | 0.0 | 20 | 2.0 | 555 |
| 0.0 | 18 | .2 | 38 | 4.0 | 1,680 |
| .1 | 26 | .4 | 62 | 6.0 | 3,360 |
| | | .6 | 94 | 6.5 | 3,900 |
| | | 1.0 | 189 | | |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 11 | 10 | 14 | 19 | *18 | 21 | *17 | 72 | *27 | *356 | 32 | 302 |
| 2 | 11 | *10 | 14 | 19 | 19 | *20 | 123 | 72 | 22 | 320 | 31 | 224 |
| 3 | 11 | 11 | 15 | 19 | 19 | 20 | 240 | 72 | *22 | 189 | 31 | 176 |
| 4 | 11 | 11 | 15 | *20 | 19 | 20 | 249 | 74 | 20 | 112 | *30 | 92 |
| 5 | 11 | 11 | 15 | 18 | 19 | 20 | 292 | *70 | 22 | 112 | 30 | 84 |
| 6 | *11 | 11 | 16 | 18 | 19 | 20 | 338 | 82 | 22 | 181 | 138 | 84 |
| 7 | 10 | 11 | 16 | 18 | 19 | 19 | 309 | 108 | 22 | 249 | 198 | 114 |
| 8 | 10 | 11 | 16 | 18 | 20 | 20 | 269 | 106 | 22 | 212 | 170 | 252 |
| 9 | 10 | 11 | *16 | 18 | 19 | 19 | 266 | 110 | 23 | 152 | 170 | 256 |
| 10 | 10 | 11 | 16 | 18 | 19 | 19 | 262 | 100 | 24 | 142 | 170 | 252 |
| 11 | 10 | 11 | 16 | 19 | 19 | 19 | 266 | 75 | 23 | 70 | 272 | 234 |
| 12 | *10 | 11 | 16 | 19 | 19 | 19 | 330 | 74 | 23 | 143 | 279 | 126 |
| 13 | 10 | 11 | 17 | 19 | 19 | 19 | 259 | 72 | 22 | 246 | 356 | 123 |
| 14 | 10 | 11 | 17 | 19 | 19 | 18 | 227 | 39 | 22 | *243 | 234 | 123 |
| 15 | 9.8 | 12 | *17 | 19 | 20 | 18 | 123 | 29 | 22 | 224 | 152 | 121 |
| 16 | 9.4 | 13 | 17 | 19 | 20 | 17 | *116 | 29 | 22 | 198 | 39 | *154 |
| 17 | 9.4 | 13 | 17 | 19 | 20 | 15 | 114 | 28 | 23 | 195 | 37 | 386 |
| 18 | 9.4 | 13 | 18 | 20 | 20 | 17 | 114 | 28 | 23 | 195 | 37 | 75 |
| 19 | *9.0 | 13 | 18 | 20 | 20 | 17 | 114 | *28 | 23 | 195 | 145 | 34 |
| 20 | 9.0 | 13 | 18 | 20 | 20 | 17 | 112 | 27 | 22 | 192 | 320 | 33 |
| 21 | 9.0 | 13 | *18 | 20 | 20 | 17 | 198 | 27 | 22 | 189 | 269 | 31 |
| 22 | 9.0 | 13 | 18 | 20 | 20 | 16 | 209 | 26 | 22 | 224 | 152 | 31 |
| 23 | 9.0 | 13 | 17 | 19 | 21 | 15 | 243 | 40 | 21 | 269 | 85 | 31 |
| 24 | 9.4 | 13 | 17 | 19 | 21 | 15 | 240 | 23 | 20 | 240 | 84 | 32 |
| 25 | 9.4 | 13 | 18 | 19 | 21 | 16 | 162 | 23 | 19 | 189 | 123 | 31 |
| 26 | 9.4 | 13 | 18 | 19 | 21 | 16 | 141 | 22 | 19 | 108 | *130 | 35 |
| 27 | 10 | 14 | 18 | 20 | 21 | 16 | 75 | *22 | 111 | 68 | 204 | 154 |
| 28 | 10 | 14 | 18 | 19 | 20 | 15 | 72 | 22 | 246 | 68 | 212 | 155 |
| 29 | 10 | 14 | *18 | 18 | - | 16 | 70 | 22 | 299 | 69 | 176 | 37 |
| 30 | 10 | *14 | 19 | 18 | ------ | 16 | 72 | 3,450 | 352 | 66 | 130 | 29 |
| 31 | 10 | ------ | 19 | 18 | ------ | 16 | ------ | *776 | ------ | 60 | *249 | ------ |
| Total | 307.2 | 363 | 522 | 587 | 551 | 548 | 5,622 | 5,748 | 1,582 | 5,476 | 4,685 | 3,811 |
| Mean | 9.91 | 12.1 | 16.8 | 18.9 | 19.7 | 17.7 | 187 | 185 | 52.7 | 177 | 151 | 127 |
| Ac-ft | 609 | 720 | 1,040 | 1,160 | 1,090 | 1,090 | 11,150 | 11,400 | 3,140 | 10,860 | 9,290 | 7,560 |

Calendar year 1964: Max 1,630 Min 7.1 Mean 68.2 Ac-ft 49,520
Water year 1964-65: Max 3,450 Min 9.0 Mean 81.6 Ac-ft 59,110

Peak discharge (base, 1,700 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 5-30 | 2040 | 14.33 | 21,700 | 9-17 | 1800 | 4.55 | 2,070 |

* Discharge measurement made on this day.

8-4035. Carlsbad main canal at head, near Carlsbad, N. Mex.

Location.--Lat 32°29'28", long 104°15'08", in N½SW¼SW¼ sec.12, T.21 S., R.26 E., on right bank 220 ft downstream from headgates in Avalon Dam and 5.0 miles north of Carlsbad.

Records available.--July 1939 to December 1940 (published as Carlsbad project main canal near Carlsbad), April 1951 to September 1965.

Gage.--Water-stage recorder and concrete control. Datum of gage is 3,156.50 ft above mean sea level (Bureau of Reclamation datum). July 1939 to December 1940 at site 20 ft upstream at datum 0.9 ft higher.

Extremes.--1939-40, 1951-65: Maximum daily discharge, 490 cfs July 13, 1940; no flow at times.

Remarks.--Records good. Discharge measurements made at least twice a month during irrigation season. Carlsbad main canal diverts water from Lake Avalon for irrigation of about 25,000 acres of Carlsbad Irrigation District. About 1,600 acres is irrigated on left bank of the Pecos River, most of it above gaging station on Pecos River at Carlsbad. The remaining acreage is on right bank, most of it downstream from Pecos River at Carlsbad gage.

Monthly discharge, in cubic feet per second, water year October 1964 to September 1965

| Month | Maximum | Minimum | Mean | Runoff in acre-feet |
|---|---|---|---|---|
| October | 0 | 0 | 0 | 0 |
| November | 0 | 0 | 0 | 0 |
| December | 0 | 0 | 0 | 0 |
| Calendar year 1964 | 423 | 0 | 51.8 | 37,590 |
| January | 0 | 0 | 0 | 0 |
| February | 0 | 0 | 0 | 0 |
| March | 92 | 0 | 3.0 | 182 |
| April | 349 | 56 | 184 | 10,930 |
| May | 111 | 0 | 32.8 | 2,020 |
| June | 266 | 0 | 84.4 | 5,020 |
| July | 292 | 13 | 167 | 10,260 |
| August | 256 | 13 | 144 | 8,830 |
| September | 215 | 42 | 125 | 7,460 |
| Water year 1964-65 | 349 | 0 | 61.8 | 44,700 |

8-4038. Lake Avalon near Carlsbad, N. Mex.

Location.--Lat 32°29'25", long 104°15'00", in SW¼ sec.12, T.21 S., R.26 E., on headwall at outlet gate of dam on Pecos River, 5 miles north of Carlsbad.

Drainage area.--18,070 sq mi (contributing area).

Records available.--January 1939 to September 1965. Gage heights since January 1919 published in reports of Pecos River Commission.

Gage.--Staff gage. Datum of gage is 3,157.0 ft above mean sea level, Bureau of Reclamation datum.

Extremes.--Maximum contents at 0800 during year, 4,970 acre-ft May 31, June 1, 2 (gage height, 20.40 ft); minimum, 220 acre-ft Sept. 30.
1939-65: Maximum contents, 11,000 acre-ft May 22, 1941 (gage height, 25.0 ft); no storage at times when natural flow was passing through reservoir.

Remarks.--Lake is formed by Avalon Dam. The original Eddy (Avalon) dam was completed and storage began in 1893. The dam was destroyed by flood of October 1893 (date of reconstruction not available), was destroyed again by flood of Oct. 2, 1904; present dam rebuilt in 1905-6. Capacity, 4,970 acre-ft between gage heights 0.0 (sill of outlet gates) and 20.4 ft (crest of spillway 2). No dead storage. No storage allocated to flood control. Figures given herein represent usable contents and are computed from daily readings at 0800. Water is used by Carlsbad Irrigation District.

Cooperation.--Capacity table based on data furnished by Carlsbad Irrigation District.

Month-end gage heights and contents, water year October 1964 to September 1965

| Date | Gage height (feet) | Contents (acre-feet) | Change in contents (acre-feet) |
|---|---|---|---|
| Sept. 30 | 14.40 | 587 | - |
| Oct. 31 | 14.25 | 517 | - 70 |
| Nov. 30 | 14.55 | 661 | + 144 |
| Dec. 31 | 15.20 | 1,010 | + 349 |
| Calendar year 1964 | - | - | - 2,780 |
| Jan. 31 | 15.60 | 1,250 | + 240 |
| Feb. 28 | 15.85 | 1,410 | + 160 |
| Mar. 31 | 15.75 | 1,350 | - 60 |
| Apr. 30 | 15.25 | 1,040 | - 310 |
| May 31 | 20.40 | 4,970 | + 3,930 |
| June 30 | 14.85 | 818 | - 4,150 |
| July 31 | 15.35 | 1,100 | + 282 |
| Aug. 31 | 14.80 | 791 | - 309 |
| Sept. 30 | 13.50 | 220 | - 571 |
| Water year 1964-65 | - | - | - 367 |

8-4040. Pecos River below Avalon Dam, N. Mex.

Location.--Lat 32°28'53", long 104°15'43", in SW¼SW¼NE¼ sec.14, T.21 S., R.26 E., on right bank 5,200 ft below Avalon Dam and 4.5 miles northwest of Carlsbad.

Drainage area.--18,080 sq mi, approximately (contributing area).

Records available.--January 1906 to March 1907 (published as "at Avalon"), June 1951 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 3,130 ft (from topographic map). January 1906 to March 1907 staff gage at site half a mile upstream at different datum.

Average discharge.--14 years (1951-65), 33.1 cfs (23,960 acre-ft per year).

Extremes.--Maximum discharge during year, 10,600 cfs May 31 (gage height 16.05 ft); no flow except for May 31, June 1.
1951-65: Maximum discharge, 41,000 cfs Oct. 7, 1954 (gage height, 23.3 ft, from floodmarks); no flow for many days.
Flood of Oct. 2, 1904, caused, in part, by failure of Avalon Dam, was described at that time as the greatest flood known. Flood in August 1893 is probably second highest, and was described as "greatest in 50 years"; it damaged McMillan Dam and washed out the original Avalon Dam.

Remarks.--Records poor. Flow regulated by Alamogordo Reservoir, Lake McMillan and Lake Avalon (see 8-3840, 8-4005, 8-4038). Diversions and ground-water withdrawals above station for irrigation of about 198,000 acres (1959 determination). Station bypassed by Carlsbad main canal (see 8-4035).

Discharge, in cubic feet per second, water year October 1964 to September 1965

| | |
|---|---|
| May 31 | 1,940 |
| June 1 | 8 |

| Month | Cfs-days | Maximum | Minimum | Mean | Runoff in acre-feet |
|---|---|---|---|---|---|
| May 1965 | 1,940 | 1,940 | 0 | 62.6 | 3,850 |
| June | 8 | 8 | 0 | 0.3 | 16 |
| Calendar year 1964 | - | 0 | 0 | 0 | 0 |
| Water year 1964-65 | - | 1,940 | 0 | 5.3 | 3,870 |

Note.--Flow occurred only on days listed above. Observations of no flow generally made once a month.

## 8-4050. Pecos River at Carlsbad, N. Mex.

Location.--Lat 32°25'05", long 104°13'25", in NW¼SE¼ sec.6, T.22 S., R.27 E., in downstream end of pier near center of Greene Street Bridge in Carlsbad, half a mile upstream from Dark Canyon.

Drainage area.--18,100 sq mi, approximately (contributing area).

Records available.--May 1903 to March 1908 (January 1907 to March 1908, gage heights and discharge measurements only), May 1914 to September 1915, and April 1920 to September 1965 in reports of Geological Survey. Monthly discharges only for some periods, published in WSP 1312. Records (except maximum discharges) for October 1915 to March 1920, published in WSP 438, 458, 478, and 508, have been found to be unreliable and should not be used.

Gage.--Water-stage recorder. Datum of gage is 3,080.28 ft above mean sea level, datum of 1929. Prior to June 1, 1920, staff gages in immediate vicinity of present site, and at different datums prior to Jan. 6, 1938.

Average discharge.--19 years (1903-4, 1905-6, 1914-15, 1920-36), 255 cfs (184,600 acre-feet per year), prior to completion of Alamogordo Dam; 29 years (1936-65), 184 cfs (133,200 acre-ft per year).

**Extremes.--Maximum discharge during year, 9,900 cfs May 31 (gage height, 10.47 ft); maximum gage height, 11.17 ft May 30, backwater from Dark Canyon; minimum discharge, 0.5 cfs Oct. 12, May 26.**

**1903-6, 1914-15, 1920-65: Maximum discharge probably exceeded 90,000 cfs Oct. 2, 1904 (gage height, 23.44 ft, from floodmarks); minimum, 0.1 cfs June 19, 1954.**

**Flood of Oct. 2, 1904, caused in part by failure of Avalon Dam, was described at that time as "greatest flood known at Carlsbad." Flood in August 1893 is probably second highest, and was described as "greatest in 50 years"; it damaged McMillan Dam and washed out the original Avalon Dam.**

Remarks.--Records good. Discharge measurements made two or more times a month. Flow regulated by Alamogordo Reservoir, Lake McMillan, and Lake Avalon (see 8-3840, 8-4005, 8-4038), and at low stages by powerplant above station. Gage is bypassed on left bank by Carlsbad main canal east which irrigates several hundred acres adjacent to and below gage site, and on right bank by Carlsbad main canal south which with supplemental groundwater withdrawals irrigates about 23,000 acres below. This bypass flow is not presently gaged. Diversions and ground-water withdrawals above station for irrigation of about 198,000 acres (1959 determination). Records of chemical analyses and water temperatures for the water year 1965 are published in Part 2 of this report.

Rating tables (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Jan. 27 to Mar. 1)

| Oct. 1 to May 18 | | | May 19 to Sept. 30 | | |
|---|---|---|---|---|---|
| 0.26 | 0.7 | 0.17 | 0.6 | 1.5 | 111 |
| .3 | 1.2 | .2 | 1.0 | 2.0 | 196 |
| .4 | 3.5 | .3 | 2.8 | 2.5 | 306 |
| .5 | 7.2 | .4 | 6.1 | 3.0 | 456 |
| .6 | 12 | .5 | 11 | 4.0 | 900 |
| .9 | 32 | .7 | 24 | 5.3 | 1,760 |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.0 | 0.8 | 1.2 | 9.6 | 7.2 | 10 | 1.6 | 6.1 | 18 | 2.8 | 2.1 | 1.1 |
| 2 | .8 | .8 | 16 | 9.6 | 7.2 | 6.8 | 15 | 7.2 | 7.0 | 2.8 | 2.1 | 1.1 |
| 3 | .8 | 1.0 | 2.0 | 9.1 | 7.7 | 8.2 | 1.2 | 7.2 | 5.3 | 2.8 | 1.9 | 1.1 |
| 4 | .8 | 1.4 | 1.0 | 10 | 7.2 | 8.6 | .7 | 9.1 | 7.0 | 2.8 | 2.1 | 1.1 |
| 5 | .7 | 1.0 | 1.4 | 15 | 8.2 | 8.6 | 16 | 9.1 | 6.1 | 3.9 | 1.8 | 1.0 |
| 6 | 1.9 | 1.0 | 3.2 | 8.2 | 9.1 | 8.6 | 19 | 6.1 | 6.1 | 4.5 | 1.6 | 1.1 |
| 7 | .8 | 1.0 | 21 | 15 | 8.6 | 7.7 | 2.9 | 5.7 | 6.1 | 4.9 | .8 | 1.1 |
| 8 | .8 | 1.1 | 24 | 11 | 11 | 9.1 | .8 | 5.4 | 6.1 | 5.3 | .8 | .8 |
| 9 | .7 | 1.2 | 1.4 | 2.7 | 11 | 9.6 | .8 | 5.0 | 6.6 | 4.9 | .7 | .7 |
| 10 | .7 | 15 | 1.0 | 6.8 | 10 | 9.1 | .8 | 6.8 | 8.0 | 3.6 | .7 | .7 |
| 11 | .7 | 1.4 | .8 | 26 | 9.6 | 9.6 | .8 | 5.0 | 8.9 | 3.6 | .7 | .8 |
| 12 | .7 | 15 | 2.8 | 20 | 9.1 | 9.6 | 1.1 | 9.1 | 9.4 | 30 | .7 | 1.0 |
| 13 | .7 | 14 | 3.9 | 1.2 | 9.1 | 8.6 | 14 | 11 | 9.9 | 93 | .7 | 1.0 |
| 14 | .7 | 1.4 | 4.2 | 1.0 | 10 | 8.6 | 1.2 | 9.1 | 9.4 | 49 | .7 | .8 |
| 15 | .8 | 1.2 | 5.7 | 2.9 | 11 | 8.6 | .8 | 5.7 | 8.9 | 1.9 | 2.4 | .8 |
| 16 | .8 | 14 | 7.2 | 7.2 | 7.7 | 9.6 | 1.2 | 6.5 | 8.0 | 1.8 | 1.2 | .7 |
| 17 | .8 | 11 | 6.8 | 8.6 | 9.1 | 7.7 | 2.0 | 24 | 7.5 | 1.6 | 1.0 | 1.9 |
| 18 | .7 | 9.6 | 6.1 | 9.6 | 9.1 | 6.5 | 2.7 | 19 | 7.0 | 1.6 | 1.0 | 4.2 |
| 19 | .7 | 8 | 7.7 | 11 | 9.6 | 6.5 | 2.9 | 96 | 7.0 | 1.4 | 1.1 | 1.9 |
| 20 | .7 | 1.2 | 7.7 | 11 | 10 | 7.2 | 2.4 | 59 | 7.0 | 1.6 | 28 | 2.4 |
| 21 | .7 | 15 | 7.7 | 22 | 9.6 | 7.7 | 2.4 | 19 | 6.6 | 1.6 | 94 | 2.8 |
| 22 | .7 | 1.8 | 8.6 | 2.9 | 9.1 | 8.2 | 3.9 | 1.0 | 6.6 | 1.6 | 44 | 3.3 |
| 23 | .7 | 18 | 9.1 | 8.6 | 11 | 8.6 | 4.6 | .8 | 5.7 | 1.4 | 27 | 3.6 |
| 24 | .8 | 20 | 9.1 | 10 | 5.0 | 7.7 | 5.4 | .7 | 6.6 | 1.4 | 24 | 9.3 |
| 25 | .8 | 19 | 9.1 | 12 | 6.1 | 7.7 | 3.5 | .7 | 8.0 | 1.2 | 24 | 5.3 |
| 26 | .8 | 2.0 | 8.2 | 6.8 | 6.8 | 7.2 | 9.2 | .6 | 8.0 | 1.4 | 20 | 5.7 |
| 27 | .8 | 14 | 9.1 | 6.1 | 7.7 | 8.2 | 6.8 | .6 | 7.5 | 57 | 24 | 6.1 |
| 28 | .8 | 2.2 | 9.6 | 7.7 | 8.6 | 8.2 | 5.4 | .7 | 6.1 | 64 | 13 | 7.0 |
| 29 | .7 | 1.4 | 9.1 | 8.6 | - | 7.7 | 4.2 | .7 | 4.9 | 19 | 1.2 | 7.5 |
| 30 | .7 | 1.2 | 8.6 | 6.5 | ---------- | 20 | 4.6 | 60 | 3.9 | 2.4 | 1.2 | 6.1 |
| 31 | .8 | ---------- | 9.1 | 8.6 | ---------- | 17 | ---------- | 1,750 | ---------- | 2.1 | 1.1 | ---------- |
| Total | 25.6 | 195.7 | 222.4 | 295.3 | 245.4 | 277.0 | 137.9 | 3,146.9 | 223.2 | 376.9 | 325.6 | 82.0 |
| Mean | 0.83 | 6.52 | 7.17 | 9.53 | 8.76 | 8.94 | 4.60 | 69.3 | 7.44 | 12.2 | 10.5 | 2.73 |
| Ac-ft | 51 | 388 | 441 | 586 | 487 | 549 | 274 | 4,260 | 443 | 748 | 646 | 163 |

Calendar year 1964: Max 103 Min 0.7 Mean 14.2 Ac-ft 10,330
Water year 1964-65: Max 1,750 Min 0.6 Mean 12.5 Ac-ft 9,040

## 8-4055. Black River above Malaga, N. Mex.

Location.--Lat 32°13'40", long 104°09'05", in SW¼ sec.12, T.24 S., R.27 E., on right bank 0.6 mile upstream from Black River diversion dam, 4.8 miles west of Malaga, and 7 miles upstream from mouth.

Drainage area.--343 sq mi.

Records available.--March to December 1940, December 1946 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 3,070 ft (from topographic map). March to December 1940 water-stage recorder and Cippoletti weir at site 0.3 mile downstream at different datum.

Average discharge.--18 years (1947-65), 12.6 cfs (9,120 acre-ft per year).

Extremes.--Maximum discharge during year, 18,400 cfs May 30 (gage height, 13.95 ft); minimum, 1.9 cfs Mar. 17.
1946-65: Maximum discharge, 20,500 cfs Sept. 23, 1955 (gage height, 14.70 ft), from rating curve extended above 1,400 cfs on basis of slope-area measurements at gage heights 8.41 and 12.60 ft; minimum, 1.6 cfs Mar. 13, 1964.
Maximum flood known since 1908 (from information by local resident), 33,000 cfs Sept. 20 or 21, 1941 (gage height, 19.0 ft, determined in 1947 from well-defined floodmarks), from rating curve extended above 1,400 cfs as explained above. Flood of Apr. 17, 1915, reached a stage of 11 ft at bridge on Loving - Malaga road.

Remarks.--Records excellent except those above 100 cfs, which are good. Diversions and ground-water withdrawals for irrigation of about 1,000 acres (1959 determination) above station.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

| | | | | | |
|---|---|---|---|---|---|
| 0.64 | 2.1 | 1.3 | 34 | 2.7 | 355 |
| .7 | 3.2 | 1.6 | 73 | 3.5 | 707 |
| .8 | 6.2 | 1.9 | 129 | 5.0 | 1,700 |
| .9 | 10 | 2.3 | 227 | 6.2 | 2,790 |
| 1.1 | 19 | | | | |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | *5.2 | 5.8 | *5.4 | 3.2 | 3.5 | 3.5 | 2.5 | 5.4 | *31 | *8.4 | 4.6 | 28 |
| 2 | 4.8 | 5.4 | 5.4 | 3.2 | *3.5 | 3.0 | 4.8 | 5.2 | 16 | 8.0 | 4.2 | 6.8 |
| 3 | 4.6 | 5.4 | 5.4 | 3.2 | 3.5 | 3.0 | 5.4 | 5.2 | 14 | 7.6 | 4.0 | 3.5 |
| 4 | 4.6 | 5.8 | 5.4 | 3.0 | 4.2 | *2.8 | 5.8 | 5.2 | 11 | 6.2 | *3.5 | 3.0 |
| 5 | 4.6 | 5.2 | 5.4 | 3.0 | 7.2 | 2.8 | 5.4 | 4.8 | 9.6 | 5.2 | 3.2 | 3.0 |
| 6 | 4.2 | 4.6 | 5.4 | 3.0 | 7.6 | 2.6 | 5.2 | 4.6 | 9.2 | 4.6 | 3.0 | 2.8 |
| 7 | 4.0 | 4.6 | 5.4 | 3.2 | 8.0 | 2.6 | 5.2 | 4.2 | 8.8 | 4.6 | 3.0 | 2.6 |
| 8 | 4.2 | 4.2 | 5.4 | 3.5 | 8.4 | 2.6 | 5.2 | 4.2 | 8.4 | 4.2 | 3.0 | 2.6 |
| 9 | 4.6 | 4.2 | 5.4 | 4.0 | 9.3 | 2.5 | 5.2 | 4.2 | 26 | 4.2 | 2.6 | 2.8 |
| 10 | 4.6 | 4.2 | 5.2 | 6.2 | 9.3 | 2.5 | 4.8 | 4.2 | 26 | 4.2 | 2.6 | 3.0 |
| 11 | 4.6 | 4.0 | 4.8 | 5.2 | 8.8 | 2.5 | 5.2 | 4.2 | 11 | 4.0 | 2.8 | 3.0 |
| 12 | 4.6 | 4.0 | 4.8 | 4.0 | 8.8 | 2.3 | 5.4 | 4.6 | 9.6 | 3.8 | 2.5 | 3.0 |
| 13 | 4.6 | 4.2 | 5.2 | 3.5 | 8.8 | 2.3 | 5.4 | 4.8 | 8.4 | 3.8 | 2.5 | 2.8 |
| 14 | 4.2 | 4.6 | 5.4 | 3.2 | 8.8 | 2.3 | 5.4 | 4.6 | 8.0 | 4.0 | 4.2 | 2.8 |
| 15 | 4.2 | 5.2 | 5.4 | 3.2 | 8.8 | 2.1 | 5.2 | 4.2 | 8.0 | 4.2 | 3.2 | 2.8 |
| 16 | 4.2 | 5.4 | 5.8 | 3.2 | 8.8 | 2.1 | 5.4 | 4.2 | 7.6 | 4.2 | 3.2 | 2.6 |
| 17 | 4.6 | 5.4 | 6.2 | 3.2 | 8.8 | 2.1 | 5.4 | 4.6 | 7.6 | 4.0 | 3.2 | 11 |
| 18 | 4.6 | 5.8 | 6.2 | 3.2 | 8.4 | 2.1 | 5.2 | 5.2 | 7.6 | 4.0 | 4.7 | 208 |
| 19 | 4.8 | 5.8 | 6.5 | 3.2 | 6.5 | 2.1 | 5.2 | 4.8 | 7.6 | 3.8 | 2.8 | 24 |
| 20 | 4.6 | 5.8 | 6.5 | 3.2 | 5.4 | 2.3 | 4.6 | 4.2 | 6.5 | 3.8 | 3.0 | 9.6 |
| 21 | 4.2 | 5.8 | 6.5 | 3.2 | 5.2 | 2.3 | 4.8 | 3.5 | 5.8 | 3.8 | 2.8 | 5.8 |
| 22 | 4.6 | 5.2 | 6.5 | 3.2 | 4.8 | 2.3 | 4.8 | 3.2 | 5.2 | 3.5 | 3.2 | 4.8 |
| 23 | 4.6 | 4.8 | 6.2 | 3.2 | 4.8 | 2.3 | 5.2 | 3.2 | 5.2 | 3.5 | 3.5 | 4.2 |
| 24 | 4.6 | 4.8 | 5.2 | 3.2 | 4.8 | 2.3 | 5.2 | 3.2 | 284 | 3.8 | 4.0 | *1,700 |
| 25 | 4.8 | 5.4 | 4.2 | 3.2 | 4.8 | 2.3 | 5.2 | 3.0 | *160 | 3.5 | 3.8 | *60 |
| 26 | 5.2 | 5.8 | 3.8 | 3.2 | 4.8 | 2.3 | 5.4 | 2.6 | 21 | 3.5 | 3.5 | 21 |
| 27 | 5.4 | 5.4 | 3.5 | 3.2 | 4.8 | 2.3 | 5.8 | 2.5 | 14 | 3.5 | 3.2 | 13 |
| 28 | 4.8 | 5.2 | 3.2 | 3.2 | 4.2 | 2.1 | 5.4 | 2.5 | 11 | 3.5 | *3.0 | 10 |
| 29 | 4.8 | 5.2 | 3.0 | 3.2 | - | 2.1 | 5.4 | 2.1 | 9.6 | 20 | 2.8 | 8.8 |
| 30 | * 5.4 | 5.4 | *3.8 | 3.2 | ------ | *2.3 | *5.4 | 2,710 | 8.8 | 5.8 | 2.6 | 8.0 |
| 31 | 5.8 | ------ | 3.5 | 3.5 | ------ | 2.3 | ------ | *466 | ------ | 5.2 | 3.0 | ------ |
| Total | 144.6 | 152.6 | 160.5 | 106.1 | 184.6 | 75.0 | 154.5 | 3,294.4 | 766.5 | 156.4 | 101.2 | 2,163.3 |
| Mean | 4.66 | 5.09 | 5.18 | 3.42 | 6.59 | 2.42 | 5.15 | 106 | 25.6 | 5.05 | 3.26 | 72.1 |
| Ac-ft | 287 | 303 | 318 | 210 | 366 | 149 | 306 | 6,530 | 1,520 | 310 | 201 | 4,290 |

Calendar year 1964: Max 338 Min 1.9 Mean 7.05 Ac-ft 5,120
Water year 1964-65: Max 2,710 Min 2.1 Mean 20.4 Ac-ft 14,790

Peak discharge (base, 450 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 5-30 | 2045 | 13.95 | 18,400 | 9-18 | 0220 | 3.34 | 627 |
| 6-24 | 2130 | 6.28 | 2,880 | 9-24 | 0650 | 8.91 | 6,610 |

* Discharge measurement made on this day.

8-4065. Pecos River near Malaga, N. Mex.

Location.--Lat 32°12'30", long 104°01'20", in N½ sec.19, T.24 S., R.29 E., on right bank 3 miles southeast of Malaga and 4 miles downstream from Black River.

Drainage area.--19,190 sq mi, approximately (contributing area).

Records available.--May 1920 to September 1965. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder (digital). Datum of gage is 2,895.64 ft above mean sea level, datum of 1929. Prior to Mar. 25, 1949, at datum 3 ft higher.

Average discharge.--16 years (1920-36), 274 cfs (198,400 acre-ft per year), prior to completion of Alamogordo Reservoir; 29 years (1936-65), 227 cfs (164,300 acre-ft per year).

Extremes.--Maximum discharge during year, 12,900 cfs May 31 (gage height, 18.55 ft); minimum, 5.0 cfs Mar. 9.
1920-65: Maximum discharge, 63,700 cfs Sept. 21, 1941, from rating curve extended above 22,500 cfs by logarithmic plotting; maximum gage height, 35.1 ft May 22, 1941, present datum, from floodmarks; minimum discharge, that of Mar. 9, 1965.
Flood in 1941 is believed to be the highest since 1904 when a flood of about the same magnitude occurred. Flood of Aug. 7, 1916, was revised to 70,000 cfs at Carlsbad, 27 miles upstream. Flood in September 1919 reached a stage of 29.4 ft, present datum (discharge, 40,400 cfs).

Remarks.--Records good. Flow regulated by storage in Alamogordo Reservoir, Lake McMillan, and Lake Avalon (see 8-3840, 8-4005, 8-4038), and by small diversion dams that divert for power or irrigation. Diversions and ground-water withdrawals above station for irrigation of about 202,000 acres (1959 determination). Harroun canal bypasses gage on left bank and irrigates approximately 1,000 acres adjacent to and below gage. This bypass is not gaged. Records of chemical analyses and water temperatures for the water year 1965 are published in Part 2 of this report.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used May 31, June 1, 25, Sept. 24)

| | | | |
|---|---|---|---|
| 1.5 | 5.8 | 4.0 | 317 |
| 1.7 | 14 | 5.0 | 589 |
| 2.0 | 32 | 7.0 | 1,390 |
| 2.5 | 80 | 9.0 | 2,560 |
| 3.0 | 141 | 11.0 | 4,080 |
| 3.5 | 217 | 14.2 | 7,180 |

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1964 TO SEPTEMBER 1965

| DAY | OCT. | NOV. | DEC. | JAN. | FEB. | MAR. | APR. | MAY | JUNE | JULY | AUG. | SEPT. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | *11 | 11 | 11 | 11 | 10 | 16 | 10 | 8.5 | *260 | 9.5 | 15 | 21 |
| 2 | 10 | 10 | 11 | 11 | 10 | 15 | *10 | 8.3 | 92 | 9.3 | 12 | 24 |
| 3 | 9.6 | 10 | 11 | 11 | 11 | 14 | 10 | 8.3 | 54 | 8.9 | 11 | *13 |
| 4 | 9.8 | 10 | 11 | 11 | 11 | *13 | 10 | 8.4 | 32 | 8.6 | 10 | 9.9 |
| 5 | 9.4 | 9.8 | 11 | 11 | *11 | 13 | 9.2 | 7.8 | 24 | 8.4 | 9.5 | 9.1 |
| 6 | 9.6 | 9.9 | 11 | 11 | 11 | 12 | 9.5 | 7.6 | 20 | 8.2 | *9.1 | 8.7 |
| 7 | 9.6 | 10 | *11 | 11 | 11 | 12 | 9.5 | 7.8 | 18 | 8.2 | 8.9 | 8.7 |
| 8 | 9.8 | 10 | 11 | 11 | 12 | 11 | 9.3 | 7.4 | 16 | 8.0 | 8.6 | 8.5 |
| 9 | 9.6 | 11 | 11 | 11 | 12 | 5.8 | 8.8 | 7.6 | 15 | 8.5 | 8.3 | 8.5 |
| 10 | 9.6 | 11 | 12 | 11 | 12 | 7.7 | 7.8 | 8.4 | 84 | 8.8 | 9.7 | 8.0 |
| 11 | 9.9 | 10 | 12 | 11 | 12 | 8.5 | 8.4 | 8.1 | 51 | 8.3 | 11 | 10 |
| 12 | 10 | 10 | 11 | 11 | 12 | 9.3 | 9.0 | 8.4 | 24 | 7.9 | 12 | 9.0 |
| 13 | 9.8 | 9.7 | 11 | 11 | 14 | 10 | 9.0 | 8.3 | 18 | 7.8 | 10 | 8.5 |
| 14 | 9.8 | 9.8 | 11 | 11 | 14 | 11 | 8.3 | 7.7 | 15 | 7.6 | 9.8 | 10 |
| 15 | 9.9 | 10 | 11 | 11 | 13 | 11 | 8.4 | 8.3 | 13 | 8.4 | 10 | *9.0 |
| 16 | 10 | 11 | 11 | 11 | 12 | 9.7 | 8.3 | 8.7 | 12 | 8.3 | 9.5 | 9.0 |
| 17 | 10 | 11 | 12 | 11 | 12 | 18 | 7.9 | 9.4 | 12 | 9.1 | 11 | 11 |
| 18 | 11 | 11 | 11 | 11 | 12 | 14 | 8.3 | 8.7 | 12 | 9.0 | 10 | 209 |
| 19 | 9.9 | 11 | 12 | 10 | 12 | 11 | 8.7 | 8.5 | 12 | *8.4 | 9.6 | 79 |
| 20 | 10 | 11 | 12 | 11 | 12 | 11 | 8.7 | 8.2 | 12 | 7.8 | 10 | 55 |
| 21 | 10 | 11 | 12 | 10 | 12 | 11 | 8.6 | 8.0 | 12 | 7.5 | 9.4 | 27 |
| 22 | 10 | 11 | 12 | 10 | 11 | 11 | 8.4 | 7.9 | 12 | 7.7 | 10 | 17 |
| 23 | 10 | 11 | 12 | 9.9 | 13 | 11 | 8.3 | 8.3 | 11 | 8.3 | 10 | 13 |
| 24 | 10 | 11 | 17 | 9.8 | 11 | 11 | 8.0 | 7.3 | 11 | 7.8 | 9.6 | *1,340 |
| 25 | 11 | 11 | 20 | 8.8 | 11 | 11 | 8.1 | 6.9 | *293 | 7.5 | 9.7 | *231 |
| 26 | 11 | 11 | 13 | 9.9 | 12 | 10 | 9.0 | 6.9 | 40 | 8.7 | 9.0 | 83 |
| 27 | 11 | 11 | 11 | 11 | 13 | 10 | 8.9 | 7.1 | 15 | 8.3 | 9.3 | 37 |
| 28 | 11 | 11 | 12 | 11 | 15 | 10 | 8.6 | *7.5 | 11 | 16 | 8.7 | 22 |
| 29 | 11 | 11 | 12 | 10 | ------ | 10 | *8.5 | 7.5 | 10 | 129 | 8.4 | 16 |
| 30 | *10 | 11 | 12 | 10 | ------ | 9.6 | 8.5 | 1,110 | 9.4 | 66 | 8.7 | 14 |
| 31 | 11 | ------ | *11 | 10 | ------ | 9.8 | ------ | *7,160 | ------ | 24 | 8.7 | ------ |
| TOTAL | 314.3 | 317.2 | 369 | 329.4 | 334 | 347.4 | 264.0 | 8,501.8 | 1,220.4 | 459.8 | 306.5 | 2,328.9 |
| MEAN | 10.1 | 10.6 | 11.9 | 10.6 | 11.9 | 11.2 | 8.80 | 274 | 40.7 | 14.8 | 9.89 | 77.6 |
| AC-FT | 623 | 629 | 732 | 653 | 662 | 689 | 524 | 16,860 | 2,420 | 912 | 608 | 4,620 |

CALENDAR YEAR 1964 MAX 266 MIN 6.9 MEAN 18.4 AC-FT 13,326
WATER YEAR 1964-65 MAX 7,160 MIN 5.8 MEAN 41.4 AC-FT 29,932

Peak discharge (base, 1,800 cfs).--May 31 (0630) 12,900 cfs (18.55 ft); Sept. 24 (1330) 4,670 cfs (11.68 ft).

* Discharge measurement made on this day.

## 8-4070. Pecos River at Pierce Canyon Crossing, near Malaga, N. Mex.

Location.--Lat 32°11'20", long 103°58'45", in NW¼NW¼SW¼ sec.27, T.24 S., R.29 E., on right bank a quarter of a mile upstream from Pierce Canyon Crossing and 6 miles southeast of Malaga.

Drainage area.--19,260 sq mi, approximately (contributing area).

Records available.--July 1938 to September 1941, August 1951 to September 1965.

Gage.--Water-stage recorder. Datum of gage is 2,889.18 ft above mean sea level, datum of 1929. July 1938 to September 1941 at datum 1.19 ft higher.

Average discharge.--17 years, 187 cfs (135,400 acre-ft per year).

Extremes.--Maximum discharge during year, 9,860 cfs May 31 (gage height, 15.06 ft), from rating curve extended above 330 cfs by logarithmic plotting and correlation of peaks with associated stations; minimum, 0.5 cfs May 30.
1938-41, 1951-65: Maximum gage height, 24.8 ft May 22, 1941 (datum then in use), from floodmarks (discharge not determined); minimum discharge, that of May 30, 1965.

Remarks.--Records good except those for discharges above 350 cfs and periods of backwater or no gage-height record, which are fair. Flow regulated by storage in Alamogordo Reservoir, Lake McMillan, and Lake Avalon (see 8-3840, 8-4005, 8-4038), and by several small diversion dams that divert for power or irrigation. Diversions and groundwater withdrawals above station for irrigation of about 202,000 acres (1959 determination). Records of chemical analyses and water temperatures for the water year 1965 are published in Part 2 of this report.

Rating tables (gage-height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Sept. 7-18)

| Oct. 1 to May 29 | | May 30 to Sept. 30 | | | |
|---|---|---|---|---|---|
| 0.63 | 3.7 | 0.6 | 2.1 | 2.0 | 240 |
| .7 | 6.8 | .7 | 4.8 | 3.0 | 590 |
| .8 | 12 | .8 | 9.6 | 5.0 | 1,540 |
| 1.0 | 28 | .9 | 16 | 9.0 | 4,380 |
| | | 1.1 | 37 | 13.0 | 7,800 |
| | | 1.4 | 86 | | |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | *13 | 13 | 13 | 15 | a11 | 15 | 12 | 6.3 | *663 | 6.1 | 22 | c20 |
| 2 | 12 | 13 | 13 | 14 | a11 | 15 | *12 | 5.3 | 128 | 6.5 | 16 | c17 |
| 3 | 12 | 12 | 14 | 13 | a12 | 15 | 12 | 4.8 | 73 | 6.1 | 14 | c15 |
| 4 | 11 | 11 | 13 | 13 | a12 | 14 | 11 | 6.8 | 49 | 4.8 | 12 | c14 |
| 5 | 11 | 11 | 14 | 13 | *12 | *13 | 7.9 | 4.8 | 37 | 4.8 | 12 | c13 |
| 6 | 11 | 11 | 14 | 13 | 13 | 12 | 6.3 | 3.7 | 32 | 4.8 | *11 | c13 |
| 7 | 11 | 11 | *14 | 14 | 13 | 12 | 6.8 | 3.7 | 27 | 4.4 | 9.6 | *12 |
| 8 | 11 | 11 | 14 | 14 | 13 | 12 | 6.3 | 3.7 | 24 | 3.7 | 9.6 | 12 |
| 9 | 11 | 11 | 14 | 11 | 14 | 11 | 7.4 | 5.3 | 23 | 4.8 | 7.5 | 12 |
| 10 | 11 | 11 | 15 | 11 | 13 | 7.9 | 7.4 | 4.0 | 59 | 5.6 | 4.8 | 12 |
| 11 | 11 | 11 | 15 | 11 | 12 | 9.1 | 6.3 | 3.4 | 78 | 4.8 | 5.2 | 12 |
| 12 | 11 | 11 | 16 | 9.1 | 12 | 10 | 5.8 | 3.7 | 41 | 4.4 | 6.5 | 13 |
| 13 | 12 | 10 | 15 | 7.9 | 12 | 11 | 5.8 | 4.8 | 29 | 4.1 | 6.5 | 12 |
| 14 | 12 | 10 | 15 | 7.4 | 14 | 12 | *5.8 | 6.8 | 23 | 3.7 | 6.5 | 11 |
| 15 | 12 | 10 | 15 | 5.3 | 14 | *13 | 4.8 | 7.9 | 19 | 3.7 | 8.5 | *12 |
| 16 | 12 | 12 | 15 | 5.8 | 13 | 14 | 4.4 | 9.6 | 16 | 4.4 | 10 | 10 |
| 17 | 12 | 11 | 15 | 9.6 | 12 | 12 | 5.8 | 10 | 16 | 4.1 | 12 | 9.6 |
| 18 | 12 | 11 | 14 | 7.9 | 12 | 20 | 4.8 | 11 | 14 | 4.4 | 11 | 220 |
| 19 | 12 | 12 | 14 | 5.8 | 13 | 14 | 8.5 | 10 | 10 | *4.1 | 8.0 | 121 |
| 20 | 12 | 11 | 14 | a5 | 13 | 12 | 9.1 | 10 | 8.5 | 3.1 | 7.0 | 62 |
| 21 | 12 | 11 | 14 | a9 | 12 | 11 | 6.3 | 11 | 8.5 | 2.8 | 6.1 | *34 |
| 22 | 12 | 11 | 13 | a13 | 12 | 12 | 8.5 | 9.1 | 8.5 | 2.8 | 6.1 | 19 |
| 23 | 12 | 11 | 14 | a12 | 13 | 12 | 9.1 | 6.8 | 8.5 | 3.1 | 9.1 | 11 |
| 24 | 12 | 11 | 15 | a10 | 12 | 12 | 9.6 | 7.9 | 9.1 | 3.1 | 12 | 1,150 |
| 25 | 12 | 12 | 25 | a13 | 12 | 12 | 9.1 | 6.3 | *261 | 3.4 | 12 | *391 |
| 26 | 13 | 12 | 18 | a9 | 12 | 12 | 10 | 5.8 | 62 | 3.4 | 11 | 109 |
| 27 | 14 | 13 | 14 | a11 | 12 | 12 | 11 | 5.3 | 24 | 4.4 | 9.6 | 49 |
| 28 | 14 | 12 | 14 | a12 | 16 | 12 | 10 | *4.0 | 14 | 4.4 | 5.6 | 27 |
| 29 | 13 | 12 | 15 | a12 | - | 11 | 11 | 4.0 | 9.6 | 168 | 4.8 | 20 |
| 30 | *12 | 12 | 15 | a11 | ---------- | 11 | *10 | 53 | 8.0 | 96 | 5.6 | 14 |
| 31 | 13 | ---------- | *15 | a12 | ---------- | 12 | ---------- | 7,720 | ---------- | 37 | 6.1 | ---------- |
| Total | 371 | 341 | 458 | 329.8 | 352 | 383.0 | 244.8 | 7,958.8 | 1,782.7 | 420.8 | 287.7 | 2,446.6 |
| Mean | 12.0 | 11.4 | 14.8 | 10.6 | 12.6 | 12.4 | 8.16 | 257 | 59.4 | 13.6 | 9.28 | 81.6 |
| Ac-ft | 736 | 676 | 908 | 654 | 698 | 760 | 486 | 15,790 | 3,540 | 835 | 571 | 4,850 |

Calendar year 1964: Max 259 Min 3.7 Mean 18.2 Ac-ft 13,220
Water year 1964-65: Max 7,720 Min 2.8 Mean 42.1 Ac-ft 30,500

* Discharge measurement made on this day.
a No gage-height record.
c Backwater from gravel bar formed by storm inflow from arroyo ½ mile downstream.

8-4075. Pecos River at Red Bluff, N. Mex.

Location.--Lat 32°04'30", long 104°02'20", in sec. 1, T.26 S., R.28 E., on right bank at Red Bluff, 0.2 mile downstream from Red Bluff Draw and 5.5 miles upstream from Delaware River.

Drainage area.--19,540 sq mi, approximately (contributing area).

Records available.--October 1937 to September 1965.

Gage.--Water-stage recorder. Datum of gage is 2,850.05 ft above mean sea level, datum of 1929.

Average discharge.--28 years (1937-65), 215 cfs (155,700 acre-ft per year).

Extremes.--Maximum discharge during year, 16,800 cfs May 30 (gage height, 19.06 ft); minimum, 1.6 cfs May 8.
1937-65: Maximum discharge, 52,600 cfs May 24, 1941 (gage height, 28.3 ft), from rating curve extended above 30,000 cfs on basis of slope-area measurement of peak flow; minimum, 1.4 cfs Aug. 21, 1954, and July 23, 1964.
Maximum stage known, that of May 24, 1941. Flood in October 1904 reached a stage of 28.0 ft, from information by Panhandle and Santa Fe Railway Co.

Remarks.--Records good except those below 10 cfs and those for periods of no gage-height record, which are fair. Flow regulated by storage in Alamogordo Reservoir, Lake McMillan and Lake Avalon (see 8-3840, 8-4005, 8-4038), and by several small diversion dams that divert for power or irrigation. Diversions and groundwater withdrawals above station for irrigation of about 202,000 acres (1959 determination). Records of chemical analyses and water temperatures for the water year 1965 are published in Part 2 of this report.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used July 1-3, 6-28)

| | | | | | |
|---|---|---|---|---|---|
| 2.5 | 1.4 | 3.1 | 39 | 6.0 | 1,080 |
| 2.6 | 3.5 | 3.5 | 98 | 8.0 | 2,550 |
| 2.7 | 8.0 | 4.0 | 209 | 10 | 4,680 |
| 2.9 | 21 | 4.7 | 435 | 12 | 7,320 |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | *13 | 10 | 10 | 13 | 12 | 18 | 10 | 9.2 | *3,040 | 11 | 25 | 89 |
| 2 | 12 | 10 | 11 | 13 | *12 | 17 | *11 | 6.2 | 196 | 9.2 | 20 | 15 |
| 3 | 12 | 9.8 | 12 | 12 | 12 | 16 | 12 | 4.0 | 100 | 8.0 | 15 | 25 |
| 4 | 11 | 9.8 | 12 | 12 | 12 | 15 | 10 | 3.5 | 61 | 7.0 | *13 | 19 |
| 5 | 10 | 9.8 | 12 | 12 | 13 | *15 | 9.8 | 4.4 | 41 | 6.5 | 12 | 13 |
| 6 | 9.8 | 9.2 | 13 | 12 | 12 | 15 | 7.6 | 4.4 | 33 | *6.2 | 10 | 10 |
| 7 | 9.2 | 9.2 | *13 | 12 | 14 | 14 | 5.8 | 2.9 | 28 | 6.2 | 9.2 | 9.8 |
| 8 | 8.6 | 9.2 | 13 | 13 | 15 | 13 | 5.8 | 2.2 | 25 | 6.2 | 8.0 | 9.8 |
| 9 | 8.0 | 8.6 | 13 | 13 | 16 | 13 | 5.8 | 2.0 | 22 | 6.6 | 7.6 | 9.2 |
| 10 | 7.6 | 8.6 | 13 | 12 | 15 | 13 | 5.8 | 3.1 | 50 | 7.6 | 6.2 | 9.2 |
| 11 | 7.6 | 8.6 | 13 | 12 | 14 | 8.0 | 6.6 | 4.0 | 70 | 6.6 | 3.5 | 9.2 |
| 12 | 7.1 | 8.5 | 13 | 12 | 14 | 6.6 | 6.2 | 3.1 | 55 | 6.6 | 2.7 | 9.2 |
| 13 | 7.1 | 8.0 | 13 | 9.8 | 13 | 8.6 | 4.4 | 2.9 | 40 | 6.2 | 3.3 | 8.6 |
| 14 | 6.6 | 8.0 | 12 | 8.6 | 14 | 9.8 | *3.5 | 2.0 | 30 | 5.3 | 4.8 | 8.6 |
| 15 | 7.6 | 8.0 | 12 | 8.0 | 16 | *11 | 4.8 | 4.4 | 25 | 4.8 | 6.6 | *8.6 |
| 16 | 9.8 | 8.0 | 13 | 6.6 | 16 | 11 | 4.4 | 7.1 | 20 | *3.5 | 7.6 | 9.2 |
| 17 | 10 | 8.0 | 13 | 6.2 | 15 | 13 | 3.1 | 8.6 | 18 | 3.3 | 9.2 | 9.8 |
| 18 | 10 | 8.0 | 13 | 10 | 14 | 12 | 3.3 | 8.6 | 17 | 3.5 | 10 | 62 |
| 19 | 12 | 8.5 | 14 | 10 | 14 | 18 | 3.5 | 8.6 | 16 | 3.5 | 11 | 236 |
| 20 | 10 | 8.5 | 15 | 8.6 | 13 | 12 | 5.8 | 8.6 | 15 | 3.5 | 7.1 | 79 |
| 21 | 10 | 8.5 | 14 | 7.1 | 14 | 10 | 8.6 | 8.0 | 14 | 3.1 | 8.6 | *51 |
| 22 | 10 | 8.5 | 13 | 8.0 | 14 | 10 | 6.2 | 8.0 | 12 | 2.4 | 7.6 | 30 |
| 23 | 11 | 8.5 | 13 | 13 | 13 | 12 | 5.8 | 7.1 | 11 | 2.4 | 15 | 21 |
| 24 | 11 | 8.5 | 13 | 12 | 14 | 12 | 7.1 | *5.3 | 11 | 2.2 | 9.2 | 279 |
| 25 | 11 | 8.5 | 14 | 9.8 | 13 | 11 | 8.0 | 6.2 | 191 | 2.2 | 12 | *1,000 |
| 26 | 12 | 8.5 | 24 | 13 | 13 | 11 | 9.2 | 4.8 | 130 | 2.9 | 12 | 183 |
| 27 | 12 | 9.5 | 18 | 9.2 | 13 | 10 | 12 | 3.3 | 50 | 3.1 | 9.8 | 75 |
| 28 | 11 | 10 | 15 | 10 | 13 | 11 | 10 | 3.1 | 35 | 3.5 | *8.0 | 41 |
| 29 | 11 | 10 | 14 | 11 | — | 11 | *9.2 | 2.7 | 23 | 672 | 6.2 | 25 |
| 30 | *11 | 10 | *15 | 12 | ------ | 10 | 9.2 | 2120 | 15 | 178 | 3.3 | 18 |
| 31 | 11 | ------ | 14 | 11 | ------ | 10 | ------ | *7,060 | ------ | 58 | 4.0 | ------ |
| Total | 310.0 | 266.8 | 420 | 331.9 | 383 | 377.0 | 214.5 | 9,328.3 | 4,394 | 1,051.1 | 287.5 | 2,372.2 |
| Mean | 10.0 | 8.89 | 13.5 | 10.7 | 13.7 | 12.2 | 7.15 | 301 | 146 | 33.9 | 9.27 | 79.1 |
| Ac-ft | 615 | 529 | 833 | 658 | 760 | 748 | 425 | 18,500 | 8,720 | 2,080 | 570 | 4,710 |

Calendar year 1964: Max 406 Min 1.6 Mean 19.5 Ac-ft 14,150
Water year 1964-65: Max 7,060 Min 2.0 Mean 54.1 Ac-ft 39,150

Peak discharge (base, 1,800 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 5-30 | 2240 | 19.06 | 16,800 | 9-25 | 0200 | 7.38 | 2,020 |
| 5-31 | 2110 | 13.10 | 8,820 | | | | |

* Discharge measurement made on this day.
Note.-No gage-height record Nov. 12 to Dec. 6, June 11-19, July 4, 5, Aug. 1-3.

## 8-4085. Delaware River near Red Bluff, N. Mex.

Location.--Lat 32°01'25", long 104°03'15", in SE¼ sec.23, T.26 S., R.28 E., near center of channel on downstream side of pier of bridge on U. S. Highway 285, 3.5 miles upstream from mouth, 4 miles south of Red Bluff, and 14 miles south of Malaga.
Drainage area.--689 sq mi.
Records available.--April 1912 to September 1913, May 1914 to June 1915, October 1937 to September 1965. Published as "near Malaga, N. Mex." 1912-13, and as "near Angeles, Tex." 1914-15.
Gage.--Water-stage recorder and concrete control. Datum of gage is 2,900.66 ft above mean sea level, datum of 1929. Prior to May 1914, at site 3 miles upstream at different datum. May 1914 to June 1915 at site 2½ miles downstream at different datum.
Average discharge.--28 years (1937-65), 13.6 cfs (9,850 acre-ft per year).
Extremes.--Maximum discharge during year, 4,260 cfs Sept. 24 (gage height, 9.18 ft); no flow at times.
1912-13, 1914-15, 1937-65: Maximum discharge, 81,400 cfs Oct. 2, 1955 (gage height, 27.0 ft, from floodmark), from rating curve extended above 1,500 cfs on basis of slope-area measurements at gage heights 8.65, 12.84, 18.00, and 27.0 ft; no flow at times.
Maximum stage known since at least 1911, that of Oct. 2, 1955. Flood of June 27, 1938, reached a stage of 18.00 ft, from floodmark.
Revisions.--Figures of maximum discharge for the water years 1963 and 1964 have been revised to 7,000 cfs June 2, 1963 (gage height, 10.17 ft) and 680 cfs Aug. 19, 1964 (gage height, 4.08 ft), superseding figures published in Surface Water Records of New Mexico for 1963 and 1964 respectively.
Remarks.--Records good. One small upstream diversion.
Revisions.--Revised figures of discharge, in cubic feet per second, for highwater periods in the water years 1963 and 1964, superseding previously published figures, are given herewith:

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| June 1, 1963... | 372 | June 21, 1963... | 56 | Aug. 30, 1963... | 243 | Sept. 4, 1963... | 171 | Sept.14,1964... | 23 | | |
| 2 ... | 1,960 | 25 ... | 110 | 31 ... | 85 | June 13, 1964... | 38 | | | | |
| 14 ... | 48 | July 8 ... | 321 | Sept. 3 ... | 253 | Aug. 19 ... | 69 | | | | |

| Month | Cfs-days | Maximum | Minimum | Mean | Runoff in acre-feet |
|---|---|---|---|---|---|
| June 1963 | 2,933.7 | 1,960 | 2.1 | 97.8 | 5,820 |
| July | 467.7 | 321 | .4 | 15.1 | 928 |
| August | 500.3 | 243 | .1 | 16.1 | 992 |
| September | 648.8 | 253 | 1.1 | 21.6 | 1,290 |
| Water year 1962-63 | 5,054.2 | 1,960 | 0 | 13.8 | 10,030 |
| Calendar year 1963 | 5,151.8 | 1,960 | 0 | 14.1 | 10,220 |
| June 1964 | 156.1 | 57 | 0 | 5.20 | 310 |
| August | 72.4 | 69 | 0 | 2.34 | 144 |
| September | 23.6 | 23 | 0 | .79 | 47 |
| Water year 1963-64 | 676.4 | 69 | 0 | 1.85 | 1,340 |

Revised peak discharge.--1963: June 2 (0100) 7,000 cfs (10.17 ft); July 8 (0700) 1,150 cfs (4.76 ft); Aug. 30 (0140) 1,480 cfs (5.21 ft).

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | (*) | 0 | 0.6 | 1.0 | 0 | 1.1 | 1.4 | 0.3 | 5.6 | 1.1 | 4.6 | 29 |
| 2 | | 0 | .6 | 1.1 | *0 | 1.2 | *1.4 | .2 | 2.0 | .9 | 2.7 | 7.5 |
| 3 | | 0 | .6 | 1.0 | 0 | 1.4 | .8 | .1 | .9 | .5 | *1.9 | 2.4 |
| 4 | | 0 | .6 | 1.2 | 0 | 1.4 | .3 | .1 | .4 | .3 | 1.3 | 1.4 |
| 5 | | 0 | .7 | 1.2 | 0 | *1.4 | 1.0 | 0 | .2 | .1 | .9 | 1.0 |
| 6 | | 0 | .7 | 1.3 | 0 | 1.3 | .9 | 0 | .1 | **0 | .6 | 1.2 |
| 7 | | 0 | *.7 | 1.0 | 0 | 1.3 | .9 | 0 | 0 | 0 | .5 | .9 |
| 8 | | 0 | .8 | .3 | 0 | 1.2 | .9 | 0 | 8.3 | 0 | .3 | .6 |
| 9 | | 0 | .9 | .1 | 0 | 1.2 | .9 | 0 | 15 | 0 | .2 | .5 |
| 10 | | 0 | 1.0 | .1 | 0 | 1.3 | .9 | 0 | 215 | 0 | .2 | .4 |
| 11 | | 0 | .9 | 0 | 0 | 1.3 | .8 | 0 | 537 | 1.0 | .2 | .3 |
| 12 | | 0 | .9 | 0 | 0 | 1.3 | .7 | 0 | 34 | .6 | .1 | .2 |
| 13 | | 0 | .9 | .5 | 0 | 1.2 | .7 | 0 | 13 | .2 | .1 | .2 |
| 14 | | 0 | .9 | .7 | 0 | 1.2 | .7 | 0 | 7.8 | 0 | .1 | .1 |
| 15 | | 0 | .9 | 1.1 | 0 | 1.2 | .7 | 0 | 5.2 | 0 | .1 | .1 |
| 16 | | 0 | 1.0 | .4 | 0 | 1.1 | .7 | 1.8 | 3.8 | 0 | 5.0 | 0 |
| 17 | | 0 | .9 | .1 | 0 | 1.0 | .6 | 0 | 3.0 | 0 | 83 | 127 |
| 18 | | 0 | .9 | .1 | 0 | 1.0 | .6 | 0 | 2.6 | 0 | 22 | *32 |
| 19 | | 0 | 1.1 | 0 | 0 | 1.1 | .5 | 0 | 2.5 | 0 | 6.7 | 32 |
| 20 | | 0 | 1.2 | 0 | 0 | 1.2 | .5 | 0 | 2.9 | 0 | 3.1 | 7.8 |
| 21 | | 0 | 1.2 | 0 | 1.0 | 1.2 | .4 | 0 | 2.7 | 0 | 5.7 | 3.1 |
| 22 | | 0 | 1.2 | 0 | 1.1 | 1.2 | .4 | 0 | 2.5 | 0 | 208 | 1.9 |
| 23 | | 0 | 1.2 | 0 | 1.1 | 1.2 | .3 | 0 | 2.1 | 0 | *27 | 1.3 |
| 24 | | 0 | 1.2 | 0 | 1.1 | 1.2 | .3 | *0 | 2.0 | 0 | 14 | *956 |
| 25 | | 0 | 1.1 | .4 | 1.2 | .9 | .2 | 0 | 30 | 0 | 13 | *87 |
| 26 | | 0 | 1.0 | .8 | 1.2 | 1.2 | .2 | 0 | 40 | 0 | 6.7 | 18 |
| 27 | | 0 | 1.0 | .3 | 1.2 | 1.2 | .2 | 0 | 7.8 | 0 | 3.5 | 9.8 |
| 28 | | 0 | 1.0 | .1 | 1.2 | 1.2 | .2 | 0 | 3.5 | 7.8 | * 2.2 | 6.0 |
| 29 | | .4 | 1.0 | 0 | — | 1.1 | *.3 | 0 | 2.1 | *1090 | 1.6 | 4.0 |
| 30 | (*) | .5 | *1.0 | 0 | ------ | .2 | .3 | 405 | 1.3 | 89 | 1.2 | 3.0 |
| 31 | | ------ | 1.0 | 0 | ------ | 1.2 | ------ | *77 | ------ | 16 | 1.0 | ------ |
| Total | 0 | 0.9 | 28.7 | 12.8 | 9.1 | 36.2 | 18.8 | 484.5 | 953.3 | 1,207.5 | 417.5 | 1,334.7 |
| Mean | 0 | 0.03 | 0.93 | 0.41 | 0.32 | 1.17 | 0.63 | 15.6 | 31.8 | 39.0 | 13.5 | 43.1 |
| Ac-ft | 0 | 1.8 | 57 | 25 | 18 | 72 | 37 | 961 | 1,890 | 2,400 | 828 | 2,650 |

Calendar year 1964: Max 69 Min 0 Mean 1.42 Ac-ft 1,030
Water year 1964-65: Max 1,090 Min 0 Mean 12.3 Ac-ft 8,940

Peak discharge (base, 1,700 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 5-30 | 2025 | 7.26 | 2,710 | 7-29 | 0005 | 8.00 | 3,300 |
| 6-11 | 1020 | 6.04 | 1,860 | 9-24 | 1300 | 9.18 | 4,260 |

* Discharge measurement or observation of no flow made on this day.
**Field estimate made on this day.

8-4100. Red Bluff Reservoir near Orla, Tex.

Location.--Lat 31°54'05", long 103°54'40", at right end of Red Bluff Dam on Pecos River, 3 miles upstream from Salt (Screwbean) Draw, and 4.5 miles north of Orla, Reeves County.

Drainage area.--20,720 sq mi, approximately (contributing area).

Records available.--February 1937 to September 1965. Monthly contents only for some periods, published in WSP 1312.

Gage.--Staff gage read at irregular intervals. Datum of gage is 0.30 ft below mean sea level, datum of 1929.

Extremes.--Maximum contents observed during year, 53,350 acre-ft Sept. 26-27 (gage height, 2,805.1 ft); minimum observed, 18,580 acre-ft Oct. 19-24 (gage height, 2,788.6 ft).
1937-65: Maximum contents observed, 352,000 acre-ft Sept. 27, 28, 1941 (gage height, 2,846.2 ft, observed on staff gage at service spillway, affected by variable drawdown due to flow through tainter gates); minimum observed, 11,080 acre-ft May 13, 1948 (gage height, 2,781.4 ft).

Remarks.--Reservoir is formed by a rock-faced earth-fill dam 9,200 ft long. Dam completed and storage began in September 1936. The concrete service spillway is equipped with 12 tainter gates 25 ft wide by 15 ft high. The emergency spillway, located on the right bank, is 790 ft long. Water is used for power development and irrigation from Mentone to Grandfalls. Contents computed from intermittent gage readings and figures given herein represent total contents. Data regarding dam and reservoir are given in the following table:

| | Gage height (feet) | Capacity (acre-feet) |
|---|---|---|
| Crest of emergency spillway | 2,845.0 | 340,000 |
| Top of tainter gates | 2,842.0 | 310,000 |
| Crest of service spillway | 2,827.0 | 166,500 |
| Bottom of two 7.0- by 9.0-foot conduits | 2,764.0 | 3,000 |

Cooperation.--Gage-height records and capacity curve furnished by Red Bluff Water Power and Control District. Capacity curve based on Geological Survey topographic map surveyed in 1925.

Month-end gage heights and contents, water year October 1964 to September 1965

| Date | Gage height (feet) | Contents (acre-feet) | Change in contents (acre-feet) |
|---|---|---|---|
| Sept. 30 | 2,788.7 | 18,710 | - |
| Oct. 31 | 2,788.7 | 18,710 | 0 |
| Nov. 30 | 2,788.8 | 18,840 | +130 |
| Dec. 31 | 2,789.2 | 19,360 | +520 |
| Calendar year 1964 | - | - | -13,990 |
| Jan. 31 | (a) | 19,750 | +390 |
| Feb. 28 | (a) | 20,270 | +520 |
| Mar. 31 | 2,790.0 | 20,400 | +130 |
| Apr. 30 | 2,789.7 | 20,010 | -390 |
| May 31 | 2,795.2 | 28,780 | +8,770 |
| June 30 | 2,803.9 | 49,700 | +20,920 |
| July 31 | 2,803.9 | 49,700 | 0 |
| Aug. 31 | 2,803.5 | 48,500 | -1,200 |
| Sept. 30 | (a) | 53,000 | +4,500 |
| Water year 1964-65 | - | - | +34,290 |

a No gage-height record.

8-4763. Mimbres River at McKnight damsite, near Mimbres, N. Mex.

Location.--Lat 32°55'15", long 108°00'55", in SW¼SE¼ sec.6, T.16 S., R.11 W., on right bank 0.3 mile upstream from Mimbres Ranger station, 0.4 mile downstream from Cottonwood Canyon and 8 miles northwest of Mimbres.

Drainage area.--

Records available.--November 1963 to September 1965.

Gage.--Water-stage recorder. Datum of gage is 6,236.73 ft above mean sea level, datum of 1929.

Extremes.--Maximum discharge during year, 211 cfs Sept. 12 (gage height, 2.83 ft); no flow for many days.
1963-65: Maximum discharge, 646 cfs Aug. 18, 1964 (gage height, 3.74 ft), from rating curve extended above 220 cfs on basis of slope-area measurement of peak flow; no flow for many days.

Remarks.--Records good except those for periods of doubtful or no gage-height record, which are poor.

Revisions.--Revised figures of discharge, in cubic feet per second, for the water year 1964, superseding those published in 1964 State Report, are given herewith:

| Date | Discharge | Date | Discharge | Date | Discharge | Date | Discharge |
|---|---|---|---|---|---|---|---|
| 1964 | | | | | | | |
| Oct. 31 | 0.3 | July 23 | 0.2 | Aug. 18 | 37 | Sept. 25 | 21 |
| July 11 | .8 | 28 | 0 | Sept. 10 | 31 | 26 | 10 |
| 18 | 1.8 | 30 | 6.4 | 11 | 19 | 27 | 4.4 |
| 19 | 4.0 | 31 | 11 | 12 | 12 | 28 | 2.4 |
| 20 | .6 | Aug. 1 | 44 | 23 | 119 | 29 | 1.7 |
| 21 | .4 | 2 | 14 | 24 | 78 | 30 | 1.6 |

| Month | Cfs-days | Maximum | Minimum | Mean | Runoff in acre-feet |
|---|---|---|---|---|---|
| July 1964 | 26.4 | 11 | 0 | 0.85 | 52 |
| August | 95.4 | 44 | 0 | 3.08 | 189 |
| September | 300.3 | 119 | 0 | 10.0 | 596 |
| Calendar year 1963 | - | - | - | - | - |
| Water year 1963-64 | - | - | - | - | - |

Revised peak discharge.--1964: Aug. 1 (1700) 277 cfs (3.09 ft); Aug. 18 (1400) 646 cfs (3.74 ft); Sept. 11 (1400) 385 cfs (3.37 ft); Sept. 12 (1545) 346 cfs (3.29 ft); Sept. 23 (1445) 304 cfs (3.18 ft).

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.5 | | | | | | | | | | 9.4 | d 3.5 |
| 2 | 1.4 | | | | | | (*) | | | | 5.2 | d 3.5 |
| 3 | 1.4 | | | | | | | | | | * 0 | 4.2 |
| 4 | 1.4 | | (*) | | | | | | | | 3.3 | 4.6 |
| 5 | * 1.4 | (*) | | | | | | | | | 8.2 | 4.6 |
| 6 | 1.3 | | | | | | | | (*) | | .8 | 8.9 |
| 7 | 1.3 | | | | | | | | | | 0 | * 8.1 |
| 8 | 1.3 | | | | | | | | | | 0 | 9.5 |
| 9 | 1.3 | | | | | (*) | | | | | 0 | 6.8 |
| 10 | 1.2 | | | | | | | | | | .1 | 8.7 |
| 11 | 1.2 | | | | | (*) | | | | | 0 | 7.4 |
| 12 | 1.2 | | | | | | | | | (*) | 0 | 17.0 |
| 13 | 1.2 | | | | | | | | | | 0 | 11.0 |
| 14 | 1.2 | | | | | | (*) | | | | 3.9 | 6.2 |
| 15 | 1.1 | | | (*) | | | | | | | .1 | 3.5 |
| 16 | 1.1 | | | | | | | | | | 0 | a 2.0 |
| 17 | 1.1 | | (*) | | | | | | | | 1.4 | a 1.6 |
| 18 | 1.1 | | | | | | | (*) | | | 2.4 | a 1.2 |
| 19 | 1.0 | | | | | | | | | | 16 | a 1.0 |
| 20 | 1.0 | | | | | | | | | | 13 | a .8 |
| 21 | .9 | | | | | | | | | | 3.0 | a .8 |
| 22 | .8 | | | | | | | | | | .6 | * 8.1 |
| 23 | .7 | | | | | | (*) | | | | 5.0 | 8.6 |
| 24 | .6 | | | | | | | | | | 30 | 8.1 |
| 25 | .6 | | | | | (*) | | | | | 18 | 8.6 |
| 26 | .5 | | | | | | | | | (*) | 7.2 | 8.1 |
| 27 | .5 | | | | | | | | (*) | | 4.2 | 7.6 |
| 28 | .4 | | | | | | | | | | 3.1 | 7.2 |
| 29 | .2 | | | | - | | | | | | 3.1 | 6.9 |
| 30 | .2 | | | | --- | | | | | | d 2.5 | 6.9 |
| 31 | 0 | --- | | | --- | | --- | | --- | | d 3 | --- |
| Total | 30.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 156.1 | 797.0 |
| Mean | 0.97 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5.04 | 26.6 |
| Ac-ft | 60 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 310 | 1,580 |

Calendar year 1964 : Max 119 Min 0 Mean 1.24 Ac-ft 897
Water year 1964-65 : Max 170 Min 0 Mean 2.72 Ac-ft 1,950

Peak discharge (base, 250 cfs).--No peak above base.

* Discharge measurement or observation of no flow made on this day.
a No gage-height record.
d Doubtful gage-height record.

8-4770. Mimbres River near Mimbres, N. Mex.

Location.--Lat 32°52'30", long 107°59'00", in SE¼NW¼ sec.33, T.16 S., R.11 W., on left bank, 0.7 mile downstream from Bear Canyon and 1½ miles northwest of Mimbres.

Drainage area.--152 sq mi.

Records available.--June 1921 to September 1930 (fragmentary), October 1930 to September 1965. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Concrete control since Mar. 26, 1938. Datum of gage is 5,972 ft above mean sea level, datum of 1929. Prior to Sept. 12, 1923, at site 10 ft downstream at datum 0.3 ft higher. Sept. 12, 1923, to Jan. 17, 1934, at datum of 0.1 ft lower.

Average discharge.--35 years, 9.74 cfs (7,050 acre-ft per year).

Extremes.--Maximum discharge during year, 345 cfs Sept. 12 (gage height, 4.46 ft); minimum, 1.9 cfs Apr. 4.
1930-65: Maximum discharge determined, 1,560 cfs Aug. 2, 1952 (gage height, 6.22 ft), from rating curve extended above 230 cfs by logarithmic plotting; minimum, 0.7 cfs Aug. 10, 1951.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Some regulation by Bear Canyon Reservoir (capacity, 700 acre-ft). Diversions for irrigation of about 300 acres above station.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1-6, Aug. 26-28)

| | | | | | |
|---|---|---|---|---|---|
| 2.1 | 1.5 | 2.7 | 6.2 | 3.2 | 40 |
| 2.2 | 2.0 | 2.8 | 7.9 | 3.4 | 75 |
| 2.3 | 2.5 | 2.9 | 11 | 3.8 | 170 |
| 2.5 | 4.1 | 3.0 | 17 | 4.2 | 270 |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7.0 | 5.8 | 7.7 | 4.1 | 5.1 | 5 | 3.9 | 4.0 | 2.8 | 2.6 | 33 | 15 |
| 2 | 4.8 | 6.4 | 7.7 | 4.5 | 5.1 | 5 | 4.1 | 4.2 | 2.6 | 2.4 | 37 | 11 |
| 3 | 2.6 | 6.7 | 7.6 | 4.8 | 5.0 | 5 | 3.7 | 4.4 | 2.5 | 2.4 | *8.5 | 6.4 |
| 4 | 2.6 | *7.0 | *7.4 | 4.9 | 4.8 | 5 | 2.4 | 4.3 | 2.4 | 2.5 | 12 | 5.9 |
| 5 | *2.6 | *8.2 | 7.2 | 4.9 | 4.4 | 5 | 2.1 | 4.4 | 2.3 | 2.6 | 43 | 7.9 |
| 6 | 2.6 | 7.6 | 7.2 | 5.2 | 4.4 | 5 | 2.2 | *5.4 | * 2.4 | 2.6 | 15 | 8.8 |
| 7 | 2.5 | 7.4 | 7.2 | 5.5 | 4.5 | 5 | 2.4 | 5.3 | 2.4 | 2.4 | 7.0 | *15 |
| 8 | 2.5 | 7.6 | 7.2 | 4.7 | * 4.5 | 5 | 2.5 | 5.3 | 2.4 | 2.6 | 6.4 | 12 |
| 9 | 2.5 | 7.7 | 7.4 | 4.5 | 4.6 | *5.2 | 2.6 | 5.1 | 2.6 | 2.7 | 5.6 | 10 |
| 10 | 2.5 | 8.5 | 7.4 | 4.4 | 4.7 | 5.2 | 2.7 | 6.5 | 2.5 | 2.5 | 6.7 | 85 |
| 11 | 3 | 8.5 | 7.2 | 4.2 | 4.6 | 5.5 | 2.8 | 7.2 | 2.6 | 2.8 | 5.9 | 75 |
| 12 | 3 | 8.5 | 6.9 | 4.2 | 4.6 | 5.2 | 3.0 | 4.6 | 2.6 | 2.7 | 3.7 | 240 |
| 13 | 3 | 8.5 | 6.9 | 4.1 | 4.6 | 4.9 | 3.0 | 4.8 | 2.4 | 2.6 | 2.5 | 164 |
| 14 | 3 | 7.9 | 6.7 | 4.2 | 4.6 | 4.8 | * 3.1 | 4.2 | 2.4 | * 2.5 | 26 | 98 |
| 15 | 3 | 8.2 | 6.5 | 4.6 | 4.7 | 4.7 | 2.5 | 3.7 | 2.4 | 2.8 | 14 | 54 |
| 16 | 3 | 8.2 | 6.7 | 5.2 | 4.7 | 4.7 | 2.2 | 3.7 | 2.6 | 2.6 | 14 | 36 |
| 17 | 3 | 7.9 | 6.7 | 5.2 | 4.6 | 4.7 | 2.2 | 3.8 | 2.4 | 2.6 | 93 | 25 |
| 18 | 10 | 7.9 | 6.9 | 5.1 | 4.6 | 4.7 | 2.4 | 4.1 | 3.2 | 2.6 | 18 | 20 |
| 19 | 8 | 7.9 | 6.7 | * 5.0 | 4.6 | 4.6 | 2.4 | 3.8 | 3.2 | 2.8 | 34 | 17 |
| 20 | 6 | 7.9 | 6.5 | 5.1 | 4.6 | 4.6 | 2.3 | 3.6 | 2.6 | 3.2 | 26 | 17 |
| 21 | 6 | 7.9 | 6.4 | 5.2 | 4.5 | 4.6 | 2.3 | 3.9 | 2.7 | 3.3 | 11 | 18 |
| 22 | 6 | 7.7 | 6.4 | 5.0 | 4.5 | 4.6 | 2.4 | 3.9 | * 2.9 | 3.4 | 43 | *16 |
| 23 | 6 | *7.9 | 6.2 | 5.0 | 4.6 | 4.7 | * 2.4 | 3.7 | 3.2 | 3.5 | 20 | 16 |
| 24 | 6 | 7.9 | 6.1 | 5.1 | 4.4 | 4.7 | 2.4 | 4.2 | 3.4 | 4.1 | 41 | 16 |
| 25 | 6 | 7.7 | 6.1 | 5.3 | 3.7 | * 4.7 | 2.5 | 4.4 | 3.1 | 5.6 | 28 | 20 |
| 26 | *6.2 | 7.9 | 6.0 | 5.2 | 3.5 | 4.8 | 2.6 | 3.7 | 3.0 | * 5.4 | 15 | 20 |
| 27 | 5.8 | 7.7 | 6.1 | 5.1 | 3.5 | 4.8 | 2.7 | 2.8 | 2.9 | 5.5 | *9.8 | 19 |
| 28 | 5.9 | 7.7 | 6.1 | 5.1 | 5 | 4.8 | 3.1 | 2.6 | 3.1 | 15 | 7.0 | 19 |
| 29 | 5.5 | 7.9 | 6.2 | 5.1 | — | 4.8 | 3.7 | 2.6 | 3.2 | 10 | 5.8 | 18 |
| 30 | 5.5 | 7.9 | * 5.1 | * 5.1 | ---------- | 4.8 | 3.8 | 2.7 | 3.1 | 4.9 | 4.8 | 18 |
| 31 | 5.6 | ---------- | 4.1 | 5.1 | ---------- | 4.6 | ---------- | 2.7 | ---------- | 4.5 | 6.5 | ---------- |
| Total | 141.7 | 232.5 | 206.5 | 150.7 | 127.0 | 150.7 | 82.4 | 129.6 | 81.9 | 117.7 | 603.2 | 1,103.0 |
| Mean | 4.57 | 7.75 | 6.66 | 4.86 | 4.54 | 4.86 | 2.75 | 4.18 | 2.73 | 3.80 | 19.5 | 36.8 |
| Ac-ft | 281 | 461 | 410 | 299 | 252 | 299 | 163 | 257 | 162 | 233 | 1,200 | 2,190 |

Calendar year 1964: Max 112 Min 1.2 Mean 5.36 Ac-ft 3,890
Water year 1964-65: Max 240 Min 2.1 Mean 8.57 Ac-ft 6,210

Peak discharge (base, 290 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 8-1 | 2130 | 4.30 | 300 | 9-12 | 0450 | 4.46 | 345 |
| 8-22 | 1315 | 4.30 | 300 | | | | |

* Discharge measurement made on this day.
Note.--No gage-height record Oct. 7-25, Feb. 26 to Mar. 8.

8-4775. Mimbres River near Faywood, N. Mex.

Location.--Lat 32°35'10", long 107°55'10", in NW¼ sec.7, T.20 S., R.10 W., on right bank 6 miles northeast of Faywood Hot Springs, 10 miles northeast of Faywood, and 12 miles upstream from San Vicente Arroyo.

Drainage area.--460 sq mi.

Records available.--January 1909 to May 1914, January 1916 to December 1917, October 1920 to May 1921, October 1927 to September 1930, all fragmentary. October 1930 to September 1955, October 1963 to September 1965. Monthly discharge only for some periods, published in WSP 1312. Records for August and September 1934, published in WSP 763, have been found to be unreliable and should not be used.

Gage.--Water-stage recorder. Altitude of gage is 5,030 ft (from topographic map). Prior to Aug. 16, 1909, chain gage 300 ft upstream at different datums. Aug. 16, 1909, to Sept. 25, 1920, water-stage recorder at site 500 ft upstream at different datums (datum lowered 0.5 ft Jan. 21, 1915, and 1.0 ft Jan. 1, 1916). Water-stage recorder at present site since Sept. 26, 1920, at datums 2.0 ft higher Sept. 26, 1920, to Sept. 30, 1942, and 1 ft higher Oct. 1, 1942, to Sept. 30, 1949.

Average discharge.--27 years (1912-13, 1930-33, 1934-55, 1963-65), 12.7 cfs (9,190 acre-ft per year year).

Extremes.--Maximum discharge during year, 1,570 cfs Sept. 2 (gage height, 5.42 ft); no flow for several days.
1930-54, 1963-65: Maximum discharge, 20,000 cfs Aug. 4, 1939 (gage height, 12 ft, present site and datum), from rating curve extended above 600 cfs on basis of slope-area measurements at gage heights 7.80 and 11.7 ft; no flow at times.

Remarks.--Records fair except those for period of doubtful gage-height record and those for July to September, which are poor. Diversions for irrigation of about 3,000 acres above station.

Rating table (gage height, in feet, and discharge in cubic feet per second)
(Shifting-control method used June 29 to Aug. 2, Aug. 6-19, Aug. 27 to Sept. 1)

| | | | |
|---|---|---|---|
| 2.3 | 0.0 | 2.8 | 22 |
| 2.4 | 1.1 | 2.9 | 34 |
| 2.5 | 3.5 | 3.1 | 70 |
| 2.6 | 7.4 | 3.3 | 115 |
| 2.7 | 13 | 3.6 | 210 |
| | | **3.7** | **250** |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.3 | 0.4 | 0.3 | 0.2 | 1.3 | 1.3 | 2.5 | 2.5 | 1.3 | 1.1 | 0.8 | 76 |
| 2 | 2.1 | .6 | .4 | .1 | 1.6 | 1.1 | 2.5 | 2.6 | 1.3 | 1.0 | * 22 | 48 |
| 3 | 2.1 | .7 | .4 | .1 | 1.8 | 1.3 | 2.8 | 2.5 | 1.3 | .9 | 3.4 | 17 |
| 4 | 2.1 | * .6 | * .4 | .1 | 1.8 | 1.3 | 3.0 | 2.5 | 1.6 | .9 | 1.1 | 32 |
| 5 | * 1.6 | .7 | .3 | .1 | 2.3 | 1.3 | 2.5 | 2.5 | 1.6 | 1.3 | .7 | 38 |
| 6 | 1.6 | .7 | .2 | .1 | 1.8 | 2.3 | 2.5 | * 2.3 | 1.8 | 1.5 | 2.2 | 5.8 |
| 7 | 2.3 | .7 | .2 | .1 | 1.6 | 2.8 | 2.8 | 2.5 | 1.6 | 1.0 | 1.1 | 190 |
| 8 | 2.1 | .6 | .2 | .1 | * 2.1 | 2.5 | * 2.8 | 2.5 | 1.3 | .9 | 1.3 | 150 |
| 9 | .9 | .6 | .2 | .1 | 3.9 | 2.3 | 3.0 | 2.5 | * 1.6 | .9 | 1.6 | 100 |
| 10 | .9 | .7 | .2 | .1 | 3.9 | 2.3 | 3.3 | 2.3 | 1.3 | .8 | 1.3 | 80 |
| 11 | 1.0 | .8 | .3 | 0 | 3.3 | * 2.8 | 3.0 | 2.3 | 1.1 | .9 | 1.1 | 80 |
| 12 | 1.1 | .8 | .3 | 0 | 2.5 | 2.8 | 2.8 | 2.3 | 1.3 | .9 | 1.0 | 60 |
| 13 | 1.1 | .2 | .3 | 0 | 2.8 | 2.8 | 2.8 | 2.1 | 1.1 | 2.4 | .9 | 250 |
| 14 | 1.1 | .3 | .4 | .1 | 2.8 | 2.8 | 2.5 | 2.1 | 1.3 | * .8 | .9 | 150 |
| 15 | 1.1 | .3 | .3 | .1 | 3.0 | 2.3 | 2.5 | 2.1 | 1.3 | .9 | 15 | * 76 |
| 16 | 1.1 | .3 | .1 | 0 | 2.8 | 2.5 | 2.3 | 2.1 | 1.8 | .9 | 3.4 | 58 |
| 17 | 1.1 | .2 | .1 | .1 | 2.3 | 2.8 | 2.3 | 2.1 | 1.8 | 2.8 | 29 | 39 |
| 18 | 1.1 | .1 | .2 | .1 | 2.3 | 2.8 | 2.8 | 2.1 | 1.8 | 4.0 | 19 | 33 |
| 19 | 1.1 | .1 | d .2 | * .2 | * 2.3 | 2.5 | 2.5 | 1.6 | 2.1 | 1.1 | 17 | 28 |
| 20 | .9 | .1 | d .2 | .3 | 2.3 | 2.8 | 2.3 | 1.6 | 1.6 | .9 | 30 | 20 |
| 21 | .9 | 0 | d .2 | .3 | 2.3 | 2.8 | * 2.1 | 1.6 | 1.8 | .8 | 15 | 16 |
| 22 | .9 | 0 | d .3 | .4 | 2.3 | * 2.8 | * 2.1 | 1.6 | 1.8 | .7 | 11 | 14 |
| 23 | .9 | 0 | d .3 | .7 | 2.8 | 2.8 | 2.3 | 1.6 | 1.6 | .7 | 14 | 13 |
| 24 | .9 | 0 | d .3 | .7 | 2.5 | 2.8 | 2.5 | 1.6 | 1.3 | .6 | 7.9 | 13 |
| 25 | .9 | 0 | d .3 | .9 | 2.1 | 2.5 | 2.8 | 1.6 | 1.0 | .7 | 2 | 40 |
| 26 | .7 | 0 | d .2 | 1.0 | 2.1 | 2.5 | 2.8 | 1.6 | .9 | .6 | .5 | 4.3 |
| 27 | .7 | .1 | d .2 | 1.0 | 1.6 | 2.5 | 2.8 | 1.3 | * 1.0 | .4 | * .3 | 3.3 |
| 28 | .7 | .2 | d .2 | 1.6 | 1.1 | 2.8 | 3.0 | 1.3 | 1.0 | * .5 | .4 | 2.8 |
| 29 | .7 | .2 | d .2 | 1.3 | - | 2.5 | 2.8 | 1.6 | 1.2 | 1.5 | .3 | 2.1 |
| 30 | .7 | .2 | * .2 | * 1.3 | ------- | 2.5 | 2.5 | 1.6 | 1.1 | 1.0 | .4 | 1.3 |
| 31 | .6 | ------- | | 1.6 | ------- | 2.8 | ------- | 1.6 | ------- | .8 | .4 | ------- |
| Total | 37.3 | 9.7 | 7.5 | 12.9 | 65.3 | 74.7 | 79.2 | 62.3 | 42.6 | 47.7 | 205.0 | 1,640.6 |
| Mean | 1.20 | 0.32 | 0.25 | 0.42 | 2.33 | 2.41 | 2.64 | 2.01 | 1.42 | 1.54 | 6.61 | 54.7 |
| Ac-ft | 74 | 19 | 15 | 26 | 130 | 148 | 157 | 124 | 85 | 95 | 407 | 3,250 |

Calendar year 1964 : Max 341 Min 0 Mean 6.00 Ac-ft 4,330
Water year 1964-65 : Max 250 Min 0 Mean 6.32 Ac-ft 4,530

Peak discharge (base, 800 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 9-2 | 2100 | 5.42 | 1,570 | 9-13 | unknown | 4.92 | 1,120 |
| 9-7 | 0120 | 4.59 | 832 | 9-25 | 1730 | 4.58 | 824 |

* Discharge measurement made on this day.
d Doubtful gage-height record.

## 8-4775.3 Mimbres River near Spalding, N. Mex.

Location.--Lat 32°27'55", long 107°56'50", in N½ sec.23, T.21 S., R.11 W., on right bank 360 ft downstream from U.S. Highway 180, 3 miles upstream from San Vicente Arroyo and 17 miles northwest of Deming.

Drainage area.--

Records available.--October 1963 to September 1965.

Gage.--Water-stage recorder. Datum of gage is 4,749.8 ft above mean sea level (levels by New Mexico State engineer).

Extremes.--Maximum gage height during year, 5.40 ft Sept. 1 (discharge not determined); no flow for most of time.
1964-65: Maximum gage height, that of Sept. 1, 1965; maximum discharge determined, 1,420 cfs Sept. 23, 1964 (gage height, 4.20 ft); no flow for most of time.

Remarks.--Records poor. Discharge measurements or observations of no flow generally made twice a month.

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | | 0 | | 700 |
| 2 | | | | | | | | | | 0 | | 22 |
| 3 | | | | | | | | | | 0 | | 0 |
| 4 | | | | | | | | | | 0 | | 1.1 |
| 5 | | | | | | | | | | 0 | | 13 |
| 6 | | | | | | | | | | 0 | | 0 |
| 7 | | | | | | | | | | 0 | | 164 |
| 8 | | | | | | | | | | 0 | | 34 |
| 9 | | | | | | | | | | 0 | | 131 |
| 10 | | | | | | | | | | 0 | | 75 |
| 11 | | | | | | | | | | 0 | | 75 |
| 12 | | | | | | | | | | 0 | | 304 |
| 13 | | | | | | | | | | 0 | | 130 |
| 14 | | | | | | | | | | 0 | | 86 |
| 15 | | | | | | | | | | 0 | | 58 |
| 16 | | | | | | | | | | 0 | | 48 |
| 17 | | | | | | | | | | 0 | | 31 |
| 18 | | | | | | | | | | 0 | | 20 |
| 19 | | | | | | | | | | 0 | | 17 |
| 20 | | | | | | | | | | 0 | | 7.9 |
| 21 | | | | | | | | | | 0 | | 0 |
| 22 | | | | | | | | | | 0 | | 0 |
| 23 | | | | | | | | | | 0 | | 0 |
| 24 | | | | | | | | | | 0 | | 0 |
| 25 | | | | | | | | | | 0 | | 13 |
| 26 | | | | | | | | | | 0 | | 3.6 |
| 27 | | | | | | | | | | 0 | | 0 |
| 28 | | | | | | | | | | 0 | | 0 |
| 29 | | | | | | | | | | .1 | | 0 |
| 30 | | | | | | | | | | 0 | | 0 |
| 31 | | | | | | | | | | 0 | | |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0 | 1933.6 |
| Mean | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.003 | 0 | 64.5 |
| Ac-ft | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.2 | 0 | 3,840 |

Calendar year 1964: Max 191 Min 0 Mean 1.54 Ac-ft 1,120
Water year 1964-65: Max 700 Min 0 Mean 5.30 Ac-ft 3,840

Peak discharge (base, 250 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 9-1 | 2200 | 5.40 | Unknown | 9-9 | 0130 | 3.95 | 1,070 |
| 9-7 | 0200 | 3.57 | 709 | 9-12 | 1130 | 3.95 | 800 |

## 8-4776. San Vicente Arroyo at Silver City, N. Mex.

Location.--Lat 32°46'15", long 108°16'30", in NW¼SE¼ sec.3, T.18 S., R.14 W. (projected), on left bank in Silver City, 800 ft upstream from bridge at Broadway Street and 1,300 ft downstream from confluence of Silva Creek and Pinos Altos Creek.

Drainage area.--26.5 sq mi.

Records available.--August 1953 to September 1965 (discontinued).

Gage.--Water-stage recorder and concrete control. Datum of gage is 5,862.58 ft above mean sea level, datum of 1929. Prior to May 25, 1958, at site 500 ft downstream at datum 17.99 ft lower.

Average discharge.--12 years, 0.79 cfs (572 acre-ft per year).

Extremes.--Maximum discharge during year, 1,130 cfs Aug. 1 (gage height, 4.18 ft); no flow for many days.
1953-65: Maximum discharge, 4,680 cfs Aug. 16, 1963 (gage height, 8.30 ft in gage well, 10.0 ft from outside gage); no flow for many days in most years.
Maximum flood known occurred July 21, 1895 (discharge probably exceeded 10,000 cfs), from newspaper accounts. A peak of 6,800 cfs was measured by slope-area method from old floodmarks found in 1956 (probably occurred Sept. 9, 1938).

Remarks.--Records fair.

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | 0 | 0 | 0 | 0 | | 0 | 0 | * 0 | 38 | 5.3 |
| 2 | | | 0 | 0 | 0 | 0 | | 0 | 0 | * 0 | *1.0 | 0 |
| 3 | | | .1 | 0 | 0 | 0 | | 0 | 0 | 0 | .1 | 25 |
| 4 | | (*) | 0 | 0 | 0 | 0 | | 0 | 0 | 2.2 | 0 | 0 |
| 5 | | | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | .3 | 0 |
| 6 | | | 0 | 0 | 0 | 0 | | * 0 | 0 | 0 | 0 | 1.2 |
| 7 | | | 0 | .9 | 0 | 0 | | .1 | 0 | 0 | 0 | .1 |
| 8 | | | 0 | .3 | 0 | 0 | | .1 | 0 | 0 | 16 | *.6 |
| 9 | | | 0 | .2 | 0 | 0 | | .1 | * 0 | 0 | 0 | 10 |
| 10 | | | 0 | .2 | 0 | 0 | | .1 | 0 | 0 | 0 | .1 |
| 11 | | | 0 | * .1 | 0 | .3 | | .1 | 0 | 0 | 0 | .3 |
| 12 | | | 0 | 0 | 0 | .1 | (*) | .2 | 0 | .9 | 0 | 5.4 |
| 13 | | | 0 | 0 | 0 | .1 | | 0 | 0 | 0 | 7.9 | 0 |
| 14 | | | * 0 | 0 | 0 | .1 | | 0 | 0 | * 0 | 9.3 | 0 |
| 15 | | | 0 | 0 | 0 | * .1 | | 0 | 0 | 0 | 0 | 0 |
| 16 | | | 0 | 0 | 0 | .1 | | 0 | 0 | 1.5 | 0 | 0 |
| 17 | | | 0 | 0 | 0 | .1 | | 0 | 0 | *5.3 | .1 | 0 |
| 18 | | | 0 | 0 | 0 | 0 | | 0 | 0 | 5.5 | 7.8 | 0 |
| 19 | | | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | * 13 | 0 |
| 20 | | | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | .1 | 0 |
| 21 | | | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 |
| 22 | | | 0 | .2 | 0 | * 0 | | 0 | 0 | 0 | 0 | 0 |
| 23 | | | 0 | .1 | * .2 | 0 | | 0 | 0 | 0 | 2.2 | * 0 |
| 24 | | | 0 | .1 | .3 | .1 | | 0 | 0 | 0 | .1 | 0 |
| 25 | | (*) | 0 | .2 | .2 | .1 | | 0 | 0 | .2 | 0 | 0 |
| 26 | | | 0 | .2 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 |
| 27 | | | 0 | .2 | 0 | 0 | | 0 | 0 | .1 | 0 | 0 |
| 28 | | | 0 | .1 | 0 | 0 | | 0 | 0 | * 0 | .1 | 0 |
| 29 | | | 0 | .1 | - | 0 | | 0 | .7 | 5.7 | 0 | 0 |
| 30 | | | 0 | 0 | ---------- | 0 | | 0 | 0 | 0 | 0 | 0 |
| 31 | | ---------- | 0 | * 0 | ---------- | 0 | ---------- | 0 | ---------- | 1.6 | 0 | ---------- |
| Total | 0 | 0 | 0.1 | 2.9 | 0.7 | 1.1 | 0 | 0.7 | 0.7 | 36.5 | 96.0 | 48.0 |
| Mean | 0 | 0 | 0.003 | 0.09 | 0.02 | 0.04 | 0 | 0.02 | 0.02 | 1.18 | 3.10 | 1.60 |
| Ac-ft | 0 | 0 | 0.2 | 5.8 | 1.4 | 2.2 | 0 | 1.4 | 1.4 | 72 | 190 | 95 |

Calendar year 1964: Max 70 Min 0 Mean 0.72 Ac-ft 520
Water year 1964-65: Max 38 Min 0 Mean 0.51 Ac-ft 369

Peak discharge (base, 500 cfs).--Aug. 1 (2115) 1,130 cfs (4.18 ft); Sept. 3 (0615) 652 cfs (3.47 ft).

* Discharge measurement or observation of no flow made on this day.

8-4783. Wamel Canal at head near Deming, N. Mex.

Location.--Lat 32°18'05", long 107°53'45", in NW¼SE¼ sec.17, T.23 S., R.10 W., on left bank 110 ft downstream from heading gates and the Mimbres River and 8½ miles west of Deming.

Records available.--October 1963 to September 1965.

Gage.--Water-stage recorder. Datum of gage is 4,468.5 ft above mean sea level (levels by New Mexico State Engineer).

Extremes.--1963-65: Maximum daily discharge, 264 cfs Sept. 24, 1964; no flow for most of time.

Remarks.--Records poor.

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | | | 0 | 3.4 |
| 2 | | | | | | | | | | | *39 | *61 |
| 3 | | | | | | | | | | | 6.3 | .9 |
| 4 | | | | | | | | | | | 0 | 0 |
| 5 | (*) | | | | | | | | | | 0 | 0 |
| 6 | | | | | | | | | | (*) | 0 | 0 |
| 7 | | | | | | | | | | | 0 | 82 |
| 8 | | | | | | | (*) | | | | 0 | 7.2 |
| 9 | | | | | | | | | (*) | | 0 | 169 |
| 10 | | | (*) | | | | | | | | 0 | 78 |
| 11 | | | | (*) | | | | (*) | | | 0 | *22 |
| 12 | | (*) | | | | | | | | | 0 | 262 |
| 13 | | | | | | | | | | | 0 | 234 |
| 14 | | | | | | | | | | | 0 | 117 |
| 15 | | | | | | | | | | | 0 | *18 |
| 16 | | | | | | | | | | | 0 | .6 |
| 17 | | | | | | | | | | | 0 | 0 |
| 18 | | | | | (*) | | | | | | 0 | 0 |
| 19 | | | | | | | | | | | 0 | 0 |
| 20 | | | | | | | | | | | 0 | 0 |
| 21 | | | | (*) | | | | | | | 0 | 0 |
| 22 | | | | | | (*) | (*) | | | | 0 | 0 |
| 23 | | | | | | | | | | | 0 | 0 |
| 24 | | | | | | | | | | | 0 | 0 |
| 25 | | | | | | | | | | | 0 | 0 |
| 26 | (*) | | | | | | | | | | 0 | 20 |
| 27 | | | | | | | | | | | 0 | 2.0 |
| 28 | | | | | | | | | | (*) | 0 | 0 |
| 29 | | | | | - | | | | | | 0 | 0 |
| 30 | | | | | ---------- | | | | | | 0 | 0 |
| 31 | | ---------- | | | ---------- | | ---------- | | ---------- | | 0 | ---------- |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 45.3 | 1,077.1 |
| Mean | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.46 | 35.9 |
| Ac-ft | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 90 | 2,140 |

Calendar year 1964: Max 264 Min 0 Mean 1.21 Ac-ft 878
Water year 1964-65: Max 262 Min 0 Mean 3.08 Ac-ft 2,230

* Discharge measurement or observation of no flow made on this day.
Note.--No gage-height record June 15-25, July 4, 5, 17, 18.

8-4784. Mimbres River below Wamel heading, near Deming, N. Mex.

Location.--Lat 32°18'05", long 107°53'45", in NW¼SE¼ sec.17, T.23 S., R.10 W., on right bank 200 ft downstream from Wamel Canal heading and 8½ miles west of Deming, N. Mex.

Drainage area.--

Records available.--October 1963 to September 1965.

Gage.--Water-stage recorder and concrete control. Datum of gage is 4,468.9 ft above mean sea level (levels by New Mexico State engineer).

Extremes.--Maximum discharge during year, 812 cfs Sept. 2 (gage height, 3.98 ft), from rating curve extended above 350 cfs on basis of logarithmic plotting; no flow for most of time.
1963-65: Maximum discharge, that of Sept. 2, 1965; no flow for most of time.

Remarks.--Records fair except those for periods of no gage-height record, which are poor.

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | | | 0 | 5 |
| 2 | | | | | | | | | | | *7.4 | * 170 |
| 3 | | | | | | | | | | | 0 | 0 |
| 4 | | | | | | | | | | | 0 | 0 |
| 5 | (*) | | | | | | | | | | 0 | 0 |
| 6 | | | | | | | | | | (*) | 0 | 0 |
| 7 | | | | | | | | | | | 0 | 33 |
| 8 | | | | | | | (*) | | | | 0 | 0 |
| 9 | | | | | | | | | (*) | | 0 | 47 |
| 10 | | | (*) | | | | | | | | 0 | .4 |
| 11 | | | | (*) | | | | (*) | | | 0 | *0 |
| 12 | | (*) | | | | | | | | | 0 | 125 |
| 13 | (*) | | | | | | | | | | 0 | 125 |
| 14 | | | | | | | | | | | 0 | 21 |
| 15 | | | | | | | | | | | 0 | 1.0 |
| 16 | | | | | | | | | | | 0 | 0 |
| 17 | | | | | | | | | | | 0 | 0 |
| 18 | | | | | | | | | | | 0 | 0 |
| 19 | | | | | (*) | | | | | | 0 | 0 |
| 20 | | | | | | | | | | | 0 | 0 |
| 21 | | | | (*) | | | | | | | 0 | 0 |
| 22 | | | | | | (*) | (*) | | | | 0 | 0 |
| 23 | | | | | | | | | | | 0 | 0 |
| 24 | | | | | | | | | | | 0 | 0 |
| 25 | | | | | | | | | | | 0 | 0 |
| 26 | (*) | | | | | | | | | | 0 | .4 |
| 27 | | | | | | | | | | | 0 | 0 |
| 28 | | | | | | | | | | (*) | 0 | 0 |
| 29 | | | | | | | | | | | 0 | 0 |
| 30 | | | (*) | | ---------- | | | | | | 0 | 0 |
| 31 | | ---------- | | | ---------- | | ---------- | | ---------- | | 0 | ---------- |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7.4 | 527.8 |
| Mean | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.24 | 17.6 |
| Ac-ft | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 1,050 |

Calendar year 1964: Max 126 Min 0 Mean 0.41 Ac-ft 295
Water year 1964-65: Max 170 Min 0 Mean 1.47 Ac-ft 1,060

Peak discharge (base, 300 cfs).--Sept. 2 (0200) 812 cfs (3.98 ft).

* Discharge measurement or observation of no flow made on this day.
Note.--No gage-height record June 21 to July 6, Aug. 5-8, Aug. 22 to Sept. 2.

8-4815. Río Tularosa near Bent, N. Mex.

Location.--Lat 33°08'40", long 105°53'50", in SE¼NW¼ sec.32, T.13 S., R.11 E., on right bank 50 ft downstream from bridge on U. S. Highway 70, 2.6 miles west of Bent, and 8.5 miles northeast of Tularosa.

Drainage area.--120 sq mi, approximately.

Records available.--December 1947 to September 1965.

Gage.--Water-stage recorder (digital) and concrete control. Altitude of gage is 5,450 ft (from topographic map).

Average discharge.--17 years (1948-65), 9.61 cfs (6,960 acre-ft per year).

Extremes.--Maximum discharge during year, 4,280 cfs June 18 (gage height, 5.02 ft), from rating curve extended above 160 cfs on basis of slope-area measurement of peak flow; minimum, 1.0 cfs June 27, 28.
1947-65: Maximum discharge, that of June 18, 1965; no flow May 14, 1955, result of unusual regulation.
A major flood probably occurred Sept. 3, 1938, when a peak of 9,640 cfs was computed for station near Tularosa. Another high peak may have occurred July 2, 1914.

Remarks.--Records poor. Diversion for irrigation of about 1,000 acres (1959 determination) above station. Records of chemical analyses and water temperatures for the water year 1965 are published in Part 2 of this report.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

| | | | |
|---|---|---|---|
| 2.25 | 2.4 | 2.6 | 60 |
| 2.3 | 4.4 | 2.7 | 104 |
| 2.4 | 13 | 2.8 | 160 |
| 2.5 | 30 | | |

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1964 TO SEPTEMBER 1965

| DAY | OCT. | NOV. | DEC. | JAN. | FEB. | MAR. | APR. | MAY | JUNE | JULY | AUG. | SEPT. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 6.6 | 8.1 | 9.5 | 7.3 | 7.4 | 9.3 | 9.5 | 9.6 | 6.0 | 6.7 | 7.1 | *10 |
| 2 | 7.8 | 8.6 | *10 | 7.5 | 7.9 | 9.9 | 8.7 | 7.1 | 9.2 | 6.8 | 105 | 9.8 |
| 3 | 7.6 | 9.0 | 11 | 8.1 | 6.5 | 9.8 | 7.7 | 7.3 | 10 | 7.4 | a 15 | 59 |
| 4 | 8.1 | 8.6 | 11 | 8.3 | 6.5 | 5.0 | 6.4 | 6.6 | 11 | 7.2 | a 11 | 11 |
| 5 | 7.8 | 9.1 | 10 | 8.1 | 6.7 | 7.3 | 6.4 | 11 | 9.6 | 4.6 | a 15 | 9.7 |
| 6 | 6.5 | 9.0 | 9.5 | 6.9 | 6.0 | 8.2 | 6.4 | 12 | 7.6 | 3.4 | a 11 | 11 |
| 7 | 7.5 | 8.5 | 10 | 14 | 8.7 | 8.2 | 9.9 | 12 | *5.7 | 3.7 | a 10 | 19 |
| 8 | 8.3 | 8.2 | 9.2 | 14 | 10 | 8.2 | * 9.5 | 11 | 6.5 | 4.4 | a 15 | 15 |
| 9 | 7.9 | 8.3 | 9.9 | 13 | 11 | * 6.8 | 10 | 11 | 6.6 | 4.5 | a 11 | 15 |
| 10 | 8.0 | 8.3 | 9.5 | 11 | *10 | 8.7 | 10 | 9.9 | 7.4 | 4.1 | a 10 | *13 |
| 11 | 8.2 | 8.2 | 9.1 | 11 | 9.6 | 10 | 9.8 | 8.5 | 7.3 | 3.8 | a 10 | 11 |
| 12 | 7.5 | * 8.2 | 9.2 | 14 | 9.0 | 12 | 8.2 | 8.4 | 6.7 | 3.9 | a 9.5 | 9.8 |
| 13 | 7.6 | 8.1 | 9.1 | *14 | 9.0 | 11 | 8.1 | 9.6 | 5.4 | 4.3 | a 9.0 | 11 |
| 14 | 7.6 | 8.0 | 8.2 | 13 | 9.0 | 11 | 8.5 | 9.0 | 4.1 | 7.2 | a 9.0 | 11 |
| 15 | 8.9 | 7.8 | 8.2 | 12 | 11 | 11 | 7.9 | 9.8 | 4.0 | 8.1 | a 13 | *12 |
| 16 | 9.0 | 8.6 | 8.6 | 11 | 11 | 10 | 8.5 | 7.0 | 7.9 | 7.9 | a 10 | 12 |
| 17 | 8.6 | 8.3 | * 9.0 | 11 | 9.2 | 10 | 7.0 | * 6.8 | 9.6 | 7.2 | *a 8.0 | 11 |
| 18 | 9.2 | 8.4 | 9.0 | 11 | 8.4 | 11 | 6.4 | 6.4 | *140 | 7.1 | 6.7 | 11 |
| 19 | * 9.3 | 8.2 | 9.0 | 12 | 7.6 | 10 | 5.8 | 9.5 | a 20 | 5.7 | 7.5 | 9.1 |
| 20 | 9.2 | 8.2 | 8.6 | 10 | 7.6 | 10 | 5.7 | 13 | a 12 | 5.4 | 8.5 | 9.1 |
| 21 | 9.9 | 7.7 | 8.3 | 9.9 | 8.5 | 9.9 | * 9.8 | 12 | a 10 | * 5.8 | 8.7 | 7.3 |
| 22 | 10 | 8.2 | 8.8 | 10 | 8.4 | 10 | 10 | 12 | *a 9.5 | 5.7 | 9.8 | 7.3 |
| 23 | 9.8 | 8.1 | 8.7 | 8.9 | 8.6 | 11 | 11 | 11 | a 6.0 | 6.2 | 9.8 | 7.3 |
| 24 | 9.3 | 8.1 | 8.2 | 9.1 | 8.2 | 7.6 | 11 | 8.0 | a 4.5 | 5.6 | 11 | 7.3 |
| 25 | 9.7 | 8.0 | 7.9 | 8.9 | 8.5 | 9.9 | 11 | 6.4 | 3.4 | 5.1 | 12 | 6.5 |
| 26 | 9.2 | 7.6 | 7.8 | 9.0 | 9.0 | 9.1 | 10 | 7.3 | 4.7 | 5.8 | 11 | 6.5 |
| 27 | 8.2 | 7.5 | 7.7 | 8.2 | 9.0 | 9.7 | 11 | 8.8 | 3.4 | 6.2 | 11 | * 7.3 |
| 28 | 7.7 | 7.7 | 7.4 | 8.3 | 9.6 | 9.7 | * 11 | 8.2 | 3.5 | 9.3 | 11 | 8.2 |
| 29 | 7.9 | 8.9 | 7.3 | 7.8 | ------ | 8.2 | 9.9 | 8.7 | 4.0 | 9.5 | 11 | 7.3 |
| 30 | 8.6 | 9.1 | 7.3 | 6.6 | ------ | 7.4 | 9.8 | 6.6 | 6.5 | 8.6 | 11 | 7.3 |
| 31 | 8.4 | ------ | 7.3 | 7.1 | ------ | 7.6 | ------ | 6.4 | ------ | 9.8 | 9.5 | ------ |
| TOTAL | 259.3 | 248.6 | 274.3 | 311.0 | 241.9 | 287.5 | 264.9 | 280.9 | 352.1 | 191.0 | 417.1 | 351.8 |
| MEAN | 8.37 | 8.29 | 8.85 | 10.0 | 8.64 | 9.27 | 8.83 | 9.06 | 11.7 | 6.16 | 13.5 | 11.7 |
| AC-FT | 514 | 493 | 544 | 617 | 480 | 570 | 525 | 557 | 698 | 379 | 827 | 698 |

CALENDAR YEAR 1964 MAX 27 MIN 2.6 MEAN 8.74 AC-FT 6,350
WATER YEAR 1964-65 MAX 140 MIN 3.4 MEAN 9.54 AC-FT 6,900

Peak discharge (base, 125 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 6-18 | 1600 | 5.02 | 4,280 | 9-3 | 0830 | 2.99 | 311 |
| 8-2 | 2150 | 3.97 | 2,210 | | | | |

* Discharge measurement made on this day.
a No gage-height record.

## 9-3464. San Juan River near Carracas, Colo.

Location.--Lat 37°00'47", long 107°18'39", in SE¼SW¼ sec.17, T.32 N., R.4 W., on right bank at river mile 178.8 just above flow line of Navajo Reservoir and 3 miles northwest of Carracas, Colo., 7.2 miles upstream from Piedra River.

Drainage area.--1,230 sq mi, approximately.

Records available.--October 1961 to September 1965.

Gage.--Water-stage recorder (digital). Altitude of gage is 6,090 ft (from river-profile map).

Extremes.--Maximum discharge during year, 6,120 cfs May 22 (gage height, 6.85 ft); minimum, 40 cfs Dec. 15.
1961-65: Maximum discharge, that of May 22, 1965; minimum discharge, about 5 cfs Dec. 10, 1961, result of freezeup.
Maximum flood known occurred Oct. 5, 1911. Major floods occurred Sept. 5 or 6, 1909 and June 29, 1927.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Discharge measurements generally made twice a month. Diversions for irrigation of about 11,000 acres above station.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Apr. 26-30)

| Oct. 1 to Apr. 16 | | | | Apr. 17 to Sept. 30 | | | |
|---|---|---|---|---|---|---|---|
| 1.3 | 45 | 2.5 | 360 | 1.9 | 170 | 5.0 | 2,920 |
| 1.6 | 94 | 3.0 | 670 | 2.5 | 390 | 6.0 | 4,540 |
| 1.9 | 156 | 4.0 | 1,560 | 3.0 | 670 | 6.5 | 5,440 |
| 2.2 | 235 | 4.4 | 2,050 | 4.0 | 1,560 | | |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 226 | 101 | 140 | 130 | 140 | 257 | 1,710 | 3,220 | 3,150 | 2,980 | 1,350 | 211 |
| 2 | 205 | 98 | 160 | 120 | 150 | 205 | 1,970 | 3,890 | 3,240 | 3,280 | 1,560 | 221 |
| 3 | 186 | 97 | 180 | 130 | 130 | 179 | 1,340 | 4,020 | 3,270 | 3,370 | 1,270 | 294 |
| 4 | 174 | 95 | 155 | 120 | 120 | 148 | 1,300 | 3,830 | 2,920 | 3,130 | 1,100 | 294 |
| 5 | 170 | 86 | 128 | 130 | 140 | 150 | 928 | 2,950 | 2,610 | 2,940 | 972 | 242 |
| 6 | 163 | 87 | 95 | 140 | 160 | 168 | 695 | 2,640 | 2,670 | 2,860 | 812 | 253 |
| 7 | 154 | 89 | 91 | 490 | 190 | 192 | 1,130 | 2,380 | 3,180 | 2,710 | 705 | 354 |
| 8 | 154 | 87 | 80 | 880 | 180 | 220 | 971 | 2,580 | 3,490 | 2,860 | 621 | 358 |
| 9 | 152 | 86 | 111 | 320 | 160 | 246 | 1,250 | 1,970 | 3,860 | 2,650 | 558 | 635 |
| 10 | 146 | 93 | 145 | 240 | 150 | 265 | 952 | 1,950 | 3,380 | 2,340 | 530 | 405 |
| 11 | 143 | 97 | 131 | 210 | 130 | 252 | 652 | 1,660 | 2,800 | 2,590 | 500 | 330 |
| 12 | 141 | 95 | 129 | 200 | 120 | 254 | 543 | 1,590 | 2,620 | 2,700 | 440 | 310 |
| 13 | 136 | 75 | 80 | 180 | 90 | 225 | 988 | 2,020 | 2,980 | 2,250 | 425 | 294 |
| 14 | 135 | 90 | 75 | 180 | 80 | 194 | 1,060 | 2,220 | 3,950 | 2,020 | 425 | 253 |
| 15 | 133 | 120 | 50 | 170 | 110 | 226 | 931 | 2,090 | 4,590 | 1,840 | 405 | 225 |
| 16 | 130 | 120 | 65 | 160 | 120 | 257 | 1,410 | 2,000 | 4,770 | 1,750 | 395 | 211 |
| 17 | 126 | 155 | 120 | 160 | 120 | 238 | 1,870 | 2,500 | 4,520 | 1,660 | 435 | 191 |
| 18 | 127 | 170 | 140 | 170 | 110 | 248 | 2,340 | 3,180 | 4,720 | 1,890 | 520 | 314 |
| 19 | 127 | 150 | 140 | 170 | 130 | 215 | 2,470 | 3,760 | 4,770 | 1,690 | 510 | 1,500 |
| 20 | 120 | 130 | 130 | 160 | 150 | 172 | 2,950 | 4,610 | 4,760 | 1,500 | 378 | 1,200 |
| 21 | 120 | 100 | 140 | 160 | 170 | 182 | 3,190 | 4,680 | 4,770 | 1,390 | 330 | 900 |
| 22 | 121 | 90 | 160 | 160 | 200 | 240 | 3,860 | 5,370 | 4,140 | 1,230 | 314 | 800 |
| 23 | 115 | 110 | 150 | 150 | 230 | 274 | 4,020 | 4,760 | 3,730 | 1,090 | 290 | 800 |
| 24 | 112 | 120 | 160 | 130 | 200 | 393 | 4,310 | 4,160 | 4,140 | 1,040 | 270 | 850 |
| 25 | 106 | 110 | 170 | 140 | 160 | 313 | 3,730 | 3,280 | 3,980 | 972 | 249 | 850 |
| 26 | 100 | 125 | 170 | 140 | 160 | 236 | 2,910 | 2,470 | 3,340 | 1,030 | 228 | 850 |
| 27 | 99 | 140 | 170 | 120 | 190 | 383 | 2,260 | 2,050 | 2,940 | 932 | 207 | 850 |
| 28 | 101 | 110 | 420 | 120 | 276 | 618 | 1,990 | 1,870 | 2,860 | 948 | 188 | 900 |
| 29 | 104 | 100 | 240 | 130 | - | 769 | 1,690 | 1,780 | 2,980 | 780 | 176 | 908 |
| 30 | 106 | 125 | 100 | 130 | ---------- | 903 | 2,320 | 2,180 | 3,100 | 1,050 | 256 | 740 |
| 31 | 105 | ---------- | 110 | 150 | ---------- | 1,310 | ---------- | 2,290 | ---------- | 1,240 | 267 | ---------- |
| Total | 4,237 | 3,251 | 4,335 | 5,990 | 4,266 | 9,932 | 57,740 | 89,950 | 108,230 | 60,712 | 16,686 | 16,543 |
| Mean | 137 | 108 | 140 | 193 | 152 | 320 | 1,925 | 2,902 | 3,608 | 1,958 | 538 | 551 |
| Ac-ft | 8,400 | 6,450 | 8,600 | 11,880 | 8,460 | 19,700 | 114,500 | 178,400 | 214,700 | 120,400 | 33,100 | 32,810 |

Calendar year 1964: Max 2,970 Min 50 Mean 405 Ac-ft 294,100
Water year 1964-65: Max 5,370 Min 50 Mean 1,046 Ac-ft 757,400

Peak discharge (base, 2,500 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 4-24 | 0330 | 6.88 | 6,070 | 6-16 | 0730 | 6.49 | 5,390 |
| 5-3 | 0230 | 6.17 | 4,920 | 7-17 | 2330 | 5.07 | 3,070 |
| 5-22 | 0800 | 6.85 | 6,120 | | | | |

Note.--No gage-height record Nov. 13 to Dec. 3, Sept. 20-28.
Stage-discharge relation affected by ice Dec. 13 to Feb. 27.

## 9-3498. Piedra River near Arboles, Colo.

Location.--37°05'17", long 107°23'52", in NE¼SW¼ sec.21, T.33 N., R.5 W., on left bank 3 miles downstream from Ignacio Creek, 5.2 miles northeast of Arboles Post Office, 8 miles upstream from mouth.

Drainage area.--629 sq mi.

Records available.--August 1962 to September 1965. Gage operated 1895-1899, 1910-1927 at a site 7½ miles downstream at altitude 6,000 ft. Low flow records probably not equivalent.

Gage.--Water-stage recorder (digital). Datum of gage is 6,147.52 ft above mean sea level (from Colorado State Highway Department bench mark).

Extremes.--Maximum discharge during year, 4,000 cfs Apr. 23 (gage height, 5.20 ft); minimum, 24 cfs Dec. 8.
1962-65: Maximum discharge, that of Apr. 23, 1965; minimum, 11 cfs Dec. 9, 1964.
Maximum flood known occurred Oct. 5, 1911. A major flood occurred Sept. 5 or 6, 1909.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Discharge measurements generally made twice a month. Diversions for irrigation of about 2,800 acres above station.

Rating tables, except periods of ice effect (gage-height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Apr. 21-27)

| Oct. 1 to Mar. 31 | | Apr. 1-23 | | Apr. 24 to Sept. 30 | | | |
|---|---|---|---|---|---|---|---|
| 1.5 | 32 | 2.4 | 305 | 1.2 | 90 | 3.5 | 1,580 |
| 1.7 | 69 | 2.9 | 610 | 1.6 | 188 | 4.0 | 2,220 |
| 2.0 | 150 | 3.4 | 1,010 | 2.0 | 350 | 4.5 | 2,980 |
| 2.3 | 260 | 4.0 | 1,680 | 2.5 | 660 | | |
| 2.7 | 470 | 5.0 | 3,200 | 3.0 | 1,070 | | |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 135 | 51 | 57 | 70 | 65 | 100 | 652 | 2,220 | 1,550 | 1,500 | 524 | 126 |
| 2 | 123 | 51 | 62 | 65 | 68 | 85 | 771 | 2,630 | 1,540 | 1,630 | 619 | 135 |
| 3 | 112 | 53 | 63 | 60 | 64 | 75 | 636 | 2,660 | 1,600 | 1,630 | 565 | 159 |
| 4 | 108 | 51 | 60 | 65 | 63 | 75 | 610 | 2,480 | 1,570 | 1,500 | 452 | 160 |
| 5 | 101 | 48 | 45 | 65 | 64 | 80 | 463 | 2,030 | 1,380 | 1,470 | 417 | 136 |
| 6 | 89 | 48 | 40 | 65 | 68 | 85 | 401 | 1,760 | 1,490 | 1,410 | 358 | 155 |
| 7 | 79 | 48 | 40 | 65 | 74 | 89 | 541 | 1,500 | 1,750 | 1,320 | 316 | 182 |
| 8 | 71 | 47 | 45 | 70 | 72 | 94 | 486 | 1,370 | 1,870 | 1,360 | 283 | 165 |
| 9 | 70 | 49 | 50 | 70 | 70 | 98 | 591 | 1,170 | 2,030 | 1,250 | 257 | 226 |
| 10 | 68 | 50 | 55 | 65 | 70 | 104 | 506 | 1,140 | 1,710 | 1,040 | 238 | 199 |
| 11 | 69 | 57 | 60 | 60 | 60 | 101 | 368 | 1,020 | 1,490 | 1,120 | 234 | 171 |
| 12 | 68 | 51 | 55 | 55 | 55 | 103 | 330 | 1,050 | 1,370 | 1,240 | 209 | 162 |
| 13 | 61 | 49 | 50 | 60 | 50 | 103 | 404 | 1,380 | 1,550 | 1,050 | 196 | 163 |
| 14 | 62 | 56 | 45 | 59 | 55 | 95 | a 500 | 1,470 | 1,880 | 902 | 186 | 149 |
| 15 | 60 | 53 | 50 | 60 | 60 | 101 | a 550 | 1,350 | 2,230 | 843 | 182 | 135 |
| 16 | 59 | 49 | 55 | 60 | 70 | 116 | a 800 | 1,320 | 2,190 | 774 | 180 | 127 |
| 17 | 59 | 75 | 55 | 60 | 65 | 114 | 1,320 | 1,550 | 1,940 | 721 | 178 | 122 |
| 18 | 62 | 78 | 50 | 61 | 65 | 114 | 1,840 | 1,860 | 1,980 | 747 | 184 | 148 |
| 19 | 64 | 66 | 50 | 61 | 70 | 106 | a 2,200 | 2,080 | 1,910 | 673 | 193 | 419 |
| 20 | 59 | 58 | 55 | 65 | 78 | 91 | 2,450 | 2,480 | 2,180 | 608 | 167 | 363 |
| 21 | 55 | 51 | 60 | 65 | 70 | 99 | 2,740 | 2,600 | 2,200 | 689 | 153 | 315 |
| 22 | 57 | 51 | 55 | 65 | 80 | 112 | 3,030 | 2,680 | 1,950 | 553 | 150 | 272 |
| 23 | 55 | 53 | 60 | 60 | 86 | 115 | 3,090 | 2,300 | 1,760 | 477 | 142 | 263 |
| 24 | 53 | 55 | 65 | 55 | 78 | 151 | 2,820 | 2,070 | 2,010 | 419 | 134 | 278 |
| 25 | 54 | 51 | 65 | 60 | 75 | 145 | 2,360 | 1,710 | 2,050 | 403 | 123 | 296 |
| 26 | 53 | 57 | 65 | 55 | 81 | 134 | 1,950 | 1,400 | 1,710 | 373 | 112 | 301 |
| 27 | 52 | 61 | 65 | 50 | 90 | 161 | 1,760 | 1,200 | 1,520 | 370 | 106 | 298 |
| 28 | 54 | 57 | 70 | 52 | 102 | 211 | 1,520 | 1,050 | 1,500 | 370 | 99 | 318 |
| 29 | 48 | 48 | 65 | 60 | - | 274 | 1,470 | 998 | 1,530 | 385 | 97 | 330 |
| 30 | 47 | 57 | 60 | 70 | ---------- | 321 | 1,700 | 1,120 | 1,590 | 460 | 146 | 294 |
| 31 | 50 | ---------- | 65 | 70 | ---------- | 451 | ---------- | 1,230 | ---------- | 556 | 153 | ---------- |
| Total | 2,157 | 1,629 | 1,737 | 1,923 | 1,968 | 4,103 | 38,859 | 52,878 | 53,030 | 27,843 | 7,353 | 6,567 |
| Mean | 69.6 | 54.3 | 56.0 | 62.0 | 70.3 | 132 | 1,295 | 1,706 | 1,768 | 898 | 237 | 219 |
| Ac-ft | 4,280 | 3,230 | 3,450 | 3,810 | 3,900 | 8,140 | 77,080 | 104,900 | 105,200 | 55,230 | 14,580 | 13,030 |

Calendar year 1964: Max 1,420 Min 24 Mean 183 Ac-ft 133,000
Water year 1964-65: Max 3,090 Min 40 Mean 548 Ac-ft 396,800

Peak discharge (base, 1,500 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 4-23 | 2330 | 5.20 | 4,000 | 5-22 | 0600 | 4.46 | 2,930 |
| 5-3 | 0200 | 4.57 | 3,030 | 6-21 | 0430 | 4.12 | 2,390 |

Note.--Stage-discharge relation affected by ice Dec. 5 to Jan. 17, Jan. 23-31, Feb. 10-18.
a No gage-height record.

## 9-3505. San Juan River at Rosa, N. Mex.

Location.--Lat 37°00'20", long 107°24'10", in SW¼ sec.21, T.32 N., R.5 W., on right bank a quarter of a mile downstream from Piedra River and 0.9 mile upstream from Colorado-New Mexico State Line.

Drainage area.--1,990 sq mi, approximately.

Records available.--July to November 1895, May 1896 to December 1897, April to December 1898, May to September 1899, September 1910 to May 1965 (discontinued). Monthly discharge only for some periods, published in WSP 1313. Prior to October 1920, published as two stations, Piedra and San Juan Rivers at Arboles, Colo., sum of which is equivalent.

Gage.--Water-stage recorder. Datum of gage is 5,972 ft above mean sea level (National Park Service bench mark). Prior to Oct. 1, 1920, at sites on Piedra and San Juan Rivers at Arboles, Colo. (see WSP 1313 for descriptions). Oct. 1, 1920, to Apr. 12, 1922, chain gage at site 75 ft downstream at different datum. Apr. 13, 1922, to Sept. 18, 1930, water-stage recorder at site 550 ft upstream at datum 0.7 ft higher. Sept. 19, 1930, to Aug. 31, 1938, water-stage recorder at sites 330 and 430 ft upstream at datum 1.0 ft higher. Sept. 1, 1938, to Dec. 19, 1949, water-stage recorder at present site at datum 1.0 ft higher.

Average discharge.--55 years (1896-97, 1910-64), 1,193 cfs (863,700 acre-ft per year).

Extremes.--Maximum discharge during period, 9,880 cfs Apr. 24 (gage height, 7.70 ft); minimum, 69 cfs Dec. 15.
1920-64: Maximum discharge, about 25,000 cfs June 29, 1927 (gage height, 13.5 ft, from estimated graph, site and datum then in use), from rating curve extended above 8,000 cfs by logarithmic plotting; minimum, about 12 cfs Dec. 9, 1963, result of freezeup.
Maximum flood known occurred Oct. 5, 1911. A major flood occurred Sept. 5 or 6, 1909.

Remarks.--Records good except those for periods of indefinite stage-discharge relation or doubtful gage-height record, which are fair. Diversions for irrigation of about 14,000 acres above station.

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 371 | 146 | 194 | 203 | d 210 | 354 | 2.370 | 5.350 | | | | |
| 2 | 326 | 146 | 216 | 190 | d 220 | 284 | 2.820 | 6.580 | | | | |
| 3 | 296 | 146 | 230 | 189 | d 190 | d 250 | 2.000 | 6.960 | | | | |
| 4 | 273 | 144 | 216 | 188 | d 190 | d 220 | 1.920 | 6.620 | | | | |
| 5 | 265 | 133 | 172 | 199 | * 201 | d 230 | 1.400 | 5.000 | | | | |
| 6 | * 245 | 132 | 127 | 203 | 232 | d 250 | 1.110 | 4.360 | | | | |
| 7 | 228 | 133 | 123 | 546 | 270 | d 280 | 1.640 | 3.780 | | | | |
| 8 | 221 | 130 | * 111 | 955 | 252 | *d 300 | 1.470 | 3.600 | | | | |
| 9 | 216 | 127 | 136 | 397 | 237 | 335 | 1.850 | 3.020 | | | | |
| 10 | 207 | 133 | 188 | 314 | 219 | 364 | 1.480 | *2.880 | | | | |
| 11 | 207 | 146 | 190 | 276 | 192 | 350 | 1.100 | 2.590 | | | | |
| 12 | 205 | * 146 | 180 | 252 | 176 | 357 | 908 | 2.530 | | | | |
| 13 | 194 | 133 | 133 | *237 | 143 | 326 | 1.360 | e3.400 | | | | |
| 14 | 194 | 150 | 121 | 237 | 136 | 282 | 1.580 | e3.600 | | | | |
| 15 | 190 | 174 | 97 | 228 | 172 | 314 | 1.440 | e3.400 | | | | |
| 16 | 194 | 170 | 122 | 221 | 192 | 389 | 2.240 | e3.300 | | | | |
| 17 | 192 | 228 | 176 | 226 | 190 | 350 | 3.080 | e4.200 | | | | |
| 18 | 190 | 242 | 196 | 226 | 180 | 374 | 4.080 | e5.300 | | | | |
| 19 | 190 | 219 | 188 | 230 | * 200 | 326 | 4.670 | e6.000 | | | | |
| 20 | 184 | 188 | 190 | 230 | 235 | 265 | *5.460 | *6.960 | | | | |
| 21 | 180 | 157 | 203 | 232 | 242 | 265 | 6.080 | 7.380 | | | | |
| 22 | 180 | 148 | 212 | 226 | 276 | 354 | 7.120 | 8.100 | | | | |
| 23 | 168 | 163 | 212 | 207 | 314 | 389 | 7.260 | 7.140 | | | | |
| 24 | 166 | 174 | 226 | 188 | 282 | 555 | 7.490 | 6.280 | | | | |
| 25 | 163 | 170 | 242 | 203 | 232 | 478 | 6.150 | 5.020 | | | | |
| 26 | 148 | 182 | 237 | 194 | 244 | 368 | 4.650 | 3.920 | | | | |
| 27 | 144 | 212 | 235 | 172 | 291 | 546 | 3.840 | 3.360 | | | | |
| 28 | 145 | 176 | 493 | 168 | 364 | 836 | 3.260 | 2.960 | | | | |
| 29 | * 145 | 157 | 311 | 192 | - | 1.080 | 3.100 | 2.850 | | | | |
| 30 | 145 | 182 | 164 | 203 | ---------- | 1.230 | 3.780 | 3.300 | | | | |
| 31 | 148 | --------- | 176 | 220 | ---------- | *1.750 | ---------- | 3.500 | ---------- | | | ---------- |
| Total | 6.320 | 4.887 | 6.017 | 7.952 | 6.282 | 14.051 | 96.708 | 143.240 | | | | |
| Mean | 204 | 163 | 194 | 257 | 224 | 453 | 3.224 | 4.621 | | | | |
| Ac-ft | 12.540 | 9.690 | 11.930 | 15.770 | 12.460 | 27.870 | 191.800 | 284.100 | | | | |

Calendar year 1964 : Max 4,460 Min 85 Mean 592 Ac-ft 429,600
Water year 1964-65 : Max - Min - Mean - Ac-ft -

Peak discharge (base, 4,000 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 4-24 | 0330 | 7.70 | 9,880 | 5-22 | 0730 | 7.29 | 8,960 |
| 5-3 | 0530 | 7.05 | 7,950 | | | | |

* Discharge measurement made on this day.
d Doubtful gage-height record.
e Stage-discharge relation indefinite.

9-3545. Los Pinos River at La Boca, Colo.
(Locally known as Pine River)

Location.--Lat 37°00'40", long 107°35'55", in S½ sec.15, T.32 N., R.7 W., on downstream end of right abutment of The Denver & Rio Grande Western Railroad Co. bridge at southeast edge of La Boca, 0.1 mile upstream from Spring Creek and 13 miles upstream from mouth.

Drainage area.--510 sq mi, approximately.

Records available.--October 1950 to September 1965. Monthly discharge only for some periods, published in WSP 1733.

Gage.--Water-stage recorder. Datum of gage is 6,143.58 ft above mean sea level, datum of 1929.

Average discharge.--15 years, 192 cfs (139,000 acre-ft per year).

Extremes.--Maximum discharge during year, 1,820 cfs May 6 (gage height, 6.05 ft); minimum, 23 cfs Dec. 14.
1950-65: Maximum discharge, 6,400 cfs July 27, 1957 (gage height, 8.95 ft); minimum, 13 cfs Apr. 23, 1951.
Maximum flood known occurred Oct. 5, 1911.

Remarks.--Records good except those for periods of ice effect or doubtful or no gage-height record, which are poor. Discharge measurements generally made twice a month. Flow regulated by Vallecito Reservoir (capacity, 126,280 acre-ft). Diversions for irrigation of about 33,000 acres above station.

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 69 | 50 | 58 | 60 | 97 | 107 | d290 | 390 | 919 | 645 | 358 | 165 |
| 2 | 69 | 41 | 61 | 50 | 71 | 80 | d360 | 1,110 | 902 | 750 | 554 | 203 |
| 3 | 66 | 38 | 61 | 50 | 66 | 61 | d330 | 1,010 | 878 | 1,040 | 596 | 218 |
| 4 | 64 | 32 | 58 | 55 | 69 | 58 | d320 | 1,410 | 928 | 1,210 | 534 | 215 |
| 5 | 66 | 29 | 49 | 60 | 76 | 55 | a260 | 1,700 | 1,070 | 1,220 | 486 | 226 |
| 6 | 66 | 29 | 45 | 60 | 80 | 61 | a200 | 1,790 | 1,060 | 1,130 | 274 | 314 |
| 7 | 66 | 31 | 40 | 70 | 108 | 73 | a190 | 1,770 | 1,110 | 927 | 243 | 286 |
| 8 | 69 | 32 | 40 | 72 | 92 | 85 | 188 | 1,730 | 764 | 1,070 | 236 | 290 |
| 9 | 69 | 31 | 40 | 70 | 76 | 130 | 236 | 1,680 | 658 | 1,100 | 222 | 330 |
| 10 | 73 | 32 | 45 | 65 | 71 | 120 | 244 | 1,470 | 870 | 1,020 | 209 | 306 |
| 11 | 78 | 36 | 45 | 65 | 60 | 102 | 194 | 1,160 | 1,160 | 878 | 218 | 274 |
| 12 | 73 | 35 | 50 | 70 | 55 | 94 | 164 | 1,010 | 1,140 | 1,000 | 197 | 290 |
| 13 | 78 | 34 | 35 | 70 | 60 | 85 | 170 | 838 | 680 | 1,080 | 185 | 294 |
| 14 | 80 | 49 | 25 | 60 | 70 | 73 | 194 | 838 | 787 | 846 | 185 | 286 |
| 15 | 120 | 60 | 30 | 55 | 80 | 80 | 198 | 774 | 1,090 | 782 | 194 | 270 |
| 16 | 85 | 107 | 35 | 55 | 80 | 104 | 264 | 750 | 1,150 | 822 | 206 | 270 |
| 17 | 55 | 115 | 40 | 55 | 65 | 123 | 335 | 701 | 1,300 | 946 | 206 | 282 |
| 18 | 48 | 85 | 40 | 54 | 67 | 118 | 395 | 680 | 1,360 | 815 | 222 | 339 |
| 19 | 46 | 71 | 45 | 54 | 74 | 85 | 370 | 687 | 1,400 | 486 | 174 | 450 |
| 20 | 44 | 61 | 50 | 52 | 80 | 66 | 380 | 610 | 1,350 | 420 | 154 | 405 |
| 21 | 41 | 58 | 50 | 52 | 85 | 102 | 474 | 870 | 1,290 | 405 | 150 | 395 |
| 22 | 41 | 71 | 50 | 50 | 94 | 140 | 643 | 942 | 1,050 | 498 | 163 | 400 |
| 23 | 41 | 64 | 55 | 46 | 92 | 140 | 922 | 438 | 822 | 504 | 163 | 390 |
| 24 | 41 | 61 | 60 | 45 | 73 | 208 | 596 | 380 | 492 | 522 | 157 | 380 |
| 25 | 48 | 60 | 60 | 50 | 71 | 177 | 540 | 486 | 486 | 522 | 144 | 380 |
| 26 | 94 | 58 | 55 | 48 | 78 | 126 | 468 | 991 | 575 | 456 | 142 | 370 |
| 27 | 78 | 60 | 55 | 45 | 100 | 140 | 438 | 1,000 | 575 | 410 | 147 | 366 |
| 28 | 66 | 56 | 70 | 44 | 123 | 191 | 370 | 973 | 568 | 395 | 144 | 370 |
| 29 | 64 | 55 | 60 | 50 | - | 216 | 355 | 937 | 438 | 320 | 163 | 362 |
| 30 | 71 | 56 | 50 | 69 | ---------- | 202 | 345 | 937 | 624 | 318 | 206 | 366 |
| 31 | 69 | ---------- | 55 | 102 | ---------- | 240 | ---------- | 955 | ---------- | 375 | 185 | ---------- |
| Total | 2,038 | 1,597 | 1,512 | 1,803 | 2,213 | 3,642 | 10,433 | 31,017 | 27,496 | 22,912 | 7,417 | 9,492 |
| Mean | 65.7 | 53.2 | 48.8 | 58.2 | 79.0 | 117 | 348 | 1,001 | 917 | 739 | 239 | 316 |
| Ac-ft | 4,040 | 3,170 | 3,000 | 3,580 | 4,390 | 7,220 | 20,690 | 61,520 | 54,540 | 45,450 | 14,710 | 18,830 |

Calendar year 1964: Max 682 Min 25 Mean 80.3 Ac-ft 58,320
Water year 1964-65: Max 1,790 Min 25 Mean 333 Ac-ft 241,100

a No gage-height record.
d Doubtful gage-height record.
Note.--Stage-discharge relation affected by ice Dec. 6 to Jan. 16, Jan. 24, 25, 27-29, Feb. 11-17.

## 9-3550. Spring Creek at La Boca, Colo.

Location.--Lat 37°00'50", long 107°35'40", in S½ sec.15, T.32 N., R.7 W., on right bank in an excavated channel, a quarter of a mile upstream from mouth and a quarter of a mile east of La Boca.

Drainage area.--58 sq mi, approximately.

Records available.--October 1950 to September 1965. Monthly discharge only for some periods, published in WSP 1733.

Gage.--Water-stage recorder. Altitude of gage is 6,160 ft (from topographic map).

Average discharge.--15 years, 27.7 cfs (20,050 acre-ft per year).

Extremes.--Maximum discharge during year, 182 cfs June 18 (gage height, 2.35 ft); maximum gage height, 2.61 ft Jan. 7 (backwater from ice); minimum, 1.4 cfs Mar. 4.
1951-65: Maximum discharge, 580 cfs Aug. 12, 1964 (gage height, 4.35 ft); maximum gage height, 5.98 ft Mar. 9, 1960 (ice jam); minimum, 0.6 cfs Nov. 27, 1960.

Remarks.--Records good except those for periods of ice effect or no gage-height record and those below 5 cfs, which are poor. Discharge measurements generally made twice a month. Part of flow is return waste from irrigation.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

| Oct. 1 to Apr. 1 | | | | Apr. 2 to Sept. 30 | | | |
|---|---|---|---|---|---|---|---|
| 0.4 | 1.0 | 0.8 | 10 | 0.6 | 4.5 | 1.5 | 60 |
| .5 | 2.5 | 1.1 | 24 | .8 | 10 | 2.0 | 130 |
| .6 | 4.5 | 1.4 | 43 | 1.0 | 22 | | |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 27 | 15 | 5 | 6 | 20 | a10 | 17 | 14 | 39 | 65 | 65 | 67 |
| 2 | 26 | 14 | 5.0 | 4 | 15 | a5 | 29 | 14 | 36 | 62 | 73 | 76 |
| 3 | 25 | 13 | 5 | 3 | 10 | a3 | 17 | 19 | 38 | 71 | 80 | 85 |
| 4 | 27 | 14 | 5 | a4 | 8 | 1.5 | 13 | 12 | 39 | 64 | 81 | 80 |
| 5 | 28 | 16 | 5 | a5 | 10 | 2 | 10 | 10 | 50 | 64 | 80 | 84 |
| 6 | 28 | 18 | 5 | a6 | a12 | 3 | a7 | 9.5 | 42 | 67 | 72 | 85 |
| 7 | 24 | 18 | 5 | 40 | a20 | 5 | 9.8 | 10 | 42 | 61 | 67 | 72 |
| 8 | 24 | 17 | 4.5 | 30 | a21 | 7 | 12 | 8.8 | 47 | 60 | 66 | 79 |
| 9 | 23 | 17 | 4 | 26 | a15 | 8 | 13 | 7.1 | 45 | 61 | 68 | 110 |
| 10 | 22 | 16 | 3.7 | 15 | a12 | 10 | 15 | 5.8 | 86 | 59 | 62 | 85 |
| 11 | 24 | 18 | 4 | 10 | a10 | 9 | 10 | 10 | 106 | 70 | 59 | 86 |
| 12 | 25 | 20 | 3.9 | 8 | a6 | 8.4 | 6.1 | 9.5 | 110 | 65 | a55 | 97 |
| 13 | 25 | 19 | 3 | 7 | a4 | 8.1 | 6.3 | 12 | 84 | 61 | a50 | 88 |
| 14 | 25 | 14 | 3 | 6 | a5 | 6.6 | 8.1 | 17 | 75 | 54 | a46 | 88 |
| 15 | 24 | 8.4 | 2.5 | 6 | a6 | 5.8 | 8.8 | 13 | 76 | 50 | a45 | 81 |
| 16 | 30 | 21 | 2.5 | 5 | a7 | 8.7 | 13 | 27 | 73 | 57 | a50 | 84 |
| 17 | 29 | 17 | 2.5 | 5 | a8 | 9.4 | 18 | 75 | 70 | 57 | 46 | 75 |
| 18 | 24 | 14 | 2.5 | 5 | a7 | 8.8 | 22 | 91 | 100 | 62 | 47 | 94 |
| 19 | 22 | 12 | 2.5 | 5 | a6 | 5 | 25 | 73 | 92 | 57 | 56 | 124 |
| 20 | 21 | 8.1 | 2.8 | 5 | a5 | 4 | 26 | a38 | 64 | 55 | 58 | 77 |
| 21 | 22 | 8.4 | 2.9 | 6.3 | a5 | 4.5 | 28 | 46 | 59 | 57 | 58 | 72 |
| 22 | 24 | 7.4 | 3 | 5 | a6 | 4.3 | 28 | a35 | 66 | 57 | 64 | 65 |
| 23 | 22 | 6.6 | 3 | 4 | a8 | 4.8 | 27 | a30 | 61 | 64 | 62 | 65 |
| 24 | 20 | 6.3 | 4 | 3 | a6 | 9.1 | 24 | a30 | 60 | 60 | 60 | 65 |
| 25 | 19 | 5.8 | 4 | 3 | a5 | 11 | 20 | 59 | 75 | 60 | 57 | 66 |
| 26 | 22 | 5.0 | 6 | 3 | a4 | 6.1 | a18 | 46 | 75 | 59 | 58 | 64 |
| 27 | 20 | 5.0 | 8 | 2.5 | a5 | 5.0 | 26 | 45 | 65 | 53 | 55 | 61 |
| 28 | 20 | 5 | 35 | 2.5 | a8 | 9.1 | 18 | 44 | 60 | 54 | 53 | 60 |
| 29 | 21 | 5 | 15 | 2.5 | - | 9.7 | 22 | 41 | 52 | 59 | 58 | 54 |
| 30 | 17 | 5 | 5 | 3 | ---------- | 10 | 14 | 42 | 57 | 58 | 72 | 54 |
| 31 | 15 | ---------- | 6 | 10 | ---------- | 13 | ---------- | 48 | ---------- | 64 | 67 | ---------- |
| Total | 725 | 369.0 | 168.3 | 245.5 | 254 | 214.6 | 511.1 | 941.7 | 1,944 | 1,867 | 1,889 | 2,343 |
| Mean | 23.4 | 12.3 | 5.43 | 7.92 | 9.07 | 6.92 | 17.0 | 30.4 | 64.8 | 60.2 | 60.9 | 78.1 |
| Ac-ft | 1,440 | 732 | 334 | 487 | 504 | 426 | 1,010 | 1,870 | 3,860 | 3,700 | 3,750 | 4,650 |

Calendar year 1964: Max 183 Min 2.0 Mean 18.8 Ac-ft 13,660
Water year 1964-65: Max 124 Min 1.5 Mean 31.4 Ac-ft 22,760

Peak discharge (base, 120 cfs).--June 18 (2200) 182 cfs (2.35 ft).

a No gage-height record.
Note.--Stage-discharge relation affected by ice Nov. 28 to Dec. 1, Dec. 3-9, 11, Dec. 13 to Jan. 3, Jan. 7-20, Jan. 22 to Feb. 5, Mar. 4-11, 19, 20.

9-3551. Navajo Reservoir near Archuleta, N. Mex.

Location.--Lat 36°48'35", long 107°36'35", in SW¼SE¼ sec.18, T.30 N., R.7 W., in gate shaft of outlet works structure near right abutment of Navajo Dam on San Juan River, 5½ miles east of Archuleta and 33 miles east of Farmington.

Drainage area.--3,230 sq mi, approximately.

Records available.--June 1962 to September 1965.

Gage.--Water-stage recorder. Datum of gage is at mean sea level, datum of 1929.

Extremes.--Maximum contents during water year, 854,200 acre-ft Aug. 3 (elevation, 6,012.4 ft); minimum, 246,900 acre-ft Mar. 10, 11 (elevation, 5,906.4 ft).
1962-65: Maximum contents, that of Aug. 3, 1965; minimum, 12,400 acre-ft June 30, 1962 (elevation, 5,774.6 ft).

Remarks.--Reservoir is formed by earth-rock-fill dam, completed in June 1963; storage began June 27, 1962. Capacity, 1,709,000 acre-ft between elevations 5,720 ft (upstream toe of dam) and 6,085 ft (crest of spillway). Usable capacity, 1,036,000 acre-ft above elevation 5,990.0 ft (minimum operating level). Reservoir will not usually be drawn below elevation 5,882.5 ft (sill of intake structure), leaving a minimum pool or dead storage of 175,200 acre-ft. Figures given herein are total contents and are based on daily elevations at midnight. Reservoir is used for irrigation storage, river regulation, desilting, flood control, and recreation.

Cooperation.--Records furnished by Bureau of Reclamation.

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

| | | | |
|---|---|---|---|
| 5,900 | 226,200 | 5,970 | 537,100 |
| 5,910 | 259,300 | 5,980 | 601,700 |
| 5,920 | 295,400 | 5,990 | 672,500 |
| 5,930 | 334,900 | 6,000 | 749,700 |
| 5,940 | 378,200 | 6,010 | 833,100 |
| 5,950 | 425,700 | 6,020 | 922,700 |
| 5,960 | 478,500 | | |

Contents, in thousands of acre-feet, during water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 428.2 | 417.1 | 409.3 | 391.7 | 327.6 | 263.9 | 257.3 | 395.8 | 588.0 | 740.5 | 852.6 | 779.9 |
| 2 | 428.1 | 417.3 | 409.2 | 390.5 | 325.6 | 261.9 | 261.2 | 406.7 | 593.3 | 743.0 | 854.0 | 776.8 |
| 3 | 428.0 | 416.9 | 409.2 | 389.1 | 322.4 | 259.9 | 263.3 | 417.6 | 599.2 | 749.6 | 854.2 | 773.8 |
| 4 | 427.8 | 416.6 | 409.0 | 388.1 | 320.0 | 257.7 | 265.3 | 429.1 | 601.5 | 755.6 | 853.9 | 771.7 |
| 5 | 427.6 | 416.2 | 409.0 | 387.3 | 317.4 | 255.6 | 267.9 | 438.5 | 603.0 | 758.8 | 853.3 | 768.1 |
| 6 | 427.5 | 415.7 | 408.8 | 386.4 | 315.4 | 253.5 | 269.4 | 446.3 | 607.6 | 760.7 | 851.8 | 765.6 |
| 7 | 427.1 | 415.3 | 408.4 | 385.0 | 313.3 | 251.4 | 272.3 | 451.2 | 616.2 | 761.8 | 850.1 | 763.0 |
| 8 | 426.8 | 415.0 | 408.1 | 386.1 | 311.1 | 249.8 | 274.1 | 459.6 | 624.4 | 763.6 | 848.1 | 762.5 |
| 9 | 426.6 | 414.5 | 407.6 | 385.3 | 308.7 | 248.1 | 276.2 | 464.6 | 634.3 | 765.0 | 846.2 | 761.1 |
| 10 | 426.3 | 414.1 | 407.4 | 384.4 | 306.1 | 246.9 | 277.6 | 469.0 | 641.7 | 769.3 | 843.9 | 758.9 |
| 11 | 425.9 | 413.8 | 407.2 | 382.9 | 303.4 | 246.9 | 278.1 | 472.3 | 649.3 | 778.1 | 841.3 | 756.3 |
| 12 | 425.5 | 413.6 | 406.9 | 381.0 | 300.7 | 247.1 | 277.3 | 475.7 | 655.8 | 785.2 | 838.5 | 754.1 |
| 13 | 425.2 | 413.1 | 406.6 | 379.0 | 297.8 | 247.4 | 277.5 | 479.2 | 662.0 | 792.8 | 835.9 | 753.2 |
| 14 | 424.9 | 413.0 | 406.1 | 376.2 | 295.0 | 247.5 | 278.3 | 483.7 | 670.6 | 798.9 | 833.4 | 753.7 |
| 15 | 424.6 | 413.0 | 405.7 | 373.4 | 292.3 | 247.6 | 278.9 | 488.5 | 678.6 | 805.4 | 830.3 | 754.3 |
| 16 | 424.4 | 412.7 | 405.4 | 370.7 | 290.1 | 247.9 | 281.5 | 491.8 | 683.8 | 809.8 | 827.8 | 753.8 |
| 17 | 424.1 | 412.6 | 405.1 | 367.9 | 287.4 | 248.2 | 286.5 | 496.7 | 687.4 | 815.1 | 825.5 | 751.0 |
| 18 | 423.7 | 412.6 | 404.5 | 365.1 | 284.9 | 248.5 | 293.6 | 505.5 | 693.3 | 820.7 | 823.0 | 748.9 |
| 19 | 423.3 | 412.5 | 404.3 | 362.5 | 282.3 | 248.5 | 301.0 | 515.8 | 701.0 | 825.2 | 820.7 | 750.0 |
| 20 | 422.7 | 412.3 | 403.8 | 359.9 | 279.7 | 248.5 | 309.6 | 525.9 | 706.2 | 829.3 | 817.7 | 750.2 |
| 21 | 422.4 | 411.9 | 403.4 | 357.6 | 278.1 | 248.4 | 319.2 | 537.5 | 710.6 | 833.4 | 814.8 | 749.6 |
| 22 | 421.9 | 411.5 | 402.7 | 354.7 | 276.4 | 248.5 | 330.9 | 550.2 | 714.9 | 836.7 | 811.9 | 748.5 |
| 23 | 421.4 | 411.2 | 401.3 | 351.9 | 274.7 | 248.6 | 344.4 | 560.2 | 719.3 | 839.9 | 808.9 | 747.1 |
| 24 | 420.8 | 410.8 | 400.1 | 349.2 | 272.9 | 249.3 | 356.6 | 567.4 | 724.6 | 842.9 | 805.7 | 745.9 |
| 25 | 420.3 | 410.6 | 399.1 | 346.1 | 270.8 | 249.9 | 366.0 | 571.4 | 730.5 | 843.8 | 802.3 | 744.7 |
| 26 | 419.9 | 410.4 | 397.8 | 343.4 | 268.8 | 250.1 | 372.5 | 573.9 | 732.9 | 843.3 | 799.1 | 743.6 |
| 27 | 419.5 | 410.3 | 396.7 | 340.5 | 267.2 | 250.1 | 377.6 | 575.3 | 734.9 | 844.0 | 795.8 | 742.4 |
| 28 | 419.0 | 410.1 | 396.1 | 337.6 | 265.4 | 250.3 | 381.0 | 575.5 | 734.7 | 846.9 | 792.6 | 743.2 |
| 29 | 418.6 | 409.7 | 395.5 | 335.0 | - | 251.2 | 384.2 | 575.8 | 735.8 | 848.9 | 789.2 | 744.3 |
| 30 | 418.1 | 409.5 | 394.1 | 332.3 | ---------- | 252.1 | 388.4 | 577.6 | 738.8 | 851.5 | 786.1 | 744.8 |
| 31 | 417.6 | ---------- | 392.9 | 329.8 | ---------- | 254.2 | ---------- | 581.8 | ---------- | 852.7 | 783.2 | ---------- |
| (†) | 5.948.4 | 5.946.7 | 5.943.2 | 5.928.8 | 5.911.8 | 5.908.5 | 5.942.2 | 5.977.0 | 5.998.6 | 6.012.2 | 6.004.1 | 5.999.4 |
| (‡) | -10.5 | -8.1 | -16.6 | -63.1 | -64.4 | -11.2 | +134.2 | +193.4 | +157.0 | +113.9 | -69.5 | -38.4 |

† Elevations, in feet, at midnight on last day of month.
‡ Change in contents, in thousands of acre-feet.

9-3555. San Juan River near Archuleta, N. Mex.

Location.--Lat 36°48'10", long 107°41'55", in N½ sec.20, T.30 N., R.8 W., on left bank at river mile 136.8, half a mile upstream from Gobernador Canyon, 0.8 mile northeast of Archuleta, and 7.2 miles downstream from Navajo Dam. Dec. 29, 1959 to Oct. 15, 1964 at site 0.4 mile upstream. Prior to Dec. 29, 1959, at site 5.0 miles upstream.

Drainage area.--3,260 sq mi, approximately.

Records available.--December 1954 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 5,655 ft (from river-profile survey). Dec. 29, 1959 to Oct. 15, 1964 at site 0.4 mile upstream at altitude 5 ft higher. Prior to Dec. 29, 1959, at site 5.0 miles upstream at altitude 55 ft higher.

Average discharge.--10 years, 1,152 cfs (834,000 acre-ft per year).

Extremes.--Maximum discharge during year, 6,500 cfs June 20 (gage height, 4.57 ft); minimum, 61 cfs May 19.
1954-65: Maximum discharge, 18,900 cfs July 27, 1957 (gage height, 11.00 ft, site and datum then in use); minimum determined, 8 cfs Feb. 28, 1963.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Discharge measurements generally made 2 to 3 times a month. Flow completely regulated at Navajo Dam (see preceding page) except for minor inflow from 30 sq mi intervening drainage area. Diversions above station for irrigation of about 47,000 acres. Archuleta ditch bypasses gage on left bank for irrigation below, but part or all of flow may be wasted back to River. No flow was observed in ditch during water year. Records of chemical analyses and water temperatures for the water year 1965 are published in part 2 of this report.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1-14, Mar. 19 to Apr. 6)

| | |
|---|---|
| 0.5 | 150 |
| 1.0 | 425 |
| 2.0 | 1,250 |
| 3.0 | 2,460 |
| 4.0 | 3,380 |
| 4.6 | 6,600 |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 453 | 467 | 336 | 998 | 1.730 | 1.490 | 1.100 | 1.960 | 2.000 | 4.350 | 2.220 | 2.220 |
| 2 | 469 | 413 | 348 | 998 | 1.730 | 1.490 | 1.400 | 1.970 | 2.040 | 4.350 | 2.220 | 2.220 |
| 3 | 477 | 439 | 354 | 998 | 1.730 | 1.490 | 1.400 | 1.910 | 2.460 | 2.650 | 2.200 | 2.210 |
| 4 | 461 | 355 | 354 | 998 | 1.730 | 1.480 | 1.410 | 1.980 | 3.980 | 2.570 | 2.210 | 2.210 |
| 5 | 431 | 318 | 226 | 998 | 1.730 | 1.480 | 589 | 2.000 | 4.050 | 3.770 | 2.210 | 2.210 |
| 6 | 431 | 318 | 187 | 998 | 1.720 | 1.470 | 488 | 2.000 | 2.840 | 4.380 | 2.210 | 2.200 |
| 7 | 431 | 318 | 306 | 998 | 1.720 | 1.450 | 540 | 2.010 | 1.740 | 4.380 | 2.220 | 2.210 |
| 8 | 438 | 324 | 289 | 989 | 1.720 | 1.440 | 874 | 1.880 | 1.750 | 4.350 | 2.240 | 2.060 |
| 9 | 438 | 324 | 368 | 1.070 | 1.740 | 1.430 | 1.170 | 2.020 | 1.760 | 4.320 | 2.220 | 2.150 |
| 10 | 438 | 324 | 312 | 1.140 | a 1.740 | 1.390 | 1.170 | 1.950 | 1.760 | 2.620 | 2.220 | 2.210 |
| 11 | 438 | 330 | 312 | 1.200 | a 1.740 | a 750 | 1.230 | 2.050 | 1.760 | 442 | 2.220 | 2.220 |
| 12 | 438 | 336 | 318 | 1.370 | 1.740 | a 400 | 1.470 | 2.070 | 1.770 | 386 | 2.220 | 2.220 |
| 13 | 445 | 336 | 318 | 1.530 | 1.740 | a 380 | 1.470 | 2.070 | 1.770 | 380 | 2.220 | 1.260 |
| 14 | 453 | 342 | 330 | 1.670 | 1.740 | a 380 | 1.480 | 2.070 | 1.840 | 380 | 2.260 | 373 |
| 15 | 467 | 348 | 330 | 1.740 | a 1.740 | a 380 | 1.480 | 2.090 | 3.520 | 386 | 2.260 | 360 |
| 16 | 474 | 348 | 330 | 1.740 | a 1.740 | a 380 | 1.350 | 2.080 | 5.140 | 955 | 2.160 | 645 |
| 17 | 474 | 342 | 318 | 1.740 | 1.740 | a 380 | 1.240 | 2.080 | 6.040 | 399 | 2.120 | 2.220 |
| 18 | 474 | 354 | 342 | 1.740 | 1.740 | a 418 | 680 | 1.190 | 5.440 | 373 | 2.260 | 2.220 |
| 19 | 474 | 348 | 432 | 1.740 | 1.740 | 418 | 1.530 | 515 | 4.560 | 373 | 2.260 | 2.220 |
| 20 | 474 | 354 | 432 | 1.740 | 1.740 | 418 | 1.670 | 2.090 | 6.040 | 373 | 2.260 | 2.150 |
| 21 | 481 | 360 | 432 | 1.740 | 1.410 | 418 | 1.860 | 2.090 | 6.420 | 373 | 2.220 | 2.200 |
| 22 | 467 | 366 | 656 | 1.750 | 1.460 | 418 | 1.910 | 2.140 | 5.460 | 373 | 2.240 | 2.200 |
| 23 | 467 | 342 | 953 | 1.740 | 1.490 | 418 | 1.910 | 2.150 | 4.200 | 373 | 2.200 | 2.200 |
| 24 | 495 | 318 | 962 | 1.740 | 1.490 | 425 | 1.910 | 2.490 | 4.150 | 386 | 2.220 | 2.210 |
| 25 | 481 | 318 | 962 | 1.740 | 1.490 | 425 | 1.920 | 3.250 | 3.800 | 1.320 | 2.150 | 2.220 |
| 26 | 460 | 318 | 962 | 1.730 | 1.490 | 432 | 1.880 | 3.620 | 4.190 | 2.200 | 2.180 | 2.220 |
| 27 | 453 | 324 | 962 | 1.730 | 1.490 | 656 | 1.960 | 3.510 | 4.110 | 1.650 | 2.220 | 2.180 |
| 28 | 460 | 330 | 971 | 1.730 | 1.490 | 1.010 | 1.940 | 3.720 | 5.220 | 404 | 2.220 | 1.220 |
| 29 | 467 | 330 | 971 | 1.730 | - | 1.010 | 1.940 | 3.470 | 4.300 | 380 | 2.200 | 814 |
| 30 | 481 | 336 | 980 | 1.730 | ---------- | 1.010 | 1.940 | 3.250 | 4.320 | 380 | 2.180 | 1.300 |
| 31 | 467 | ---------- | 980 | 1.730 | ---------- | 1.010 | ---------- | 2.040 | ---------- | 1.350 | 2.220 | ---------- |
| Total | 14.257 | 10.380 | 16.233 | 45.485 | 46.500 | 26.146 | 42.911 | 69.715 | 108.430 | 51.376 | 68.660 | 56.552 |
| Mean | 460 | 346 | 524 | 1.467 | 1.661 | 843 | 1.430 | 2.249 | 3.614 | 1.657 | 2.215 | 1.885 |
| Ac-ft | 28.280 | 20.590 | 32.200 | 90.220 | 92.230 | 51.860 | 85.110 | 138.300 | 215.100 | 101.900 | 136.200 | 112.200 |

Calendar year 1964: Max 2,030 Min 30 Mean 602 Ac-ft 436,700
Water year 1964-65: Max 6,420 Min 187 Mean 1,525 Ac-ft 1,104,000

a No gage-height record.

9-3635. Animas River near Cedar Hill, N. Mex.

Location.--Lat 37°02'15", long 107°52'25", in Sec.7, T.32 N., R.9 W., on right bank three-quarters of a mile downstream from Florida River, 2.5 miles upstream from Colorado-New Mexico State Line, and 8.5 miles north of Cedar Hill.

Drainage area.--1,090 sq mi, approximately.

Records available.--October 1933 to September 1965. Monthly discharge only for October and November 1933, published in WSP 1313.

Gage.--Water-stage recorder. Altitude of gage is 5,960 ft (from topographic map).

Average discharge.--32 years, 902 cfs (653,000 acre-ft per year).

Extremes.--Maximum discharge during year, 6,740 cfs June 21 (gage height, 8.40 ft); minimum, 168 cfs Dec. 7.
1933-65: Maximum discharge, 13,100 cfs June 19, 1949 (gage height, 11.45 ft); minimum, 63 cfs Jan. 21, 1935.
Maximum flood known occurred Oct. 5 or 6, 1911.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Discharge measurements generally made twice a month. Diversions for irrigation of about 20,000 acres above station. During water years 1944-49, Twin Rocks Canal diverted above station for irrigation below. Possible regulation by Lemon Dam on Florida River (capacity, 40,100 acre-ft), storage started in November 1963.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

| Oct. 1 to Jan. 29 | | Jan. 30 to Sept. 30 | | | |
|---|---|---|---|---|---|
| 3.2 | 180 | 3.2 | 200 | 6.0 | 2,530 |
| 3.4 | 245 | 3.6 | 350 | 7.0 | 4,030 |
| 3.7 | 380 | 4.0 | 545 | 8.0 | 5,880 |
| 4.0 | 550 | 5.0 | 1,350 | 8.5 | 6,960 |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 415 | 201 | 234 | 298 | 235 | 263 | 601 | 2,580 | 2,860 | 4,040 | 2,200 | 844 |
| 2 | 360 | 192 | 253 | 273 | 224 | 260 | 670 | 3,550 | 2,900 | 4,680 | 2,640 | 804 |
| 3 | 330 | 204 | 265 | b200 | 218 | 235 | 569 | 3,990 | 3,080 | 4,860 | 2,460 | 888 |
| 4 | 308 | 210 | 257 | b240 | 218 | 238 | 490 | 3,760 | 3,400 | 4,370 | 2,080 | 740 |
| 5 | 294 | 207 | 234 | b280 | 221 | 249 | 440 | 3,080 | 3,190 | 4,200 | 1,830 | 766 |
| 6 | 253 | 214 | 204 | 290 | 235 | 260 | 418 | 2,520 | 3,130 | 4,070 | 1,620 | 1,150 |
| 7 | 245 | 210 | b 190 | 285 | 246 | 266 | 475 | 2,080 | 3,600 | 4,020 | 1,420 | 964 |
| 8 | 242 | 204 | b 210 | 290 | 228 | 274 | 455 | 1,820 | 4,500 | 3,730 | 1,290 | 957 |
| 9 | 238 | 192 | b 230 | 269 | 221 | 286 | 480 | 1,580 | 4,710 | 3,730 | 1,200 | 1,030 |
| 10 | 234 | 201 | 253 | 242 | 228 | 294 | 501 | 1,400 | 4,010 | 3,200 | 1,080 | 998 |
| 11 | 231 | 220 | 261 | 217 | 224 | 290 | 440 | 1,330 | 3,480 | 3,130 | 1,040 | 884 |
| 12 | 228 | 224 | 253 | 231 | b 200 | 290 | 400 | 1,400 | 3,220 | 3,660 | 932 | 828 |
| 13 | 231 | 234 | b 230 | 242 | b 180 | 290 | 418 | 1,740 | 3,660 | 3,730 | 868 | 772 |
| 14 | 224 | 238 | b 190 | 220 | b 190 | 274 | 440 | 1,790 | 4,550 | 3,280 | 892 | 733 |
| 15 | 220 | 242 | b 200 | 217 | b 200 | 270 | 475 | 1,670 | 5,520 | 3,130 | 940 | 677 |
| 16 | 220 | 257 | b 240 | 224 | b 210 | 290 | 575 | 1,700 | 5,700 | 2,940 | 916 | 644 |
| 17 | 224 | 294 | b 250 | a230 | b 220 | 310 | 828 | a 2,200 | 4,790 | 2,560 | 1,070 | 618 |
| 18 | 224 | 281 | b 240 | a230 | b 220 | 306 | 1,180 | 2,800 | 4,690 | 2,640 | 1,370 | 875 |
| 19 | 220 | 281 | b 230 | a210 | 224 | 294 | 1,390 | 3,360 | 5,030 | 2,640 | 1,370 | 1,340 |
| 20 | 207 | 265 | b 250 | a220 | 228 | 274 | 1,710 | 4,200 | 5,800 | 2,560 | 1,190 | 1,390 |
| 21 | 204 | 261 | b 230 | a240 | 232 | 270 | 2,340 | 4,600 | 6,460 | 2,430 | 1,030 | 1,250 |
| 22 | 204 | 249 | b 220 | 220 | 224 | 306 | 2,900 | 5,170 | 6,100 | 2,240 | 1,020 | 1,120 |
| 23 | 210 | 238 | b 240 | 210 | 249 | 318 | 3,180 | 5,110 | 5,200 | 2,180 | 932 | 1,090 |
| 24 | 210 | 253 | b 260 | 195 | 242 | 404 | 3,540 | 3,930 | 5,030 | 1,980 | 852 | 1,110 |
| 25 | 204 | 261 | b 280 | 198 | a 250 | 395 | 3,310 | 3,010 | 5,400 | 2,600 | 748 | 1,150 |
| 26 | 204 | 265 | 242 | 204 | 260 | 342 | 2,840 | 2,350 | 4,200 | 2,780 | 691 | 1,170 |
| 27 | 207 | 245 | 231 | b200 | 270 | 338 | 2,430 | 2,060 | 3,360 | 2,320 | 650 | 1,200 |
| 28 | 207 | 253 | 350 | b200 | 282 | 364 | 2,030 | 1,880 | 3,430 | 2,000 | 599 | 1,200 |
| 29 | 207 | 238 | 273 | b220 | - | 395 | 1,780 | 1,800 | 3,840 | 1,980 | 593 | 1,210 |
| 30 | 207 | 224 | 214 | 246 | ---------- | 408 | 1,900 | 1,980 | 4,170 | 2,070 | 916 | 1,120 |
| 31 | 207 | ---------- | 281 | 242 | ---------- | 440 | ---------- | 2,240 | ---------- | 2,040 | 948 | ---------- |
| Total | 7,419 | 7,058 | 7,495 | 7,283 | 6,379 | 9,493 | 39,205 | 82,680 | 129,010 | 95,790 | 37,387 | 29,522 |
| Mean | 239 | 235 | 242 | 235 | 228 | 306 | 1,307 | 2,667 | 4,300 | 3,090 | 1,206 | 984 |
| Ac-ft | 14,720 | 14,000 | 14,870 | 14,450 | 12,650 | 18,830 | 77,760 | 164,000 | 255,900 | 190,000 | 74,160 | 58,560 |

Calendar year 1964: Max 3,870 Min 118 Mean 535 Ac-ft 388,800
Water year 1964-65: Max 6,460 Min 180 Mean 1,257 Ac-ft 909,900

Peak discharge (base, 4,000 cfs).--June 21 (1500) 6,740 cfs (8.40 ft); Aug. 2 (1400) 4,040 cfs (7.00 ft).

a No gage-height record.
b Stage-discharge relation affected by ice.

## 9-3645. Animas River at Farmington, N. Mex.

Location.--Lat 36°43'20", long 108°12'00", in SE¼ sec.16, T.29 N., R.13 W., on left bank at bridge on former State Highway 17, 0.6 mile downstream from bridge on State Highway 17, and 1.3 miles upstream from mouth.

Drainage area.--1,360 sq mi, approximately.

Records available.--June 1904 to October 1905 (published as "near Farmington"). September 1912 to September 1965. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Altitude of gage is 5,278 ft (from bridge-profile plans). Prior to Nov. 1, 1905, chain gage at old bridge a quarter of a mile upstream at different datum. Sept. 17, 1912, to Oct. 4, 1938, water-stage recorder at site 0.6 mile downstream at lower datums (datum lowered 2.0 ft Aug. 15, 1927, and raised 0.2 ft Dec. 16, 1929).

Average discharge.--54 years, 945 cfs (684,200 acre-ft per year).

Extremes.--Maximum discharge during year, 6,570 cfs Aug. 2 (gage height, 6.89 ft); minimum, 80 cfs Oct. 11.
1904-5, 1912-65: Maximum discharge, about 25,000 cfs June 29, 1927 (gage height, 8.5 ft, site and datum then in use), from rating curve extended above 10,000 cfs by logarithmic plotting; minimum, 1.4 cfs Sept. 4, 1956.
Maximum flood known occurred Oct. 6, 1911, when a stage of about 16.5 ft was reached (present site and datum). Flood of Sept. 6, 1909, reached a stage of 11.1 ft, 1904-5 site and datum (discharge, about 19,000 cfs).

Remarks.--Records good except those for periods of no gage-height record, which are fair. Discharge measurements generally made 2 to 3 times a month. Diversions for irrigation of about 30,000 acres above station. Records of chemical analyses, suspended sediment loads, and water temperatures for the water year 1965 are published in part 2 of this report.

Rating tables (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1-31, Apr. 18-21, June 16, Aug. 8-31)

| Oct. 1 to Apr. 18 | | Apr. 19 to June 16 | | June 17 to Sept. 30 | |
|---|---|---|---|---|---|
| 3.0 | 100 | 3.9 | 160 | 3.5 | 460 |
| 3.3 | 185 | 4.2 | 1,570 | 4.0 | 960 |
| 3.6 | 320 | 4.6 | 2,280 | 4.5 | 1,650 |
| 4.0 | 620 | 5.0 | 3,000 | 5.0 | 2,500 |
| | | 6.0 | 5,000 | 6.0 | 4,300 |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 297 | 122 | 197 | 280 | 238 | 285 | 436 | 2,190 | 2,320 | 3,800 | 2,220 | 700 |
| 2 | 261 | 127 | 221 | 256 | 217 | 256 | 530 | 3,040 | 2,680 | 4,050 | 3,110 | 631 |
| 3 | 228 | 138 | 238 | 209 | 225 | 256 | 498 | 3,600 | 2,680 | 4,480 | 2,790 | 622 |
| 4 | 200 | 152 | 230 | 230 | 217 | 234 | 443 | 3,440 | 3,040 | 4,210 | 2,270 | 541 |
| 5 | 182 | 149 | 217 | 266 | 225 | 234 | 408 | 3,040 | 3,040 | 3,960 | 1,860 | 514 |
| 6 | 168 | 159 | 189 | 300 | 243 | 252 | 362 | 2,600 | 2,890 | 3,890 | 1,520 | 604 |
| 7 | 136 | 162 | 165 | 368 | 270 | 266 | 362 | 2,230 | 3,180 | a3,800 | 1,350 | 850 |
| 8 | 125 | 162 | 162 | 356 | 266 | 280 | 401 | 1,830 | 3,900 | a3,700 | 1,240 | 1,020 |
| 9 | 112 | 159 | 201 | 326 | 230 | 290 | 374 | 1,570 | 4,560 | a3,600 | 1,140 | 1,140 |
| 10 | 100 | 149 | 225 | 300 | 243 | 305 | 415 | 1,280 | 4,360 | a3,300 | 1,010 | 1,120 |
| 11 | 106 | 168 | 230 | 266 | 234 | 310 | 394 | 1,180 | 3,520 | a3,000 | 984 | 938 |
| 12 | 103 | 185 | 261 | 248 | 205 | 315 | 356 | 1,130 | 3,260 | a3,200 | 872 | 894 |
| 13 | 100 | 182 | 230 | 261 | 185 | 315 | 356 | 1,400 | 3,300 | 3,620 | 751 | 861 |
| 14 | 97 | 201 | 178 | 252 | 155 | 305 | 368 | 1,670 | 4,000 | 3,150 | 720 | 806 |
| 15 | 97 | 243 | 165 | 234 | 217 | 295 | 387 | 1,540 | 4,720 | 3,040 | 730 | 710 |
| 16 | 97 | 261 | 230 | 234 | 205 | 300 | 415 | 1,480 | 5,070 | 2,910 | 740 | 680 |
| 17 | 100 | 261 | 248 | 243 | 234 | 315 | 548 | 1,640 | 4,950 | 2,570 | 828 | 577 |
| 18 | 103 | 275 | 243 | 225 | 234 | 320 | 914 | 2,190 | 4,380 | 2,500 | 1,380 | 676 |
| 19 | 129 | 280 | 225 | 209 | 261 | 305 | 1,320 | 2,930 | 4,700 | 2,500 | 1,500 | 1,290 |
| 20 | 133 | 270 | 234 | 234 | 275 | 290 | 1,570 | 3,780 | 5,200 | 2,320 | 1,280 | 1,590 |
| 21 | 129 | 256 | 252 | 248 | 275 | 270 | 2,100 | 4,280 | 6,000 | 2,290 | 1,060 | 1,320 |
| 22 | 133 | 238 | 221 | 238 | 252 | 285 | 2,730 | 4,640 | 5,850 | 2,060 | 972 | 1,090 |
| 23 | 140 | 230 | 252 | 225 | 261 | 310 | 3,100 | 4,920 | 4,880 | 1,900 | 960 | 1,020 |
| 24 | 151 | 213 | 270 | 213 | 280 | 344 | 3,260 | 4,080 | 4,340 | 2,330 | 850 | 1,030 |
| 25 | 155 | 225 | 300 | 205 | 256 | 401 | 3,100 | 3,100 | 4,900 | 2,770 | 740 | 1,110 |
| 26 | 151 | 225 | 290 | 185 | 248 | 338 | 2,780 | 2,460 | 4,120 | a2,700 | 613 | 1,160 |
| 27 | 155 | 230 | 266 | 197 | 270 | 310 | 2,530 | 1,960 | 3,180 | a2,300 | 541 | 1,180 |
| 28 | 160 | 213 | 320 | 197 | 290 | 310 | 2,030 | 1,710 | 3,000 | a1,900 | 487 | 1,180 |
| 29 | 173 | 217 | 344 | 217 | - | 350 | 1,780 | 1,500 | 3,360 | a1,900 | 478 | 1,120 |
| 30 | 151 | 205 | 252 | 256 | ---------- | 387 | 1,710 | 1,600 | 3,740 | 1,980 | 660 | 1,090 |
| 31 | 122 | ---------- | 209 | 261 | ---------- | 394 | ---------- | 1,920 | ---------- | 1,880 | 905 | ---------- |
| Total | 4,494 | 6,057 | 7,265 | 7,739 | 6,711 | 9,427 | 35,977 | 75,930 | 119,120 | 91,610 | 36,561 | 28,064 |
| Mean | 145 | 202 | 234 | 250 | 240 | 304 | 1,199 | 2,449 | 3,971 | 2,955 | 1,179 | 935 |
| Ac-ft | 8,910 | 12,010 | 14,410 | 15,350 | 13,310 | 18,700 | 71,360 | 150,600 | 236,300 | 181,700 | 72,520 | 55,660 |

Calendar year 1964: Max 3,900 Min 59 Mean 419 Ac-ft 303,800
Water year 1964-65: Max 6,000 Min 97 Mean 1,175 Ac-ft 850,800

Peak discharge (base, 4,000 cfs).--June 21 (2200) 6,450 cfs (6.85 ft); Aug. 2 (2130) 6,570 cfs (6.89 ft).

a No gage-height record.

## 9-3650. San Juan River at Farmington, N. Mex.

Location.--Lat 36°43'25", long 108°13'30", in SE¼ sec.17, T.29 N., R.13 W., on left bank 360 ft downstream from highway bridge, 4,000 ft downstream from Animas River and 1 mile west of Farmington.

Drainage area.--7,240 sq mi, approximately.

Records available.--June to December 1904, January 1905 to September 1906 (gage heights and discharge measurments only; discharge records for January to December 1905, published in WSP 175, have been found to be unreliable and should not be used), September 1912 to September 1965. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 5,230.37 ft above mean sea level, datum of 1929. June 19, 1904, to May 10, 1906, wire-weight gage at site 1½ miles downstream at different datum. May 11 to Sept. 22, 1906, chain gage and Sept. 19, 1912, to July 2, 1918, staff gage, at site half a mile upstream at different datums. Nov. 1, 1921, to Nov. 18, 1933, water-stage recorder at site 360 ft upstream at datum 1.04 ft higher prior to October 1932, and 0.53 ft higher thereafter.

Average discharge.--53 years (1912-65), 2,500 cfs (1,810,000 acre-ft per year), unadjusted.

Extremes.--Maximum discharge during year, 12,400 cfs June 22 (gage height, 6.14 ft); minimum 275 cfs Dec. 7.
1912-65: Maximum discharge, about 68,000 cfs June 29, 1927 (gage height, 10.2 ft, site and datum then in use), from rating curve extended above 37,000 cfs; minimum, 14 cfs Aug. 22, 1939.
Maximum flood known occurred Oct. 6, 1911. Flood of Sept. 6, 1909, reached a stage of about 12.3 ft, site and datum in use May to September 1906.

Remarks.--Records good. Since June 1962 flow is partly controlled by operation of Navajo Reservoir. Discharge measurements generally made 2 to 3 times a month. Diversions above station for irrigation of about 86,000 acres, 4,000 of which is irrigated by Farmers Mutual ditch (see table below) which diverts from Animas River and bypasses this station; ditch flow not included in record. At times this ditch may be supplied partly or entirely by diversion from San Juan River below this station. Records of chemical analyses and water temperatures for the water year 1965 are published in part 2 of this report.

Discharge in cubic feet per second, of Farmers Mutual ditch, water year October 1964 to September 1965

| Date | Discharge | Date | Discharge | Date | Discharge | Date | Discharge | Date | Discharge | Date | Discharge |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Oct. 31 | 92 | Jan. 19 | 0 | Mar. 25 | *104 | May 13 | *127 | June 21 | 130 | Aug. 27 | 123 |
| Nov. 24 | *115 | Feb. 1 | 0 | Apr. 1 | 114 | 21 | 126 | 30 | 134 | Sept. 1 | 125 |
| Dec. 1 | 106 | 9 | 0 | 7 | 111 | 27 | 127 | July 13 | 155 | 17 | 113 |
| 9 | 104 | 18 | 0 | 14 | 109 | June 1 | 134 | 23 | 133 | 30 | 125 |
| Jan. 4 | 0 | Mar. 1 | 0 | 22 | 122 | 9 | 130 | 30 | 121 | | |
| 14 | 0 | 15 | 0 | 30 | 105 | 16 | 134 | Aug. 6 | 136 | | |

* Result of discharge measurement.

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 654 | 475 | 503 | 1,340 | 2,220 | 1,920 | 1,390 | 4,030 | 4,200 | 7,960 | 4,400 | 2,730 |
| 2 | 606 | 534 | 542 | 1,340 | 2,130 | 1,770 | 2,000 | 4,950 | 4,440 | 8,320 | 5,950 | 2,710 |
| 3 | 574 | 503 | 590 | 1,260 | 2,100 | 1,710 | 1,990 | 5,700 | 4,500 | 8,510 | 4,650 | 2,710 |
| 4 | 510 | 590 | 550 | 1,270 | 2,040 | 1,640 | 1,850 | 5,580 | 6,000 | 6,690 | 4,300 | 2,710 |
| 5 | 482 | 461 | 558 | 1,330 | 2,060 | 1,710 | 1,470 | 5,100 | 6,750 | 7,260 | 4,140 | 2,760 |
| 6 | 461 | 489 | 392 | 1,390 | 2,150 | 1,720 | 918 | 4,560 | 5,810 | 8,160 | 3,860 | 2,820 |
| 7 | 428 | 489 | 356 | 2,120 | 2,210 | 1,720 | 942 | 4,040 | 4,780 | 7,720 | 3,630 | 2,870 |
| 8 | 422 | 454 | 434 | 2,600 | 2,120 | 1,740 | 1,200 | 3,610 | 5,420 | 7,140 | 3,520 | 3,070 |
| 9 | 410 | 447 | 468 | 1,610 | 2,100 | 1,770 | 1,580 | 3,500 | 6,210 | 7,140 | 3,340 | 2,960 |
| 10 | 404 | 468 | 482 | 1,500 | 2,170 | 1,800 | 1,630 | 3,390 | 6,150 | 6,260 | 2,980 | 3,090 |
| 11 | 428 | 422 | 447 | 1,600 | 2,080 | 1,340 | 1,550 | 3,140 | 5,450 | 3,860 | 2,760 | 2,980 |
| 12 | 428 | 468 | 510 | 1,680 | 2,040 | 930 | 1,690 | 3,290 | 5,150 | 3,580 | 2,550 | 2,960 |
| 13 | 434 | 489 | 558 | 1,820 | 2,040 | 771 | 1,770 | 3,410 | 5,200 | 3,860 | 2,490 | 2,760 |
| 14 | 447 | 542 | 518 | 1,970 | 2,010 | 751 | 1,800 | 3,470 | 6,000 | 3,480 | 2,490 | 1,070 |
| 15 | 454 | 638 | 468 | 2,060 | 2,040 | 724 | 1,800 | 3,520 | 7,800 | 3,320 | 2,530 | 930 |
| 16 | 482 | 622 | 510 | 2,030 | 2,040 | 715 | 1,800 | 3,430 | 9,880 | 3,240 | 2,570 | 942 |
| 17 | 510 | 697 | 510 | 2,080 | 2,060 | 742 | 1,690 | 3,470 | 10,200 | 3,470 | 2,870 | 2,120 |
| 18 | 489 | 715 | 590 | 2,060 | 2,060 | 706 | 1,680 | 3,900 | 9,000 | 2,870 | 2,820 | 2,830 |
| 19 | 510 | 630 | 662 | 2,040 | 2,080 | 670 | 2,320 | 3,450 | 8,270 | 2,910 | 3,200 | 3,320 |
| 20 | 482 | 679 | 815 | 2,060 | 2,100 | 679 | 3,000 | 4,850 | 9,700 | 2,670 | 3,160 | 3,500 |
| 21 | 510 | 646 | 815 | 2,100 | 2,050 | 670 | 3,800 | 6,090 | 11,800 | 2,620 | 2,980 | 3,430 |
| 22 | 440 | 630 | 826 | 2,060 | 1,690 | 688 | 4,420 | 6,600 | 11,500 | 2,390 | 2,890 | 3,290 |
| 23 | 482 | 630 | 1,210 | 2,010 | 1,940 | 751 | 4,900 | 6,900 | 8,920 | 2,100 | 2,800 | 3,230 |
| 24 | 496 | 550 | 1,300 | 2,100 | 1,970 | 793 | 5,180 | 6,450 | 8,200 | 3,130 | 2,670 | 3,180 |
| 25 | 518 | 574 | 1,380 | 2,100 | 1,840 | 804 | 5,100 | 6,150 | 9,000 | 3,980 | 2,620 | 3,210 |
| 26 | 566 | 534 | 1,320 | 2,030 | 1,840 | 715 | 4,750 | 5,650 | 8,230 | 5,470 | 2,490 | 3,270 |
| 27 | 461 | 526 | 1,270 | 2,030 | 1,820 | 760 | 4,460 | 5,300 | 7,250 | 4,500 | 2,440 | 3,230 |
| 28 | 518 | 510 | 1,450 | 2,040 | 1,900 | 1,180 | 4,000 | 5,200 | 7,630 | 2,960 | 2,490 | 3,120 |
| 29 | 503 | 550 | 1,400 | 2,040 | - | 1,390 | 3,680 | 5,090 | 7,400 | 2,710 | 2,510 | 1,560 |
| 30 | 496 | 542 | 1,270 | 2,060 | ---------- | 1,340 | 3,560 | 4,850 | 7,880 | 2,280 | 2,570 | 2,700 |
| 31 | 447 | ---------- | 1,260 | 2,060 | ---------- | 1,320 | ---------- | 4,360 | ---------- | 2,310 | 2,840 | ---------- |
| Total | 15,052 | 16,504 | 23,964 | 57,790 | 56,900 | 35,939 | 77,920 | 143,030 | 218,720 | 142,690 | 98,510 | 82,062 |
| Mean | 486 | 550 | 773 | 1,864 | 2,032 | 1,159 | 2,597 | 4,614 | 7,291 | 4,603 | 3,178 | 2,735 |
| Ac-ft | 29,860 | 32,740 | 47,530 | 114,600 | 112,900 | 71,280 | 154,600 | 283,700 | 433,800 | 283,000 | 195,400 | 162,800 |

Calendar year 1964: Max 6,820 Min 215 Mean 987 Ac-ft 716,200
Water year 1964-65: Max 11,800 Min 356 Mean 2,655 Ac-ft 1,922,000

Peak discharge (base, 8,000 cfs).--June 22 (0200) 12,400 cfs (6.14 ft); Aug. 2 (0800) 9,800 cfs (5.65 ft).

## 9-3675. La Plata River near Farmington, N. Mex.

Location.--Lat 36°44'30", long 108°14'45", in SW¼ sec.7, T.29 N., R.13 W., on right bank 1,300 ft upstream from bridge on U. S. Highway 550, 1,800 ft upstream from mouth, and 2½ miles northwest of Farmington.

Drainage area.--583 sq mi.

Records available.--March 1938 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 5,215 ft (from river-profile map).

Average discharge.--27 years, 24.9 cfs (18,030 acre-ft per year).

Extremes.--Maximum discharge during year, 2,710 cfs Aug. 3 (gage height, 5.93 ft), from rating curve extended above 250 cfs on basis of slope-area measurement of peak flow; minimum, 0.2 cfs Oct. 28.
1938-65: Maximum gage height, 6.03 ft Sept. 10, 1939 (discharge not determined); no flow for long periods.
Major floods occurred Sept. 5 or 6, 1909, and Oct. 5 or 6, 1911.

Remarks.--Records poor. Discharge measurements or field estimates generally made 2 to 4 times a month. Diversions for irrigation of about 24,000 acres above station.

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.6 | 0.6 | 0.6 | 6 | b 6 | 6.5 | 12 | 140 | 18 | 8.5 | 253 | 5.1 |
| 2 | .6 | .6 | 1.1 | 2 | 7.0 | 6.5 | 30 | 169 | 27 | 4.6 | 378 | 4.8 |
| 3 | .6 | .4 | 2.1 | 1 | 5.6 | 7.5 | 41 | 235 | 36 | 12 | 192 | 4.8 |
| 4 | .5 | .4 | 1.2 | 1 | 4.0 | 6.5 | 27 | 212 | 42 | 11 | 4 | 4.5 |
| 5 | .5 | .4 | 1.0 | 2 | 3.4 | 8.5 | 27 | 181 | 30 | 4.6 | 4 | 4.8 |
| 6 | .5 | .4 | .8 | 2 | 3.4 | 9.4 | 24 | 120 | 14 | 3.7 | 2 | 33 |
| 7 | .5 | .4 | .6 | 2 | 9.0 | 8.5 | 23 | 80 | 17 | 2.8 | 2 | 9.5 |
| 8 | .5 | .5 | .6 | 2 | 15 | 8.5 | 26 | 40 | 28 | 2.3 | 2 | 22 |
| 9 | .4 | .5 | .8 | 4 | 15 | 8.0 | 20 | 20 | 60 | 1.9 | 2 | 18 |
| 10 | .4 | .5 | 1.0 | 8 | 10 | 8.5 | 28 | 10 | 60 | 1.9 | 2 | 10 |
| 11 | .4 | .5 | .7 | 11 | 8.5 | 6.2 | 27 | 9.0 | 33 | 21 | 2 | 9.1 |
| 12 | .4 | .6 | .7 | 6.2 | b 2 | 6.2 | 23 | 8.5 | 21 | 5 | 2 | 6.3 |
| 13 | .4 | .6 | b .5 | 3.7 | b 2 | 9.0 | 23 | 12 | 15 | 2 | 2 | 5.4 |
| 14 | .4 | .6 | .5 | 3.2 | b 10 | 10 | 21 | 13 | 27 | 7.3 | 2 | 4.3 |
| 15 | .4 | 1.1 | .5 | 2.5 | b 20 | 10 | 18 | 9.9 | 86 | 6.4 | 2 | 4.8 |
| 16 | .4 | 5.9 | .5 | 2 | b 12 | 9.9 | 26 | 7.5 | 103 | 53 | 2 | 5.7 |
| 17 | .4 | 1.4 | .5 | 2 | b 12 | 9.4 | 54 | 7.0 | 40 | 20 | 2 | 6.3 |
| 18 | .4 | 1.1 | 1 | 2 | 12 | 9.0 | 66 | 6.2 | 27 | 10 | 19 | 11 |
| 19 | .4 | .8 | 1 | 2 | 14 | 8.5 | 83 | 7.5 | 39 | 6 | 4 | 19 |
| 20 | .4 | .5 | 1 | 2 | 14 | 9.0 | 135 | 34 | 74 | 5 | 4 | 11 |
| 21 | .4 | .5 | 1 | 6 | 16 | 8.5 | 266 | 97 | 100 | 5 | 4 | 8.7 |
| 22 | .4 | .5 | 1 | 6 | 16 | 8.5 | 313 | 122 | 86 | 4.6 | 4 | 8.7 |
| 23 | .4 | .4 | b 1 | 6.5 | 14 | 9.0 | 313 | 106 | 56 | 4.6 | 5.4 | 8.3 |
| 24 | .3 | .5 | b 1 | 5.6 | 10 | 9.9 | 362 | 66 | 58 | 5.0 | 3.3 | 9.1 |
| 25 | .3 | .5 | b 1 | 8.0 | 7.5 | 10 | 319 | 60 | 125 | 79 | 6.0 | 8.3 |
| 26 | .5 | .5 | b 1 | b 4 | 6.5 | 11 | 226 | 51 | 100 | 42 | 5.1 | 8.7 |
| 27 | .4 | .6 | 1 | b 2 | 6.5 | 12 | 207 | 34 | 49 | 27 | 4.8 | 10 |
| 28 | .3 | .6 | b 6 | b 2 | 6.5 | 11 | 180 | 23 | 29 | 20 | 4.8 | 7.9 |
| 29 | .4 | .5 | 6 | b 2 | - | 10 | 160 | 17 | 15 | 22 | 4.8 | 8.3 |
| 30 | .4 | .5 | 2 | b 2 | ---------- | 9.0 | 140 | 13 | 9.4 | 23 | 5.4 | 6.6 |
| 31 | .4 | ---------- | 1 | b 4 | ---------- | 7.5 | ---------- | 14 | ---------- | 29 | 5.7 | ---------- |
| Total | 13.3 | 22.9 | 38.7 | 114.7 | 267.9 | 272.0 | 3,220 | 1,924.6 | 1,424.4 | 450.2 | 935.3 | 284.0 |
| Mean | 0.43 | 0.76 | 1.25 | 3.70 | 9.57 | 8.77 | 107 | 62.1 | 47.5 | 14.5 | 30.2 | 9.47 |
| Ac-ft | 26 | 45 | 77 | 228 | 531 | 540 | 6,390 | 3,820 | 2,830 | 893 | 1,860 | 563 |

Calendar year 1964: Max 205 Min 0 Mean 14.2 Ac-ft 10,320
Water year 1964-65: Max 378 Min 0.3 Mean 24.6 Ac-ft 17,800

b Stage-discharge relation affected by ice.
Note.--No gage-height record Dec. 14-22, 27, Dec. 29 to Jan. 10, Jan. 16-22, Feb. 8, 9, 18-22, Apr. 28 to May 1, May 6-10, June 13, 17, July 12, 13, 18-21, Aug. 4-17, 19-22.

9-3680. San Juan River at Shiprock, N. Mex.

Location.--Lat 36°47'35", long 108°43'55", in SW¼ sec.22, T.30 N., R.18 W., on left bank 3 miles west of Shiprock and 6 miles downstream from Chaco River.

Drainage area.--12,900 sq mi, approximately.

Records available.--January to October 1911, February 1927 to September 1965. Monthly or yearly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 4,848.68 ft above mean sea level (river-profile survey). Prior to Apr. 6, 1922, chain gage and Apr. 7, 1922, to Oct. 25, 1933, water-stage recorder, at site 3 miles upstream at different datum. Oct. 26, 1933, to Sept. 30, 1936, water-stage recorder at present site at datum 3.31 ft higher and Oct. 1, 1936, to Sept. 30, 1952, at datum 1.77 ft higher. Supplementary water-stage recorders all at gage datum, 400 ft downstream since Oct. 26, 1938 (at datum 1.00 ft higher prior to July 24, 1939); 400 ft upstream since Dec. 19, 1942 (at datum 1.77 ft higher prior to Dec. 30, 1953). Records compiled from either of 2 downstream gages.

Average discharge.--39 years (1926-65), 2,299 cfs (1,664,000 acre-ft per year), unadjusted.

Extremes.--Maximum discharge during year, 13,200 cfs Aug. 2 (gage height, 6.95 ft); minimum, 320 cfs Nov. 3.
1927-65: Maximum discharge, about 80,000 cfs Aug. 11, 1929 (gage height, 5.7 ft, site and datum then in use); minimum, 9 cfs Aug. 25-27, 1939.
Maximum flood known occurred Oct. 6, 1911, and reached a stage of 22 ft, site and datum then in use.

Remarks.--Records good prior to Aug. 5 and fair thereafter except those for period of Aug. 6-20, which are poor. Discharge measurements generally made 4 times a month. Since 1962 flow partly regulated by Navajo Reservoir (see No. 3551). Diversions for irrigation of about 118,000 acres above station. Ungaged canals bypass station on both right and left bank, though some of bypass flow is returned to river below gage. Records of chemical analyses, suspended sediment loads, and water temperatures for the water year 1965 are published in part 2 of this report.

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 708 | 418 | 656 | 1,390 | 2,200 | 1,960 | 1,330 | 3,700 | 3,820 | 8,040 | 5,200 | 2,660 |
| 2 | 693 | 448 | 680 | 1,380 | 2,140 | 1,920 | 1,600 | 4,730 | 4,420 | 8,040 | 9,600 | 2,600 |
| 3 | 630 | 511 | 770 | 1,280 | 2,120 | 1,800 | 2,010 | 5,640 | 4,420 | 8,840 | 8,680 | 2,700 |
| 4 | 616 | 436 | 752 | 1,250 | 2,100 | 1,750 | 1,840 | 5,520 | 6,010 | 5,860 | 5,000 | 2,780 |
| 5 | 525 | 448 | 710 | 1,340 | 2,080 | 1,780 | 1,680 | 5,120 | 7,200 | 6,450 | 4,000 | 2,720 |
| 6 | 472 | 370 | 625 | 1,370 | 2,050 | 1,770 | 1,010 | 4,450 | 6,880 | 7,760 | 3,700 | 2,740 |
| 7 | 430 | 400 | 464 | 1,750 | 2,100 | 1,780 | 920 | 4,060 | 4,450 | 7,840 | 3,300 | 2,840 |
| 8 | 388 | 412 | 450 | 2,470 | 2,030 | 1,750 | 1,000 | 3,850 | 4,730 | 7,760 | 3,180 | 3,020 |
| 9 | 400 | 406 | 550 | 1,960 | 2,010 | 1,820 | 1,210 | 3,480 | 6,200 | 7,560 | 3,050 | 3,060 |
| 10 | 365 | 365 | 645 | 1,460 | 2,050 | 1,840 | 1,530 | 3,200 | 6,400 | 7,200 | 2,980 | 3,150 |
| 11 | 365 | 350 | 645 | 1,550 | 2,030 | 1,660 | 1,680 | 2,880 | 5,400 | 4,190 | 2,650 | 3,150 |
| 12 | 394 | 365 | 704 | 1,630 | 1,920 | 1,160 | 1,690 | 3,020 | 4,920 | 3,890 | 2,550 | 2,980 |
| 13 | 412 | 400 | 650 | 1,690 | 1,870 | 1,070 | 1,700 | 3,280 | 4,620 | 4,150 | 2,400 | 2,880 |
| 14 | 430 | 525 | 565 | 1,920 | 1,870 | 950 | 1,780 | 3,670 | 5,200 | 3,700 | 2,350 | 1,630 |
| 15 | 448 | 651 | 575 | 2,080 | 1,880 | 950 | 1,750 | 3,550 | 6,600 | 3,400 | 2,500 | 940 |
| 16 | 448 | 816 | 595 | 2,080 | 1,870 | 910 | 1,750 | 3,420 | 9,360 | 3,550 | 2,550 | 900 |
| 17 | 454 | 798 | 710 | 2,060 | 1,920 | 890 | 1,600 | 3,250 | 10,600 | 3,610 | 2,620 | 1,290 |
| 18 | 466 | 764 | 710 | 2,010 | 1,920 | 890 | 1,630 | 3,480 | 10,000 | 3,050 | 2,720 | 2,960 |
| 19 | 448 | 740 | 752 | 2,050 | 1,920 | 861 | 1,800 | 3,180 | 9,600 | 3,000 | 3,380 | 3,680 |
| 20 | 454 | 748 | 806 | 2,100 | 1,920 | 870 | 2,550 | 3,760 | 9,700 | 2,650 | 3,220 | 3,560 |
| 21 | 442 | 732 | 836 | 2,120 | 1,940 | 834 | 3,500 | 6,000 | 11,800 | 2,480 | 3,050 | 3,300 |
| 22 | 454 | 693 | 818 | 2,060 | 1,580 | 861 | 4,240 | 6,400 | 12,200 | 2,380 | 2,960 | 3,120 |
| 23 | 460 | 679 | 972 | 2,060 | 1,740 | 910 | 4,730 | 6,800 | 10,100 | 2,100 | 2,820 | 2,920 |
| 24 | 442 | 645 | 1,270 | 2,080 | 1,820 | 920 | 5,000 | 5,160 | 8,680 | 2,780 | 2,680 | 2,920 |
| 25 | 478 | 615 | 1,390 | 2,120 | 1,820 | 992 | 5,120 | 5,680 | 9,000 | 3,950 | 2,620 | 2,960 |
| 26 | 490 | 615 | 1,380 | 2,060 | 1,780 | 970 | 4,840 | 5,480 | 8,800 | 5,510 | 2,370 | 3,100 |
| 27 | 430 | 625 | 1,320 | 1,990 | 1,890 | 920 | 4,450 | 5,240 | 7,520 | 4,840 | 2,310 | 3,000 |
| 28 | 360 | 650 | 1,340 | 2,060 | 1,960 | 1,080 | 4,000 | 4,840 | 7,070 | 3,660 | 2,310 | 2,900 |
| 29 | 412 | 650 | 1,470 | 1,990 | - | 1,360 | 3,550 | 5,200 | 7,480 | 3,180 | 2,280 | 1,840 |
| 30 | 454 | 656 | 1,300 | 2,120 | ---------- | 1,400 | 3,420 | 4,420 | 7,600 | 2,500 | 2,300 | 1,880 |
| 31 | 418 | ---------- | 1,250 | 2,140 | ---------- | 1,380 | ---------- | 4,450 | ---------- | 2,420 | 2,560 | ---------- |
| Total | 14,386 | 16,931 | 26,360 | 57,620 | 54,530 | 40,008 | 74,910 | 137,910 | 220,780 | 147,34 | 103,890 | 80,180 |
| Mean | 464 | 564 | 850 | 1,859 | 1,948 | 1,291 | 2,497 | 4,449 | 7,359 | 4,753 | 3,351 | 2,673 |
| Ac-ft | 28,530 | 33,580 | 52,280 | 114,300 | 108,200 | 79,350 | 148,600 | 273,500 | 437,900 | 292,200 | 206,100 | 159,000 |

Calendar year 1964: Max 7,000 Min 153 Mean 978 Ac-ft 709,700
Water year 1964-65: Max 12,200 Min 350 Mean 2,671 Ac-ft 1,934,000

Peak discharge (base, 8,500 cfs).--June 22 (0200) 12,600 cfs (6.80 ft); Aug. 2 (1330) 13,200 cfs (6.95 ft).

## 9-3860.5 Largo Creek near Mangas, N. Mex.

Location.--Lat 34°08'30", long 108°30'05", in SW¼ sec.10, T.2 S., R.16 W., on right bank at El Caso Ranch, half a mile upstream from Sawmill Canyon, 10½ miles southwest of Mangas, and 14 miles south of Quemado.

Drainage area.--63 sq mi, approximately.

Records available.--September 1959 to September 1965.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 7,600 ft (from topographic map).

Average discharge.--6 years, 0.96 cfs (695 acre-ft per year).

Extremes.--Maximum discharge during year, 43 cfs Aug. 1 (gage height, 1.44 ft); minimum, 0.07 cfs June 2.
1959-65: Maximum discharge, 258 cfs Feb. 1, 1963 (gage height, 2.65 ft); minimum daily, 0.02 cfs July 25-27, 1961.

Remarks.--Records good.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Aug. 1)

| | | | |
|---|---|---|---|
| 0.1 | 0.01 | 0.5 | 3.5 |
| .2 | .2 | .6 | 5.5 |
| .3 | .9 | .7 | 8.2 |
| .4 | 2.0 | | |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.5 | 0.9 | 0.2 | 0.1 | *0.2 | 4.6 | 0.2 |
| 2 | .1 | .2 | .2 | .2 | .2 | .5 | .8 | .2 | *.1 | .2 | *2.3 | .2 |
| 3 | .1 | .2 | .2 | .2 | .2 | .4 | .8 | .2 | .2 | .2 | .6 | .3 |
| 4 | .1 | .2 | .2 | .1 | .2 | .3 | .8 | .2 | .2 | .2 | .3 | .4 |
| 5 | .1 | .2 | .3 | .2 | * | .3 | .9 | .2 | .2 | .2 | .2 | .2 |
| 6 | .1 | .2 | .2 | .2 | .2 | .3 | .7 | .2 | .2 | .2 | .2 | .2 |
| 7 | .1 | .2 | .2 | .2 | .2 | .3 | * | .2 | .2 | .2 | .1 | .2 |
| 8 | .1 | .2 | .2 | .2 | .2 | .6 | .6 | .2 | .1 | .2 | .1 | .2 |
| 9 | .1 | .2 | .2 | .2 | .2 | 3.4 | .6 | .2 | .2 | .2 | .1 | .2 |
| 10 | .1 | .2 | .2 | .2 | .2 | 2.3 | .8 | .2 | .2 | .2 | .1 | * |
| 11 | .1 | .2 | .2 | .2 | .3 | 2.0 | .6 | .2 | .2 | .2 | .1 | 1.7 |
| 12 | .1 | .2 | .2 | .2 | .2 | 1.2 | .5 | .2 | .2 | .2 | .2 | .2 |
| 13 | .1 | .2 | .2 | * | .2 | .7 | .4 | .2 | .2 | .2 | .1 | .4 |
| 14 | .1 | .2 | .2 | .2 | .2 | .5 | .4 | .2 | .2 | .2 | .1 | .3 |
| 15 | .1 | .2 | .2 | .2 | .2 | .6 | .4 | .2 | .1 | .2 | .1 | .2 |
| 16 | .2 | .8 | .2 | .2 | .2 | .8 | .3 | .2 | .1 | .2 | .3 | .1 |
| 17 | .2 | .2 | .2 | .2 | .2 | *2.9 | .3 | .2 | .1 | .2 | .3 | .1 |
| 18 | .2 | .2 | .2 | .2 | .3 | 2.5 | .3 | .2 | .1 | .1 | .2 | .1 |
| 19 | .2 | .4 | .2 | .2 | .4 | 2.5 | .2 | .2 | .1 | .1 | .2 | .1 |
| 20 | .2 | .3 | .2 | .2 | .4 | 1.5 | .2 | .2 | .1 | .1 | * .1 | .4 |
| 21 | * .2 | .3 | .2 | .3 | .5 | 1.1 | .2 | .2 | .1 | .2 | .2 | .3 |
| 22 | .1 | .3 | * .2 | .3 | .5 | 1.0 | .2 | .2 | .1 | .1 | 1.6 | .2 |
| 23 | .2 | .3 | .4 | .2 | .4 | 1.0 | .2 | .2 | .1 | .1 | .5 | .2 |
| 24 | .2 | * | .4 | .3 | .4 | 2.1 | .2 | .2 | .1 | .2 | .2 | .1 |
| 25 | .2 | .2 | .6 | .2 | * .3 | 1.0 | .2 | .2 | .1 | .2 | .3 | .1 |
| 26 | .2 | .2 | .4 | .2 | .3 | 1.4 | .2 | .2 | .1 | .1 | .2 | .1 |
| 27 | .2 | .2 | .4 | .2 | .3 | 1.0 | .4 | .2 | .1 | .1 | .1 | .1 |
| 28 | .2 | .2 | .5 | .2 | .3 | .9 | .3 | .2 | .1 | .1 | .1 | .1 |
| 29 | .2 | .2 | .3 | .2 | - | .9 | .2 | .2 | .1 | .1 | .8 | .1 |
| 30 | .2 | .2 | .2 | .3 | ---------- | .8 | * .2 | .2 | .1 | .1 | .4 | .1 |
| 31 | .2 | ---------- | .2 | .3 | ---------- | .9 | ---------- | .2 | ---------- | .4 | .3 | ---------- |
| Total | 4.6 | 8.1 | 8.1 | 6.7 | 7.8 | 43.6 | 13.4 | 5.4 | 4.1 | 9.1 | 20.2 | 9.4 |
| Mean | 0.15 | 0.27 | 0.26 | 0.22 | 0.28 | 1.40 | 0.45 | 0.17 | 0.14 | 0.29 | 0.65 | 0.31 |
| Ac-ft | 9.1 | 16 | 16 | 13 | 15 | 86 | 27 | 11 | 8.1 | 18 | 40 | 19 |

Calendar year 1964: Max 9.1 Min 0.07 Mean 0.41 Ac-ft 297
Water year 1964-65: Max 8.2 Min 0.1 Mean 0.38 Ac-ft 278

Peak discharge (base, 30 cfs).--Aug. 1 (1745) 43 cfs (1.44 ft).

* Discharge measurement made on this day.

9-3957. Whitewater Arroyo near Cheechilgeetho, N. Mex.

Location.--Lat 35°15'35", long 108°55'15", in sec.24, T.12 N., R.20 W., on left bank in Navajo Indian Reservation, at highway bridge, 1¼ miles northwest of Cheechilgeetho and 14 miles north of Zuni.

Drainage area.--78.5 sq mi.

Records available.--June 1964 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 6,670 ft (from topographic map).

Extremes.--Maximum discharge during year, 1,210 cfs July 24 (gage height, 4.27 ft); no flow for many days.
1964-65: Maximum discharge, 2,480 cfs July 30, 1964 (gage height, 7.80 ft), from rating curve extended above 35 cfs on basis of slope-area measurement at gage height 6.48 ft; no flow for many days.

Remarks.--Records poor.

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 0 | ** 0 | 0.1 | * 0.1 | 0 | 0 | * 0 | 0 | * 0 | 3.6 | 0 |
| 2 | | 0 | 0 | 0 | .1 | 0 | 0 | 0 | ** 0 | .1 | 0 | ** 0 |
| 3 | | 0 | b 0 | 0 | .1 | 0 | 0 | 0 | 0 | .1 | 0 | 0 |
| 4 | | 0 | b 0 | 0 | .1 | 0 | 0 | 0 | .1 | .2 | 0 | 0 |
| 5 | | b 0 | 0 | .1 | .1 | .1 | 0 | 0 | .3 | .1 | 0 | 0 |
| 6 | | b 0 | 0 | .2 | .1 | .2 | 0 | 0 | .2 | .2 | 0 | 0 |
| 7 | | 0 | 0 | .2 | .1 | .3 | 0 | 0 | .1 | .2 | 0 | 1.4 |
| 8 | | 0 | 0 | .1 | .1 | .2 | 0 | 0 | 0 | .2 | 0 | 0 |
| 9 | | 0 | 0 | .1 | .1 | .1 | .2 | 0 | 0 | .1 | 1.1 | 0 |
| 10 | | 0 | 0 | .1 | .1 | .1 | .4 | 0 | 0 | 3.0 | 0 | 0 |
| 11 | | .3 | 0 | 0 | 0 | .2 | .3 | 0 | 0 | 43 | 0 | 0 |
| 12 | | .1 | 0 | 0 | 0 | .3 | .3 | 0 | 0 | .5 | 0 | 0 |
| 13 | | .1 | 0 | 0 | 0 | .5 | .1 | .1 | 0 | 5 | 0 | 0 |
| 14 | | b .1 | 0 | 0 | 0 | .3 | 0 | .6 | 0 | * .5 | 2.5 | 0 |
| 15 | | b .1 | 0 | 0 | 0 | .2 | 0 | .2 | 1 | .2 | .1 | 0 |
| 16 | | b .1 | 0 | 0 | 0 | .1 | 0 | .1 | 3 | .2 | 3.9 | 0 |
| 17 | | .3 | 0 | 0 | 0 | .1 | 0 | 0 | .2 | .2 | 0 | 0 |
| 18 | | .2 | 0 | 0 | 0 | .1 | 0 | 0 | .1 | 7 | 0 | 0 |
| 19 | | .1 | .1 | 0 | 0 | .1 | 0 | 0 | 0 | .3 | 0 | 0 |
| 20 | | .1 | .1 | .1 | .1 | 0 | 0 | 0 | 0 | .2 | 0 | 0 |
| 21 | | 0 | .1 | .1 | .1 | 0 | 0 | 0 | 0 | 8 | 0 | 0 |
| 22 | | 0 | .1 | .1 | .1 | 0 | 0 | 0 | 0 | 38 | 0 | 0 |
| 23 | | 0 | .1 | 0 | .1 | 0 | 0 | 0 | 3 | 93 | 0 | 0 |
| 24 | | 0 | .1 | 0 | .1 | 0 | 0 | 0 | .3 | 156 | 0 | 0 |
| 25 | | 0 | .1 | 0 | .1 | .1 | 0 | 0 | .1 | 4 | 0 | 0 |
| 26 | | 0 | .1 | 0 | .2 | .1 | .1 | 0 | 0 | 1 | 0 | 0 |
| 27 | (*) | 0 | .1 | 0 | .2 | .1 | .2 | 0 | 0 | 50 | 0 | 0 |
| 28 | | 0 | .1 | 0 | * .2 | 0 | 0 | 0 | 0 | *41 | 0 | 0 |
| 29 | | 0 | .1 | .1 | - | 0 | 0 | 0 | 0 | * 8 | 0 | 0 |
| 30 | | 0 | * .1 | .1 | ---------- | 0 | 0 | 0 | 0 | .1 | 0 | 0 |
| 31 | | ---------- | .1 | .1 | ---------- | * 0 | ---------- | 0 | ---------- | 0 | 0 | ---------- |
| Total | 0 | 1.5 | 1.3 | 1.5 | 2.2 | 3.2 | 1.6 | 1.0 | 8.4 | 460.4 | 11.2 | 1.4 |
| Mean | 0 | 0.05 | 0.04 | 0.05 | 0.08 | 0.10 | 0.05 | 0.03 | 0.28 | 14.9 | 0.36 | 0.05 |
| Ac-ft | 0 | 3.0 | 2.6 | 3.0 | 4.4 | 6.3 | 3.2 | 2.0 | 17 | 913 | 22 | 2.8 |

Calendar year 1964: Max - Min - Mean - Ac-ft -
Water year 1964-65: Max 156 Min 0 Mean 1.35 Ac-ft 979

Peak discharge (base, 600 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 7-11 | 1830 | 2.87 | 648 | 7-24 | 1500 | 4.27 | 1,210 |
| 7-23 | 1730 | 3.52 | 908 | 7-27 | 1800 | 3.27 | 808 |

* Discharge measurement made on this day.
** Field estimate made on this day.
b Stage-discharge relation affected by ice.
Note.--No gage-height record Nov. 21-24, Dec. 5 to Apr. 19, May 1-12, May 15 to June 30, July 12-20, 25, 26, Aug. 3-12, 15, 18-31.

## 9-4301.5 Sapillo Creek below Lake Roberts, near Silver City, N. Mex.

Location.--Lat 33°01'55", long 108°10'10", in SE¼SE¼ sec.34, T.14 S., R.13 W., on left bank 1,400 ft below Lake Roberts Dam, about 1 mile upstream from former mining town of Meerschaum and 18 miles north of Silver City.

Drainage area.--78 sq mi.

Records available.--May 1964 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 5,990 ft (from topographic map).

Extremes.--1964: Maximum discharge during period, 1,210 cfs Sept. 23 (gage height, 5.58 ft), from rating curve extended above 10 cfs on basis of slope-area measurement of peak flow; no flow for many days.
1964-65: Maximum discharge during water year, 622 cfs Aug. 1 (gage height, 5.16 ft); no flow for part of Aug. 15, 16.

Remarks.--Records good except those for period of no gage-height record, which are poor.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Sept. 23, 1964; Aug. 18 to Sept. 9, 1965)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 2.4 | 0 | 2.9 | 0.8 | 3.3 | 4.2 | 4.0 | 44 |
| 2.5 | .1 | 3.0 | 1.2 | 3.4 | 6.2 | 4.2 | 74 |
| 2.6 | .2 | 3.1 | 1.8 | 3.6 | 12 | 4.5 | 150 |
| 2.7 | .3 | 3.2 | 2.8 | 3.8 | 24 | 4.8 | 300 |
| 2.8 | .5 | | | | | | |

Discharge, in cubic feet per second, water year October 1963 to September 1964

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | - | | 0 | 18 | 0.8 |
| 2 | | | | | | | | - | | 0 | 33 | .7 |
| 3 | | | | | | | | - | | 0 | 8.7 | * .6 |
| 4 | | | | | | | | - | | 0 | 5.6 | .6 |
| 5 | | | | | | | | - | | 0 | 3.6 | .7 |
| 6 | | | | | | | | - | | 0 | 1.7 | .7 |
| 7 | | | | | | | | * 0 | | 0 | .9 | .7 |
| 8 | | | | | | | | 0 | | 0 | * .6 | .8 |
| 9 | | | | | | | | 0 | | .3 | .6 | 5.6 |
| 10 | | | | | | | | 0 | | .2 | .4 | 3.8 |
| 11 | | | | | | | | 0 | | .4 | .3 | 4.6 |
| 12 | | | | | | | | * 0 | | .6 | .4 | 3.6 |
| 13 | | | | | | | | 0 | | * .4 | .4 | 2.7 |
| 14 | | | | | | | | 0 | | .3 | .4 | 2.9 |
| 15 | | | | | | | | 0 | | .2 | .4 | 2.0 |
| 16 | | | | | | | | 0 | | .1 | .5 | 1.7 |
| 17 | | | | | | | | 0 | | .1 | 2.2 | 1.5 |
| 18 | | | | | | | | 0 | | .2 | 11 | 1.2 |
| 19 | | | | | | | | 0 | | .2 | 8.7 | 1.1 |
| 20 | | | | | | | | 0 | | .1 | 3.9 | 1.1 |
| 21 | | | | | | | | 0 | | 0 | 2.5 | 1.1 |
| 22 | | | | | | | | 0 | (*) | * 0 | * 1.5 | 3.6 |
| 23 | | | | | | | | 0 | | 1.5 | .7 | * 298 |
| 24 | | | | | | | | 0 | | 4.4 | .6 | a 20 |
| 25 | | | | | | | | 0 | | 1.5 | .3 | a 15 |
| 26 | | | | | | | | 1.9 | | 3.5 | .1 | a 10 |
| 27 | | | | | | | | 1.1 | | 4.6 | 0 | * a 8 |
| 28 | | | | | | | | * .6 | | 3.8 | .1 | * a 7 |
| 29 | | | | | | | | .2 | | 3.1 | .6 | 5.2 |
| 30 | | | | | ---------- | | | 0 | | 2.2 | .8 | * 5.0 |
| 31 | | ---------- | | | ---------- | | ---------- | 0 | ---------- | 2.5 | 1.0 | ---------- |
| Total | | | | | | | | 3.8 | 0 | 30.2 | 109.5 | 410.3 |
| Mean | | | | | | | | 0.12 | 0 | 0.97 | 3.53 | 13.7 |
| Ac-ft | | | | | | | | 7.5 | 0 | 60 | 217 | 814 |

Calendar year Max - Min - Mean - Ac-ft -
Water year 1963-64: Max - Min - Mean - Ac-ft -

* Discharge measurement or observation of no flow made on this day.
a No gage-height record.

9-4301.5 Sapillo Creek below Lake Roberts near Silver City, N. Mex.--continued

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 4.6 | 3.8 | 3.2 | 1.6 | 1.1 | 1.0 | 1.1 | 2.1 | 0.8 | 0.7 | 86 | 5.2 |
| 2 | 4.4 | 3.8 | 3.2 | 2.6 | 1.1 | 1.0 | 3.6 | 1.9 | .6 | .8 | 64 | 5.0 |
| 3 | 4.3 | 3.8 | 3.4 | 3.8 | 1.0 | 1.2 | 3.5 | 2.0 | 2.2 | .9 | * 8.4 | 5.8 |
| 4 | 4.2 | 3.8 | * 3.5 | 2.6 | 1.0 | 1.2 | 2.2 | 2.1 | 3.1 | .9 | 4.6 | 7.9 |
| 5 | 4.1 | * 3.8 | 3.4 | 2.0 | 1.0 | 1.1 | 2.0 | 2.1 | 2.5 | .9 | 2.7 | 7.0 |
| 6 | 4.1 | 3.6 | 2.7 | 1.8 | 1.0 | 1.0 | 2.0 | 1.8 | * 2.7 | .9 | 1.7 | 6.8 |
| 7 | 4.2 | 3.6 | 1.5 | 1.9 | 1.1 | .8 | 2.0 | 1.6 | 2.9 | .7 | 1.6 | * 9.0 |
| 8 | 4.2 | 3.6 | 1.7 | 3.5 | 1.9 | .9 | 1.9 | 1.3 | 2.6 | .7 | 1.6 | 7.6 |
| 9 | 4.1 | 3.6 | 1.9 | 2.3 | * 1.9 | * .9 | 2.0 | 1.7 | 2.4 | .7 | 1.6 | 37 |
| 10 | 4.1 | 3.9 | 2.1 | 2.2 | 1.9 | 1.0 | 1.9 | 1.7 | 1.9 | .7 | 2.0 | 9.3 |
| 11 | 3.9 | 3.8 | 2.1 | 2.1 | 1.7 | 2.9 | 1.9 | 1.7 | 1.6 | .7 | 1.9 | 8.2 |
| 12 | 3.8 | 3.6 | 2.2 | 1.9 | 1.5 | 2.8 | 2.4 | 1.4 | 1.7 | * .8 | 1.8 | 28 |
| 13 | 3.6 | 3.6 | 2.2 | 1.7 | 1.3 | 2.1 | 2.5 | 1.6 | 1.6 | .7 | 1.3 | 15 |
| 14 | 3.6 | 3.6 | 2.1 | 1.7 | 1.2 | 2.0 | * 2.4 | 2.0 | 1.4 | .7 | 2.2 | 10 |
| 15 | 3.6 | 3.6 | 2.0 | * 1.6 | 1.1 | 2.3 | 1.7 | 3.2 | 1.4 | .8 | 5.2 | 8.4 |
| 16 | 3.6 | 3.6 | * 1.9 | 1.4 | 1.1 | 1.7 | 1.3 | 3.1 | 1.3 | 1.0 | 2.6 | 7.3 |
| 17 | 3.8 | 3.6 | 1.8 | 1.4 | 1.1 | 1.7 | 1.9 | 2.4 | 1.2 | 3.2 | 21 | 6.5 |
| 18 | 3.9 | 3.8 | 1.3 | 1.8 | 1.2 | 1.6 | 2.4 | * 2.2 | 1.4 | 5.8 | 17 | 6.2 |
| 19 | * 3.8 | 3.8 | .8 | 1.9 | 1.2 | 1.6 | 2.7 | 2.5 | 1.5 | 2.7 | 12 | 6.2 |
| 20 | 3.9 | 3.6 | 1.4 | 1.8 | 1.1 | 1.7 | 3.2 | 2.2 | 1.5 | 2.5 | 11 | 5.6 |
| 21 | 3.9 | 3.6 | 1.7 | 1.8 | 1.1 | 1.9 | 2.8 | 1.6 | 1.5 | 1.7 | 9.0 | 5.4 |
| 22 | 3.8 | 3.6 | 1.7 | 1.6 | 1.2 | 2.0 | 2.5 | 1.9 | 1.3 | 1.4 | 7.6 | 5.2 |
| 23 | 3.6 | 3.5 | 1.7 | 1.1 | 1.2 | 2.2 | * 2.3 | 2.2 | 1.3 | 1.2 | 13 | 5.2 |
| 24 | 3.6 | 3.5 | 1.8 | 1.3 | 1.2 | 2.1 | 1.5 | 2.0 | 1.6 | 1.4 | 11 | * 5.0 |
| 25 | 3.6 | 3.5 | 1.8 | 1.5 | 1.1 | * 2.2 | 1.6 | 2.0 | 1.3 | 3.3 | 9.9 | 6.2 |
| 26 | 3.6 | 3.4 | 2.0 | 1.4 | 1.1 | 2.0 | 2.2 | 2.0 | 1.0 | * 2.6 | 8.4 | 9.6 |
| 27 | 3.6 | 3.2 | 2.4 | 1.3 | 1.2 | 1.8 | 2.2 | 2.0 | * .7 | 2.8 | 6.8 | 8.2 |
| 28 | 3.8 | 2.9 | 2.0 | 1.2 | 1.2 | 1.0 | 2.3 | 2.2 | .7 | 11 | 6.0 | 7.0 |
| 29 | 3.8 | 2.8 | 1.8 | 1.2 | - | .7 | 2.1 | 2.0 | .6 | 11 | 5.8 | 6.2 |
| 30 | 3.8 | 3.2 | 1.7 | * 1.3 | ---------- | .8 | 2.2 | 2.0 | .7 | 6.2 | 5.4 | 5.8 |
| 31 | 3.8 | ---------- | 1.6 | 1.3 | ---------- | 1.0 | ---------- | 1.2 | ---------- | 3.6 | 7.6 | ---------- |
| Total | 120.6 | 107.1 | 64.6 | 56.6 | 34.8 | 48.2 | 65.3 | 61.7 | 47.0 | 73.0 | 340.7 | 265.8 |
| Mean | 3.89 | 3.57 | 2.08 | 1.83 | 1.24 | 1.55 | 2.18 | 1.99 | 1.57 | 2.35 | 11.0 | 8.86 |
| Ac-ft | 239 | 212 | 128 | 112 | 69 | 96 | 130 | 122 | 93 | 145 | 676 | 527 |

Calendar year 1964 : Max - Min - Mean - Ac-ft -
Water year 1964-65 : Max 86 Min 0.6 Mean 3.52 Ac-ft 2,550

* Discharge measurement made on this day.

## 9-4305. Gila River near Gila, N. Mex.

Location.--Lat 33°03'45", long 108°32'20", in NW¼ sec.30, T.14 S., R.16 W., on left bank at Hooker damsite, 1 mile upstream from Mogollon Creek, and 7 miles northeast of Gila.

Drainage area.--1,864 sq mi.

Records available.--April to December 1914, December 1927 to September 1965. Monthly discharge only December 1927 to September 1930, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 4,655.8 ft above mean sea level (river-profile survey). Prior to Dec. 31, 1928, at site 5 miles upstream at different datum. Dec. 31, 1928, to Jan. 7, 1942, at site 200 ft upstream at same datum.

Average discharge.--38 years (1927-65), 123 cfs (89,050 acre-ft per year).

Extremes.--Maximum discharge during year, 1,710 cfs July 17 (gage height, 5.74 ft); minimum, 25 cfs July 8.
1929-65: Maximum discharge, 25,400 cfs Sept. 29, 1941 (gage height, 17.2 ft, from floodmark), from rating curve extended above 3,900 cfs on basis of velocity-area studies and logarithmic plotting; minimum, 15 cfs July 7, 1956.

Remarks.--Records good. Discharge measurements generally made twice a month. Diversions for irrigation of about 500 acres above station. Records of chemical analyses, suspended sediment loads, and water temperatures for the water year 1965 are published in part 2 of this report.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

| | | | |
|---|---|---|---|
| 1.8 | 24 | 2.6 | 180 |
| 1.9 | 35 | 3.0 | 300 |
| 2.1 | 66 | 3.5 | 460 |
| 2.3 | 106 | | |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 192 | 74 | 70 | 70 | 96 | 219 | 237 | 162 | 68 | 28 | 128 | 76 |
| 2 | 162 | 76 | 70 | 68 | 98 | 234 | 249 | 165 | 66 | 30 | 335 | 78 |
| 3 | 138 | 76 | 74 | 68 | 102 | 225 | 267 | 177 | 68 | 31 | 412 | 84 |
| 4 | 122 | 76 | 76 | 68 | 104 | 186 | 258 | 192 | 68 | 31 | 239 | 84 |
| 5 | 112 | 76 | 72 | 68 | 106 | 165 | 243 | 186 | 70 | 32 | 162 | 76 |
| 6 | 106 | 76 | 72 | 70 | 108 | 159 | 222 | 174 | 68 | 31 | 126 | 84 |
| 7 | 100 | 76 | 70 | 82 | 128 | 148 | 204 | 156 | 66 | 27 | 106 | 100 |
| 8 | 94 | 76 | 68 | 170 | 150 | 140 | 186 | 145 | 59 | 26 | 90 | 104 |
| 9 | 90 | 74 | 66 | 222 | 148 | 136 | 177 | 138 | 58 | 26 | 84 | 297 |
| 10 | 88 | 86 | 64 | 171 | 153 | 136 | 174 | 133 | 63 | 28 | 80 | 156 |
| 11 | 86 | 78 | 64 | 136 | 148 | 218 | 171 | 126 | 63 | 31 | 76 | 138 |
| 12 | 88 | 76 | 64 | 124 | 126 | 422 | 162 | 124 | 61 | 38 | 70 | 168 |
| 13 | 86 | 74 | 64 | 116 | 114 | 351 | 150 | 122 | 52 | 47 | 68 | 159 |
| 14 | 86 | 74 | 61 | 108 | 112 | 297 | 143 | 122 | 48 | 76 | 68 | 128 |
| 15 | 84 | 74 | 59 | 102 | 116 | 270 | 140 | 120 | 43 | 59 | 78 | 112 |
| 16 | 82 | 78 | 61 | 98 | 120 | 267 | 138 | 120 | 39 | 65 | 100 | 100 |
| 17 | 80 | 76 | 61 | 94 | 116 | 264 | 138 | 122 | 38 | 274 | 253 | 90 |
| 18 | 80 | 78 | 66 | 92 | 116 | 252 | 138 | 116 | 38 | 150 | 168 | 88 |
| 19 | 82 | 80 | 70 | 90 | 126 | 249 | 150 | 110 | 36 | 82 | 187 | 102 |
| 20 | 74 | 76 | 70 | 94 | 140 | 240 | 159 | 106 | 34 | 63 | 171 | 106 |
| 21 | 76 | 76 | 68 | 104 | 162 | 228 | 168 | 108 | 32 | 56 | 108 | 102 |
| 22 | 76 | 76 | 68 | 116 | 183 | 219 | 177 | 114 | 33 | 52 | 114 | 96 |
| 23 | 76 | 74 | 68 | 110 | 204 | 219 | 189 | 114 | 32 | 48 | 116 | 88 |
| 24 | 74 | 74 | 70 | 104 | 219 | 234 | 201 | 112 | 38 | 69 | 106 | 82 |
| 25 | 74 | 72 | 70 | 108 | 195 | 246 | 204 | 108 | 38 | 84 | 112 | 78 |
| 26 | 78 | 74 | 68 | 110 | 186 | 246 | 195 | 102 | 35 | 128 | 96 | 92 |
| 27 | 76 | 72 | 68 | 104 | 183 | 228 | 180 | 96 | 32 | 108 | 84 | 92 |
| 28 | 76 | 70 | 68 | 100 | 198 | 216 | 159 | 90 | 30 | 156 | 78 | 80 |
| 29 | 76 | 68 | 74 | 98 | - | 216 | 150 | 82 | 27 | 171 | 72 | 70 |
| 30 | 76 | 68 | 72 | 98 | ---------- | 222 | 150 | 76 | 27 | 171 | 72 | 66 |
| 31 | 74 | ---------- | 70 | 98 | ---------- | 225 | ---------- | 74 | ---------- | 143 | 68 | ---------- |
| Total | 2,864 | 2,254 | 2,106 | 3,261 | 3,957 | 7,077 | 5,479 | 3,892 | 1,430 | 2,361 | 4,027 | 3,176 |
| Mean | 924 | 751 | 679 | 105 | 141 | 228 | 183 | 126 | 47.7 | 76.2 | 130 | 106 |
| Ac-ft | 5,680 | 4,470 | 4,180 | 6,470 | 7,850 | 14,040 | 10,870 | 7,720 | 2,840 | 4,680 | 7,990 | 6,300 |

Calendar year 1964 : Max 3,790 Min 19 Mean 85.1 Ac-ft 61,780
Water year 1964-65 : Max 422 Min 26 Mean 115 Ac-ft 83,090

Peak discharge (base, 600 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 7-17 | 2000 | 5.74 | 1,710 | 9-9 | 0300 | 4.35 | 780 |
| 8-3 | 0800 | 4.38 | 815 | | | | |

## 9-4315. Gila River near Redrock, N. Mex.

Location.--Lat 32°43'30", long 108°40'30", in W½ sec.23 T.18 S., R.18 W., on left bank 0.2 mile downstream from Copper Canyon, a quarter of a mile upstream from lower end of box canyon, 4.7 miles northeast of Redrock, and 14 miles downstream from Mangas Creek.

Drainage area.--2,829 sq mi.

Records available.--September 1904 to May 1927, fragmentary (see WSP 1313), July 1927 to September 1955, October 1962 to September 1965. Published as "near Cliff" 1904-7.

Gage.--Water-stage recorder. Altitude of gage is 4,090 ft (planetable survey). Prior to Dec. 31, 1907, staff gage at site 13½ miles upstream at different datum. May 14, 1908, to July 16, 1909, staff gage at site a quarter of a mile downstream at different datum.

Average discharge.--49 years (1905-6, 1908-10, 1912-55, 1962-65), 191 cfs (138,300 acre-ft per year).

Extremes.--Maximum discharge during year, 4,130 cfs July 18 (gage height, 13.97 ft), from rating curve extended above 600 cfs on basis of slope-area measurements at gage heights 14.3 and 14.0 ft; minimum, about 7 cfs July 12.
1905-55, 1962-65: Maximum discharge, 40,000 cfs Sept. 29, 1941 (gage height, 31 ft, from floodmark), computed on basis of known peak flow for station below Blue Creek; minimum, 2.2 cfs Aug. 5, 1947.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Discharge measurements generally made twice a month. Diversions for irrigation of about 5,000 acres above station.

Rating tables (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Jan. 16 to Mar. 8, July 25 to Aug. 27)

| Oct. 1 to Jan. 20 | | Jan. 21 to July 25 | | | | July 26 to Sept. 30 | |
|---|---|---|---|---|---|---|---|
| 8.0 | 46 | 8.0 | 4 | 10.0 | 240 | 8.3 | 44 |
| 8.4 | 90 | 8.4 | 13 | 10.3 | 350 | 8.7 | 80 |
| 8.8 | 155 | 8.8 | 32 | 10.7 | 550 | 9.0 | 120 |
| 9.2 | 250 | 9.2 | 66 | 11.1 | 830 | 9.5 | 220 |
| 9.4 | 320 | 9.6 | 140 | | | 10.0 | 370 |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | a 290 | 66 | 89 | 94 | 124 | 285 | 282 | 166 | 61 | 24 | 197 | 80 |
| 2 | a 270 | 66 | 87 | 92 | 124 | 294 | 300 | 170 | 62 | 30 | 234 | 86 |
| 3 | a 250 | 67 | 90 | 90 | 122 | 297 | 315 | 160 | 62 | 36 | 366 | 98 |
| 4 | a 230 | 67 | 94 | 90 | 126 | 270 | 297 | 160 | 64 | 34 | 234 | a 85 |
| 5 | a 210 | 70 | 90 | 92 | 134 | 252 | 297 | 174 | 65 | 33 | 184 | a 75 |
| 6 | a 190 | 70 | 94 | 93 | 136 | 246 | 261 | 170 | 65 | 31 | a 150 | a 70 |
| 7 | a 180 | 71 | 93 | 94 | 146 | 246 | 243 | 160 | 57 | 26 | a 130 | a 65 |
| 8 | a 170 | 75 | 90 | 99 | 162 | 246 | 216 | 146 | 37 | 22 | a 115 | 66 |
| 9 | a 160 | 75 | 89 | 161 | 170 | 237 | 192 | 140 | 21 | a 8 | 102 | 130 |
| 10 | a 150 | 76 | 90 | 190 | 174 | 237 | 180 | 136 | 24 | 8.8 | 93 | 162 |
| 11 | a 140 | 75 | 89 | 173 | 172 | 261 | 178 | 130 | 20 | a 9 | 74 | 109 |
| 12 | a 130 | 74 | 90 | 163 | 166 | 553 | 180 | 122 | 18 | a 7 | 73 | 172 |
| 13 | a 120 | 75 | 92 | 161 | 160 | 495 | 168 | 116 | 19 | 50 | 66 | 152 |
| 14 | a 115 | 82 | 92 | 157 | 158 | 415 | 152 | 100 | 23 | 42 | 50 | 130 |
| 15 | a 110 | 87 | 90 | 151 | 158 | 390 | 154 | 104 | 23 | 40 | 128 | 115 |
| 16 | a 105 | 94 | 90 | 143 | 158 | 380 | 148 | 104 | 24 | 33 | 80 | 104 |
| 17 | a 105 | 89 | 87 | 135 | 162 | 385 | 148 | 122 | 27 | 77 | 126 | 97 |
| 18 | a 105 | 89 | 87 | 128 | 164 | 370 | 156 | 124 | 27 | 782 | 208 | 92 |
| 19 | a 110 | 90 | 94 | 120 | 166 | 355 | 164 | 122 | 30 | 118 | 190 | 94 |
| 20 | a 105 | 93 | 94 | 120 | 180 | 340 | 168 | 106 | 29 | 72 | 208 | 99 |
| 21 | a 95 | 93 | 93 | 142 | 216 | 320 | 172 | 104 | 30 | 39 | 174 | 92 |
| 22 | 83 | 94 | 84 | 148 | 240 | 300 | 201 | 100 | 30 | 41 | 162 | 88 |
| 23 | 84 | 94 | 86 | 146 | 261 | 288 | 213 | 100 | 32 | 45 | 192 | 87 |
| 24 | 83 | 92 | 87 | 140 | 282 | 288 | 219 | 112 | 40 | 48 | 142 | 86 |
| 25 | 83 | 80 | 93 | 138 | 273 | 300 | 243 | 112 | 40 | 354 | 128 | 96 |
| 26 | 86 | 84 | 94 | 136 | 264 | 273 | 255 | 112 | 37 | 144 | 120 | 92 |
| 27 | 75 | 89 | 94 | 138 | 273 | 273 | 225 | 92 | 36 | 170 | 106 | 94 |
| 28 | 70 | 77 | 94 | 134 | 270 | 261 | 219 | 84 | 38 | 144 | 99 | 84 |
| 29 | 58 | 84 | 87 | 132 | - | 264 | 189 | 72 | 28 | 239 | 94 | 81 |
| 30 | 52 | 92 | 93 | 126 | ---------- | 267 | 166 | 65 | 22 | 200 | 91 | 79 |
| 31 | 60 | ---------- | 94 | 124 | ---------- | 261 | ---------- | 66 | ---------- | 160 | 85 | ---------- |
| Total | 4,074 | 2,430 | 2,810 | 4,050 | 5,141 | 9,649 | 6,301 | 3,751 | 1,091 | 3,066.8 | 4,401 | 2,960 |
| Mean | 131 | 81.0 | 90.6 | 131 | 184 | 311 | 210 | 121 | 36.4 | 98.9 | 142 | 98.7 |
| Ac-ft | 8,080 | 4,820 | 5,570 | 8,030 | 10,200 | 19,140 | 12,500 | 7,440 | 2,160 | 6,080 | 8,730 | 5,870 |

Calendar year 1964: Max 2,870 Min 5.8 Mean 93.1 Ac-ft 67,620
Water year 1964-65: Max 782 Min 7 Mean 136 Ac-ft 98,620

Peak discharge (base, 3,000 cfs).--July 18 (0645) 4,130 cfs (13.97 ft).

a No gage-height record.

## 9-4320. Gila River below Blue Creek, near Virden, N. Mex.

Location.--Lat 32°38'55", long 108°50'45", in SE¼SW¼ sec.18, T.19 S., R.19 W., on left bank at head of canyon, 1¼ miles downstream from Blue Creek, 10 miles east of Virden, and 16 miles upstream from New Mexico-Arizona State line.

Drainage area.--3,203 sq mi, excluding Animas River basin.

Records available.--May to November 1914, March to September 1915, July 1927 to September 1965. July 1927 to May 1931 monthly discharge only, published in WSP 1313, computed as sum of flow at Virden Bridge, 8⅔ miles downstream, and in Sunset Canal. Published as Gila River near Duncan, Ariz., 1914-15 and as Gila River at Fuller's Ranch, near Duncan, Ariz. 1931-38.

Gage.--Water-stage recorder at present site and datum since July 8, 1931. Altitude of gage is 3,875 ft (from river-profile map). May 11, 1914, to Sept. 30, 1915, at site 6 miles downstream, 1,000 ft upstream from intake of Sunset Canal. June 1 to July 7, 1931, staff gage at present site and datum.

Average discharge.--38 years (1927-65), 161 cfs (116,600 acre-ft per year); median of yearly mean discharges, 130 cfs (94,100 acre-ft per year).

Extremes.--Maximum discharge during year, 2,540 cfs July 24 (gage height, 9.22 ft); minimum, 6.6 cfs July 10.
1927-65: Maximum discharge, 41,700 cfs Sept. 29, 1941 (gage height, 25.78 ft); minimum, 1 cfs July 14, 1934.

Remarks.--Records good except for those periods of no gage-height record, which are poor. Station is above all Duncan Valley diversions. Diversions for irrigation of about 6,200 acres above station.

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 332 | 60 | a85 | 100 | 118 | 308 | 250 | 145 | 54 | 15 | 255 | 87 |
| 2 | 292 | 63 | *85 | 96 | 118 | 338 | 261 | 138 | *53 | *15 | 271 | *112 |
| 3 | 265 | 65 | 89 | 94 | 116 | 350 | 274 | 132 | 53 | 16 | *370 | 417 |
| 4 | 250 | *64 | 90 | 91 | 117 | 338 | 272 | *129 | 54 | 18 | 303 | 126 |
| 5 | 237 | 67 | 95 | 90 | 122 | 312 | 269 | 146 | 55 | 18 | 239 | 61 |
| 6 | 218 | 70 | 98 | 90 | 126 | 305 | 237 | 150 | 57 | 17 | 191 | 66 |
| 7 | 185 | 70 | 100 | 91 | 129 | 303 | 218 | 132 | 57 | 16 | 167 | 69 |
| 8 | 181 | 71 | 99 | 93 | 138 | 298 | 194 | 122 | 46 | 13 | 156 | *88 |
| 9 | 176 | 72 | 98 | 128 | 150 | 294 | *174 | 111 | 37 | 9.7 | 140 | 119 |
| 10 | 165 | 73 | 96 | 187 | 162 | 292 | 160 | 103 | 33 | 55 | 120 | 174 |
| 11 | 156 | 71 | 95 | 178 | 162 | 308 | 155 | 98 | 32 | 35 | 98 | 236 |
| 12 | 146 | 70 | 98 | 165 | 160 | 450 | 165 | 88 | 29 | 22 | 82 | 444 |
| 13 | 143 | 69 | 100 | 158 | 151 | 437 | 155 | 84 | 27 | 23 | 76 | 124 |
| 14 | 135 | 71 | 100 | 142 | 143 | 385 | 135 | 72 | 27 | 26 | 63 | 150 |
| 15 | 132 | 75 | 98 | 128 | 142 | 362 | 130 | 65 | 21 | 23 | 115 | 130 |
| 16 | 117 | 81 | 90 | 116 | 142 | 352 | 126 | 196 | 18 | 22 | 73 | 116 |
| 17 | 117 | 81 | 94 | 107 | 145 | 350 | 123 | 113 | 18 | 27 | 79 | 107 |
| 18 | 117 | 80 | 95 | 100 | 142 | 330 | 135 | 103 | 20 | 482 | 194 | 96 |
| 19 | 126 | 80 | 99 | 99 | 143 | 312 | 146 | 95 | 20 | 129 | 150 | 96 |
| 20 | 109 | 82 | 103 | 99 | 146 | 305 | 146 | 83 | 20 | 103 | *160 | 109 |
| 21 | 103 | 84 | 103 | 113 | 174 | 280 | 158 | 75 | 19 | 69 | 137 | 102 |
| 22 | 100 | 83 | 96 | 123 | 204 | 274 | 170 | 72 | 18 | 53 | 166 | 95 |
| 23 | 95 | 85 | 94 | 122 | 222 | 254 | 187 | 71 | 19 | 57 | 165 | 90 |
| 24 | 90 | 82 | 95 | 120 | 241 | 254 | 200 | 74 | 26 | 265 | 148 | 85 |
| 25 | 89 | 81 | 96 | 120 | 252 | 269 | 210 | 79 | 27 | 217 | 117 | 93 |
| 26 | 88 | 79 | 100 | 120 | 245 | 254 | 222 | 80 | 26 | 295 | 103 | 107 |
| 27 | 82 | 82 | 100 | 122 | *256 | 252 | 210 | 71 | 23 | 138 | 90 | 100 |
| 28 | 75 | a85 | 99 | 118 | 285 | 239 | 202 | 68 | 20 | 148 | 80 | 94 |
| 29 | 68 | a85 | *94 | 116 | -- | 239 | 172 | 64 | 19 | 235 | 74 | 85 |
| 30 | 58 | a85 | 99 | *118 | ---------- | 237 | 156 | 58 | 17 | 212 | 71 | 85 |
| 31 | 56 | ---------- | 102 | 120 | ---------- | *235 | ---------- | 57 | ---------- | 169 | 72 | ---------- |
| Total | 4,503 | 2,266 | 2,985 | 3,664 | 4,651 | 9,516 | 5,612 | 3,074 | 945 | 2,942.7 | 4,525 | 3,863 |
| Mean | 145 | 75.5 | 96.3 | 118 | 166 | 307 | 187 | 99.2 | 31.5 | 94.9 | 146 | 129 |
| Ac-ft | 8,930 | 4,490 | 5,920 | 7,270 | 9,230 | 18,870 | 11,130 | 6,100 | 1,870 | 5,840 | 8,980 | 7,660 |

Calendar year 1964: Max 2,530 Min 3.2 Mean 95.6 Ac-ft 69,350
Water year 1964-65: Max 482 Min 9.7 Mean 133 Ac-ft 96,290

Peak discharge (base, 1,900 cfs).--July 24 (2100) 2,540 cfs (9.22 ft).

* Discharge measurement made on this day.
a No gage-height record

9-4330. Sunset Canal near Virden, N. Mex.

Location.--Lat 32°39'20", long 108°56'00", in NW¼ sec.17, T.19 S., R.20 W., on left bank 1.7 miles downstream from intake and 4.5 miles southeast of Virden.

Records available.--October 1914 to September 1915, July 1922 to September 1931, January 1936 to September 1965. Monthly discharge only January 1936 to December 1938, published in WSP 1313. Prior to 1939, published as "near Duncan, Ariz."

Gage.--Water-stage recorder (digital) and Parshall flume. Altitude of gage is 3,790 ft (from topographic map). Oct. 1, 1914, to Sept. Sept. 30, 1915, staff gage at site 0.4 mile upstream and July 15, 1922, to Sept. 30, 1931, staff gage at site 0.5 mile downstream at different datums. Mar. 9, 1936, to Feb. 20, 1942, water-stage recorder and submerged rectangular weir at site 300 ft downstream at different datum.

Extremes.--1914-15, 1922-31, 1936-65: Maximum daily discharge, 62 cfs Sept. 21, 22, 1929; no flow at times.

Remarks.--Records excellent. Canal diverts from right bank of Gila River in SW¼NW¼ sec.21, T.19 S., R.20 W., for irrigation of about 2,750 acres in Virden-Duncan Valley. No diversion between intake and station.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

| | | | |
|---|---|---|---|
| 0.0 | 0.02 | 0.5 | 8.2 |
| .1 | .4 | .8 | 18 |
| .2 | 1.7 | 1.1 | 30 |
| .3 | 3.5 | 1.4 | 43 |

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1964 TO SEPTEMBER 1965

| DAY | OCT. | NOV. | DEC. | JAN. | FEB. | MAR. | APR. | MAY | JUNE | JULY | AUG. | SEPT. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 32 | 14 | 13 | | 0 | 34 | 34 | 26 | 12 | 12 | 8.1 | 8.2 |
| 2 | 33 | * 14 | 12 | | 0 | 34 | 34 | 26 | 12 | 10 | * 7.0 | 13 |
| 3 | * 30 | 13 | 14 | | 0 | 34 | 34 | 26 | 12 | 10 | 9.0 | 3.1 |
| 4 | 28 | 13 | 18 | | 0 | 34 | 34 | 28 | 12 | 12 | 8.8 | .2 |
| 5 | 28 | 13 | 19 | (*) | 0 | 33 | 32 | 27 | 12 | 14 | 8.3 | .2 |
| 6 | 27 | 13 | 19 | | 0 | 34 | 31 | 27 | 12 | 13 | 7.8 | .2 |
| 7 | 28 | 12 | 19 | | 0 | 34 | 27 | 27 | 12 | 12 | 7.9 | .2 |
| 8 | 22 | 13 | 19 | | 0 | 34 | 28 | 27 | 11 | 9.8 | 8.6 | .1 |
| 9 | 16 | 13 | 19 | | 0 | 33 | 28 | 27 | 8.5 | 6.7 | 8.1 | 0 |
| 10 | 14 | 12 | 19 | | 0 | 34 | 23 | * 25 | 5.0 | 4.0 | 8.1 | 0 |
| 11 | 14 | 12 | 19 | | 0 | 34 | 16 | 24 | 8.2 | 16 | 7.4 | 0 |
| 12 | 14 | 12 | 18 | | 0 | 34 | 22 | 18 | 16 | 8.8 | 7.4 | 0 |
| 13 | 14 | 11 | 19 | | 0 | 35 | 27 | 17 | 16 | 11 | 8.3 | 0 |
| 14 | * 14 | 10 | * 19 | | 0 | 35 | 26 | 17 | 17 | 16 | 13 | 0 |
| 15 | 14 | 10 | 19 | | 0 | 35 | 26 | 18 | * 14 | 13 | 14 | 0 |
| 16 | 8.5 | 11 | 18 | | * 0 | * 33 | 26 | 18 | 10 | 11 | 13 | 0 |
| 17 | 6.8 | 13 | 18 | | 0 | 34 | 26 | 16 | 8.8 | 12 | 15 | 0 |
| 18 | 6.9 | 13 | 18 | | 0 | 31 | 26 | 17 | 11 | 21 | 15 | 0 |
| 19 | 7.0 | 13 | 18 | | 0 | 35 | 26 | 17 | 13 | 21 | 15 | 0 |
| 20 | 6.3 | 13 | 18 | | 0 | 34 | 26 | 16 | 13 | 20 | 14 | 0 |
| 21 | 6.3 | 13 | 18 | | 0 | 34 | 27 | 16 | 13 | 22 | 13 | 0 |
| 22 | 6.4 | 13 | 17 | | 0 | 24 | 27 | 16 | 12 | 15 | 13 | 6.2 |
| 23 | 6.6 | 13 | 16 | | 0 | 35 | 27 | 17 | * 12 | 17 | 5.5 | 15 |
| 24 | 13 | 13 | 17 | | .7 | 34 | 28 | * 18 | 19 | 17 | .4 | 13 |
| 25 | 13 | * 13 | 16 | | 14 | 34 | 27 | 17 | 22 | 16 | .3 | 12 |
| 26 | 13 | 13 | 17 | | 21 | 32 | * 26 | 14 | 23 | 20 | .3 | 12 |
| 27 | 13 | 12 | 17 | | 29 | 34 | 27 | 12 | 20 | 18 | .1 | 11 |
| 28 | 13 | 12 | 17 | (*) | 34 | 33 | 27 | 13 | 17 | 17 | .2 | 12 |
| 29 | 12 | 12 | 16 | | — | * 33 | 27 | 13 | 15 | 14 | .2 | 9.5 |
| 30 | 12 | 13 | 15 | | | 20 | 26 | 13 | 13 | 8.6 | .2 | 3.8 |
| 31 | 13 | | 8.9 | | | 29 | | 13 | | 8.5 | .1 | |
| TOTAL | 484.8 | 375 | 529.9 | 0 | 98.7 | 1,020 | 821 | 606 | 401.5 | 426.4 | 237.1 | 119.7 |
| MEAN | 15.6 | 12.5 | 17.1 | 0 | 3.52 | 32.9 | 27.4 | 19.5 | 13.4 | 13.8 | 7.65 | 3.99 |
| AC-FT | 962 | 744 | 1,050 | 0 | 196 | 2,020 | 1,630 | 1,200 | 796 | 846 | 470 | 237 |

Calendar year 1964: Max 35 Min 0 Mean 12.0 Ac-ft 8,720
Water year 1964-65: Max 35 Min 0 Mean 14.0 Ac-ft 10,150

* Discharge measurement or observation of no flow made on this day.
Note.--No gage-height record Jan. 28 to Feb. 15.

## 9-4360. New Model Canal near Virden, N. Mex.

Location.--Lat 32°40'30", long 108°59'30", in NE¼ sec.10, T.19 S., R.21 W., 1 mile downstream from intake, 1 mile southeast of Virden, and 3¼ miles east of State line.

Records available.--October 1914 to September 1915, July 1922 to September 1931, January 1936 to September 1965. Monthly discharge only January 1936 to December 1038, published in WSP 1313. Published as Model Canal near Duncan, Ariz., 1914-15, as Moddle Canal near Duncan, Ariz., 1922-31, and as Moddle Canal near Virden, N. Mex., 1936-51.

Gage.--Water-stage recorder (digital) and Parshall flume. Altitude of gage is 3,745 ft (from topographic map). Prior to Nov. 25, 1926, staff gage and Nov. 25, 1926, to Feb. 21, 1942, water-stage recorder, at several sites within half a mile upstream at different datums.

Extremes.--1914-15, 1922-31, 1936-65: Maximum daily discharge, 74 cfs Sept. 9, 1930; no flow at times.

Remarks.--Records excellent. Canal diverts from left bank of Gila River in NE¼SE¼ sec.11, T.19 S., R.21 W., for irrigation of about 2,450 acres in Virden-Duncan Valley. For additional history and gage data, see page 599 of WSP 1313.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

| | | | |
|---|---|---|---|
| 0.0 | 0.0 | 0.6 | 13 |
| .1 | .8 | .8 | 20 |
| .2 | 2.3 | 1.0 | 30 |
| .4 | 6.6 | | |

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1964 TO SEPTEMBER 1965

| DAY | OCT. | NOV. | DEC. | JAN. | FEB. | MAR. | APR. | MAY | JUNE | JULY | AUG. | SEPT. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 20 | | 0 | 0 | 0 | 18 | 26 | 27 | | 0 | 19 | 0 |
| 2 | 18 | (*) | 0 | 0 | 0 | 17 | 28 | 26 | | 0 | * 15 | 0 |
| 3 | * 17 | | 2.8 | 0 | 0 | 18 | 29 | 25 | | 0 | 15 | 0 |
| 4 | 11 | | 7.4 | 4.7 | 0 | 22 | 28 | 27 | | 0 | 14 | 0 |
| 5 | 9.4 | | 9.0 | * 6.9 | 0 | 24 | 28 | 28 | | 0 | 11 | 0 |
| 6 | 11 | | 8.3 | 6.4 | 0 | 27 | 27 | 26 | | 0 | 7.9 | 0 |
| 7 | 6.1 | | 9.0 | 7.6 | 0 | 26 | 25 | 27 | | 0 | 5.4 | 0 |
| 8 | 3.4 | | 7.8 | 8.0 | 0 | 26 | 24 | 28 | | 0 | 16 | * 0 |
| 9 | 0 | | 7.0 | 12 | 0 | 25 | 23 | 28 | | 0 | 24 | 0 |
| 10 | 0 | | 7.6 | 17 | 0 | 25 | 27 | * 28 | | 0 | 26 | 0 |
| 11 | 0 | | 8.2 | 5.6 | 0 | 25 | 26 | 16 | | 0 | 6.1 | 0 |
| 12 | 0 | | 8.2 | 5.1 | 0 | 28 | 26 | 5.5 | | 0 | 0 | 0 |
| 13 | 0 | | 9.0 | 6.2 | * 0 | 25 | 25 | 6.0 | | 0 | 0 | 0 |
| 14 | * 0 | | * 8.0 | 5.2 | 0 | 24 | 24 | 5.4 | | 0 | 0 | 0 |
| 15 | 0 | | 5.1 | 5.1 | 0 | 24 | 26 | 6.0 | (*) | 0 | 0 | 0 |
| 16 | 0 | | 3.8 | 4.1 | * 0 | * 25 | 28 | 5.2 | | 0 | 0 | 0 |
| 17 | 0 | | 3.7 | 3.3 | 0 | 26 | 27 | 3.6 | | 0 | 0 | 0 |
| 18 | 0 | | 3.8 | 6.8 | 0 | 27 | 29 | 5.3 | | 1.1 | 7.9 | 0 |
| 19 | 0 | | 4.2 | 4.2 | 3.6 | 27 | 25 | 4.9 | | 14 | 20 | 0 |
| 20 | 0 | | 4.7 | 0 | 13 | 26 | 26 | 5.1 | | 25 | 24 | 0 |
| 21 | 0 | | 3.9 | 0 | 7.9 | 27 | 28 | 6.8 | | 13 | 22 | 0 |
| 22 | 0 | | 2.7 | 0 | 8.7 | 26 | 27 | 6.0 | | 0 | 17 | 0 |
| 23 | 0 | | .5 | 0 | 13 | 27 | 23 | 5.4 | (*) | 0 | 11 | 0 |
| 24 | 0 | | 0 | 0 | 13 | 27 | 27 | * 5.5 | | 14 | 25 | 0 |
| 25 | 0 | (*) | 0 | 0 | 15 | 26 | 27 | 3.0 | | 18 | 25 | 0 |
| 26 | 0 | | 0 | 0 | 17 | 26 | * 28 | 0 | | 1.2 | 6.0 | 0 |
| 27 | 0 | | 0 | 0 | 16 | 27 | 27 | 0 | | 22 | 0 | 0 |
| 28 | 0 | | 0 | * 0 | 18 | 27 | 27 | 0 | | 27 | 0 | 0 |
| 29 | 0 | | 0 | 0 | — | * 27 | 26 | 0 | | 30 | 0 | 7.0 |
| 30 | 0 | | 0 | 0 | ------- | 28 | 26 | 0 | | 24 | 0 | 13 |
| 31 | 0 | ------- | 0 | 0 | ------- | 27 | ------- | 0 | ------- | 21 | 0 | ------- |
| TOTAL | 95.9 | 0 | 124.7 | 108.2 | 125.2 | 780 | 793 | 359.7 | 0 | 210.3 | 317.3 | 20.0 |
| MEAN | 3.09 | 0 | 4.02 | 3.49 | 4.47 | 25.2 | 26.4 | 11.6 | 0 | 6.78 | 10.2 | 0.67 |
| AC-FT | 190 | 0 | 247 | 215 | 248 | 1,550 | 1,570 | 713 | 0 | 417 | 629 | 40 |

Calendar year 1964: Max 38 Min 0 Mean 2.48 Ac-ft 1,800

Water year 1964-65: Max 30 Min 0 Mean 8.04 Ac-ft 5,820

* Discharge measurement or observation of no flow made on this day.

Note.--No gage-height record Aug. 6 to Sept. 7.

## 9-4426.8 San Francisco River near Reserve, N. Mex.

Location.--Lat 33°44'30", long 108°46'15", in SW¼NE¼ sec.35, T.6 S., R.19 W., on left bank 500 ft upstream from mouth of Rainbow Bridge Canyon and 2 miles northwest of Reserve.

Drainage area.--350 sq mi, approximately.

Records available.--March 1959 to September 1965.

Gage.--Water-stage recorder (digital) and concrete control. Altitude of gage is 5,850 ft above mean sea level (from topographic map).

Average discharge.--6 years, 17.8 cfs (12,890 acre-ft per year).

Extremes.--Maximum discharge during year, 1,160 cfs July 26, estimated (gage height, 3.9 ft inside, 4.9 ft from floodmarks), from rating curve extended above 300 cfs on basis of slope-area measurements at gage heights 2.92 and 3.05 ft; minimum, 1.8 cfs Dec. 15.
1959-65: Maximum discharge, that of July 26, 1965; minimum, 1.0 cfs Mar. 16, 1959.
Maximum stage known, about 15 ft, as determined in 1962 from old floodmarks. Major floods of Nov. 26, 1905 and Dec. 3, 1906, exceeded 20,000 cfs at Alma (downstream). See WSP 1313.

Remarks.--Records good except those for July 16 to Aug. 16, which are poor. Slight regulation at times by one small reservoir. Diversion for irrigation of about 500 acres above station.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Aug. 17 to Sept. 2)

| | | | | | |
|---|---|---|---|---|---|
| 0.4 | 1.0 | 0.7 | 14 | 1.2 | 80 |
| .5 | 2.9 | .8 | 22 | 1.4 | 135 |
| .6 | 7.2 | 1.0 | 43 | 1.6 | 200 |

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1964 TO SEPTEMBER 1965

| DAY | OCT. | NOV. | DEC. | JAN. | FEB. | MAR. | APR. | MAY | JUNE | JULY | AUG. | SEPT. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 35 | 5.3 | 12 | 16 | 55 | 92 | 97 | 46 | 6.2 | 3.8 | 80 | 16 |
| 2 | 30 | 5.9 | * 14 | 11 | 62 | 68 | 102 | 42 | 6.2 | 4.4 | 98 | 15 |
| 3 | 26 | 5.7 | 15 | 11 | 53 | 46 | 115 | 38 | 6.4 | 3.6 | 45 | 26 |
| 4 | 23 | 5.1 | 14 | 12 | 48 | 37 | 96 | 33 | 7.2 | 3.4 | 32 | 13 |
| 5 | 20 | 5.3 | 11 | 12 | 47 | 39 | 95 | * 29 | 8.3 | 3.3 | 26 | 16 |
| 6 | 18 | 5.5 | 12 | 13 | 50 | 41 | 84 | 27 | 7.0 | 3.4 | 22 | 16 |
| 7 | 17 | 5.4 | 12 | 85 | 57 | 44 | * 69 | 22 | 6.3 | 3.5 | 20 | 15 |
| 8 | * 16 | 5.4 | 13 | * 165 | 47 | 43 | 62 | 19 | * 5.4 | * 4.3 | 18 | 19 |
| 9 | 14 | 5.3 | 7.1 | 56 | 43 | 42 | 61 | 18 | 5.8 | 3.7 | 19 | 14 |
| 10 | 14 | 5.8 | 10 | 43 | 42 | * 40 | 81 | 17 | 6.2 | 3.5 | 18 | * 13 |
| 11 | 12 | 5.8 | 8.7 | 35 | 30 | 49 | 79 | 16 | 5.3 | 3.5 | 18 | 12 |
| 12 | 11 | 5.6 | 10 | 33 | 24 | 58 | 98 | 16 | 5.2 | 3.3 | 17 | 52 |
| 13 | 10 | * 5.7 | 7.7 | 31 | 31 | 48 | 88 | 16 | 4.4 | 3.5 | 36 | 20 |
| 14 | 10 | 6.3 | 4.3 | 28 | 31 | 41 | 76 | 16 | * 4.1 | 3.4 | 18 | 16 |
| 15 | 9.0 | 7.2 | * 5.5 | 28 | 39 | 41 | 66 | 15 | 3.9 | 8.0 | 26 | 10 |
| 16 | 9.0 | 13 | 7.0 | 28 | 33 | 46 | 60 | 14 | 3.8 | 29 | 28 | 9.1 |
| 17 | 9.2 | 13 | 10 | 29 | * 33 | 40 | 59 | 12 | 3.7 | 11 | * 24 | 9.5 |
| 18 | 8.9 | 13 | 6.8 | 29 | 32 | 46 | 62 | 11 | 3.6 | 65 | 20 | 20 |
| 19 | 11 | 11 | 9.5 | 31 | 34 | 48 | 62 | * 12 | 3.6 | 18 | 18 | 13 |
| 20 | 11 | 9.3 | 9.8 | 36 | 39 | 42 | 65 | 13 | 3.3 | 14 | 17 | 16 |
| 21 | 9.1 | 8.1 | 9.5 | 39 | 48 | 46 | * 66 | 12 | 3.3 | 17 | 17 | 11 |
| 22 | 8.1 | 8.6 | 9.7 | 33 | 61 | 58 | 68 | 11 | 3.2 | 27 | 17 | 9.7 |
| 23 | 7.9 | 8.8 | 11 | 28 | 78 | * 69 | 67 | 9.6 | 3.3 | 20 | 18 | 8.7 |
| 24 | 7.5 | 8.8 | 12 | 28 | 52 | 77 | 65 | 8.9 | 5.7 | 18 | 18 | 7.8 |
| 25 | 7.2 | 10 | 16 | 33 | 48 | 76 | 64 | 8.1 | 5.1 | 20 | 16 | 7.6 |
| 26 | 6.5 | 9.5 | 19 | 21 | 55 | 72 | 78 | 7.6 | 4.0 | a 150 | 15 | 7.8 |
| 27 | 6.7 | 9.6 | 19 | 21 | 76 | 66 | 87 | 7.5 | 3.7 | 30 | 14 | 7.4 |
| 28 | * 6.3 | 8.9 | 21 | 23 | 103 | 67 | 73 | 7.0 | 3.4 | * 18 | 13 | 7.2 |
| 29 | 5.7 | 10 | 26 | 24 | — | 72 | 58 | 6.9 | 3.3 | 21 | 14 | 7.1 |
| 30 | 5.5 | 10 | 22 | 27 | ---------- | 75 | 50 | 6.6 | 3.2 | 20 | 16 | 6.9 |
| 31 | 5.1 | ---------- | 16 | * 33 | ---------- | 85 | ---------- | 6.3 | ---------- | 57 | 23 | ---------- |
| TOTAL | 389.7 | 236.9 | 380.6 | 1,042 | 1,351 | 1,714 | 2,253 | 523.5 | 144.1 | 593.6 | 781 | 421.8 |
| MEAN | 12.6 | 7.90 | 12.3 | 33.6 | 48.2 | 55.3 | 75.1 | 16.9 | 4.80 | 19.1 | 25.2 | 14.1 |
| AC-FT | 773 | 470 | 755 | 2,070 | 2,680 | 3,400 | 4,470 | 1,040 | 286 | 1,180 | 1,550 | 837 |

CALENDAR YEAR 1964 MAX 314 MIN 1.7 MEAN 13.4 AC-FT 9,740
WATER YEAR 1964-65 MAX 165 MIN 3.2 MEAN 26.9 AC-FT 19,510

Peak discharge (base, 200 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 1-8 | 0230 | 1.86 | 272 | 8-13 | 1500 | 1.89 | 356 |
| 7-16 | 1330 | 2.60 | 600 | 8-16 | 1500 | 1.68 | 272 |
| 7-18 | 0230 | 3.40 | 928 | 9-3 | 1330 | 2.06 | 400 |
| 7-26 | 2100 | 3.90 | 1,160 | 9-12 | 1630 | 2.50 | 576 |

* Discharge measurement made on this day.
a No gage-height record.
Note.-Stage-discharge relation indefinite July 16-25, July 27 to Aug. 16.

## 9-4430. San Francisco River near Alma, N. Mex.

Location.--Lat 33°21'50", long 108°54'50", in SE¼SW¼ sec.4, T.11 S., R.20 W., on right bank 1½ miles downstream from Alma, 4 miles northwest of Glenwood and 6 miles upstream from Whitewater Creek.

Drainage area.--1,546 sq mi.

Records available.--September 1904 to January 1914, fragmentary (see WSP 1313), January 1964 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 4,800 ft (from topographic map). Prior to Aug. 11, 1912, staff gages at various sites, within 500 ft of each other, three-quarters of a mile upstream, at different datums. Aug. 11, 1912, to Feb. 2, 1914, staff gage at approximately present site and datum.

Extremes.--Maximum discharge during year, 3,120 cfs July 24 (gage height, 5.52 ft); no flow for many days.
1904-14, 1964-65: Maximum stage or discharge not determined; no flow at times.
Discharges of 25,000 cfs, Nov. 26, 1905 and 21,000 cfs Dec. 3, 1906 (gage heights, 14 ft and 13.4 ft, respectively, datum then in use), were measured by float-area method. Major floods probably occurred Jan. 19 and Oct. 14, 1916, when discharges of 90,000 cfs (or greater) were computed at Clifton, Ariz.

Remarks.--Records fair except those for period of ice effect, which are poor. Discharge measurements or observation of no flow generally made 2 to 3 times a month. Diversions for irrigation of about 1,500 acres above station.

Rating table, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Jan. 9 to Feb. 6)

| | | | | | |
|---|---|---|---|---|---|
| 0.5 | 0 | 0.8 | 12 | 1.3 | 82 |
| .6 | 3.0 | .9 | 20 | 1.6 | 190 |
| .7 | 7.0 | 1.1 | 43 | 2.0 | 400 |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 69 | 0 | 5.8 | 16 | 33 | 134 | 108 | 48 | 1.1 | 0.8 | 105 | 15 |
| 2 | 53 | 0 | 6.6 | 16 | 43 | 102 | 134 | 45 | 20 | .8 | 158 | 9.2 |
| 3 | 40 | 0 | 9.2 | 12 | 48 | 78 | 174 | 39 | 1.1 | .8 | 149 | 4.6 |
| 4 | 29 | 0 | 10 | 12 | 45 | 60 | 165 | 40 | 1.1 | .8 | 67 | 26 |
| 5 | 20 | 0 | 9.2 | 12 | 42 | 57 | 145 | 40 | 1.4 | .5 | 52 | 35 |
| | 16 | | | | | | | | | | | |
| 6 | 16 | 0 | 6.2 | 14 | 43 | 57 | 111 | 38 | 1.4 | .8 | 33 | 29 |
| 7 | 11 | 0 | 5.8 | 17 | 62 | 57 | 91 | 30 | 1.1 | .5 | 24 | 19 |
| 8 | 6.6 | 0 | 5.8 | 144 | 57 | 58 | 82 | 23 | 1.1 | .5 | 19 | 245 |
| 9 | 2.6 | 0 | b 3 | 89 | 50 | 55 | 67 | 22 | 1.4 | .5 | 11 | 330 |
| 10 | 0 | 0 | b 2 | 38 | 50 | 52 | 73 | 17 | 1.1 | .5 | 2.2 | 106 |
| 11 | 0 | 0 | b 3 | 34 | 40 | 60 | 91 | 12 | 1.1 | .5 | 0 | 52 |
| 12 | 0 | 0 | b 3 | 34 | 25 | 75 | 80 | 11 | 1.1 | .5 | 0 | 45 |
| 13 | 0 | 0 | b 2 | 33 | 24 | 67 | 88 | 7.5 | .8 | .2 | 50 | 303 |
| 14 | 0 | 0 | b 1 | 31 | 30 | 57 | 78 | 8.1 | .8 | .2 | 106 | 69 |
| 15 | 0 | 0 | b.3 | 29 | 40 | 50 | 64 | 9.8 | .8 | 0 | 42 | 36 |
| 16 | 0 | 0 | b.2 | 27 | 45 | 52 | 58 | 11 | .5 | .2 | 73 | 23 |
| 17 | 0 | 2.6 | b.5 | 26 | 43 | 57 | 55 | 11 | .5 | 19 | 91 | 18 |
| 18 | 21 | 7.0 | b 1 | 25 | 40 | 57 | 62 | 7.0 | .8 | 98 | 71 | 34 |
| 19 | 9.2 | 9.8 | .8 | 26 | 40 | 71 | 69 | 3.8 | .8 | 46 | 53 | 50 |
| 20 | 2.6 | 11 | 7.5 | 30 | 43 | 69 | 73 | 3.4 | .5 | 17 | 31 | 22 |
| | 2.3 | 9.2 | | | | | | | | | | |
| 21 | 2.3 | 9.2 | 6.2 | 45 | 50 | 62 | 80 | 3.0 | .8 | 8.6 | 21 | 19 |
| 22 | 2.0 | 8.6 | 6.6 | 45 | 57 | 67 | 85 | 2.3 | .8 | 11 | 16 | 14 |
| 23 | 1.7 | 7.0 | 7.0 | 36 | 71 | 73 | 88 | 2.0 | .8 | 11 | 12 | 10 |
| 24 | 1.7 | 6.2 | 6.6 | 31 | 75 | 85 | 91 | 2.6 | .8 | 357 | 11 | 7.5 |
| 25 | 1.4 | 5.8 | 6.6 | 36 | 60 | 94 | 91 | 2.0 | .8 | 233 | 14 | 2.0 |
| 26 | 0 | 6.2 | 8.6 | 30 | 60 | 91 | 88 | 1.7 | .8 | 69 | 9.8 | 1.1 |
| 27 | 0 | 6.2 | 11 | 23 | 71 | 82 | 91 | 1.1 | .8 | 98 | 9.2 | 0 |
| 28 | .2 | 5.4 | 14 | 23 | 96 | 78 | 80 | .5 | .8 | 31 | 8.1 | 0 |
| 29 | 0 | 5.4 | 16 | 24 | - | 82 | 62 | 1.1 | .8 | 47 | 5.8 | 0 |
| 30 | 0 | 5.4 | 21 | 25 | ---------- | 88 | 53 | .8 | .8 | 33 | 6.2 | 0 |
| 31 | 0 | ---------- | 20 | 27 | ---------- | 94 | ---------- | .5 | ---------- | 147 | 11 | ---------- |
| Total | 289.3 | 95.8 | 206.5 | 1,010 | 1,383 | 2,221 | 2,677 | 444.2 | 28.5 | 1,233.4 | 1,261.3 | 1,524.4 |
| Mean | 9.33 | 3.19 | 6.66 | 32.6 | 49.4 | 71.6 | 89.2 | 14.3 | 0.95 | 39.8 | 40.7 | 50.8 |
| Ac-ft | 574 | 190 | 410 | 2,000 | 2,740 | 4,410 | 5,310 | 881 | 57 | 2,450 | 2,500 | 3,020 |

Calendar year 1964 : Max - Min - Mean - Ac-ft -
Water year 1964-65 : Max 357 Min 0 Mean 33.9 Ac-ft 24,540

b Stage-discharge relation affected by ice.

Peak discharge (base, 750 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 7-24 | 1830 | 5.52 | 3,120 | 9-13 | 0100 | 3.07 | 1,090 |
| 9-8 | 1940 | 4.27 | 2,040 | | | | |

## 9-4440. San Francisco River near Glenwood, N. Mex.

Location.--Lat 33°15'05", long 108°52'40", in NE¼NW¼ sec.23, T.12 S., R.20 W., on left bank a quarter of a mile upstream from hot springs, 5 miles south of Glenwood, and 6 miles downstream from Whitewater Creek.

Drainage area.--1,653 sq mi.

Records available.--October 1927 to September 1965. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 4,552.06 ft above mean sea level, datum of 1929. Prior to Feb. 15, 1934, at site 4½ miles upstream at datum 98.82 ft higher.

Average discharge.--38 years, 61.8 cfs (44,740 acre-ft per year).

Extremes.--Maximum discharge during year, 2,840 cfs July 24 (gage height, 6.83 ft); minimum, 7.2 cfs June 9.
1927-65: Maximum discharge, 7,800 cfs Jan. 13, 1949 (gage height, 10.74 ft), from rating curve extended above 2,800 cfs on basis of slope-area measurement of peak flow; minimum, 1.5 cfs Aug. 6, 1961.
Major floods probably occurred Jan. 19 and Oct. 14, 1916 when discharges of 90,000 cfs (or greater) were computed for station at Clifton, Ariz. On Nov. 26, 1905, a peak of 25,000 cfs was measured (by float-area method) at station at Alma (about 12 miles upstream, drainage area, 1,560 sq mi); a similar measurement of 21,000 cfs was made at the Alma station for peak of Dec. 3, 1906.

Remarks.--Records good. Diversions for irrigation of about 2,000 acres above station. Records of chemical analyses, suspended sediment loads, and water temperatures for the water year 1965 are published in part 2 of this report.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

| | | | |
|---|---|---|---|
| 1.8 | 6.6 | 2.7 | 160 |
| 1.9 | 11 | 3.0 | 280 |
| 2.1 | 30 | 3.4 | 460 |
| 2.4 | 80 | | |

Discharge, in cubic feet per second, water year October 1964 to September 1965

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 68 | 18 | 30 | 38 | 51 | 154 | 130 | 112 | 32 | 17 | 170 | 14 |
| 2 | 56 | 19 | *32 | 34 | 64 | 142 | 157 | 120 | 32 | 14 | 184 | 12 |
| 3 | 45 | 21 | 34 | 30 | 78 | 118 | 178 | 115 | 24 | 18 | 203 | 11 |
| 4 | 38 | 21 | 38 | *27 | 74 | *88 | 174 | 105 | 28 | 21 | 122 | 28 |
| 5 | 29 | 13 | 36 | 27 | 68 | 76 | *164 | 98 | 28 | 14 | 90 | 34 |
| 6 | 28 | 13 | 34 | 28 | 70 | 72 | 148 | 80 | 32 | 14 | *58 | 26 |
| 7 | 28 | 16 | 33 | 30 | 80 | 72 | 125 | 62 | 29 | 14 | 48 | 30 |
| 8 | *25 | 16 | 32 | 136 | 85 | 72 | 118 | *52 | *20 | *19 | 42 | 151 |
| 9 | 18 | 14 | 30 | 179 | 74 | 68 | 102 | 45 | 14 | 18 | 39 | 291 |
| 10 | 15 | 14 | 27 | 110 | *76 | 66 | 108 | 42 | 13 | 17 | 30 | 139 |
| 11 | 15 | 21 | 28 | 92 | 72 | 70 | 115 | 36 | 14 | 24 | 28 | 85 |
| 12 | 18 | 20 | 28 | 80 | 54 | *98 | 112 | 36 | 22 | 23 | 26 | 70 |
| 13 | 16 | *22 | 26 | 68 | 36 | 92 | 120 | 38 | 26 | 26 | 64 | 321 |
| 14 | 13 | 21 | 22 | 62 | 42 | 78 | 110 | *42 | 22 | 24 | 106 | 62 |
| 15 | 17 | 22 | 19 | 57 | 46 | 72 | 98 | 36 | 26 | 22 | 66 | 44 |
| 16 | 18 | 22 | 19 | 54 | 57 | 70 | 85 | 36 | 28 | 44 | 70 | 33 |
| 17 | 23 | 22 | 17 | 51 | 57 | 78 | 80 | 36 | 21 | 34 | 100 | 28 |
| 18 | 39 | 21 | 20 | *50 | 54 | 78 | 88 | 28 | 17 | 132 | *85 | 29 |
| 19 | 33 | 22 | 20 | 51 | 54 | 88 | *95 | 27 | 11 | 64 | 60 | 52 |
| 20 | 22 | 32 | 23 | 57 | 56 | 90 | 108 | 32 | 26 | *38 | 40 | 29 |
| 21 | 22 | 33 | 24 | 85 | 60 | 82 | 115 | 44 | 27 | 29 | 27 | 21 |
| 22 | 25 | 32 | 24 | 90 | 72 | 82 | 136 | 48 | 17 | 25 | 20 | 17 |
| 23 | 23 | 32 | 25 | 72 | 88 | *92 | 157 | 52 | 17 | 27 | 16 | 14 |
| 24 | 25 | 32 | 24 | 62 | 118 | 108 | 170 | 50 | 15 | 377 | 14 | 15 |
| 25 | 24 | 32 | 24 | 72 | 92 | 120 | 160 | 45 | 15 | 297 | 17 | 16 |
| 26 | 19 | 33 | 25 | 66 | 85 | 120 | 142 | 34 | 14 | 110 | 14 | 16 |
| 27 | 20 | 33 | 26 | 51 | 98 | 112 | 148 | 23 | 17 | 136 | 14 | 12 |
| 28 | *14 | 30 | 30 | 46 | 125 | 108 | 128 | 20 | 11 | 95 | 14 | 12 |
| 29 | 15 | 32 | 33 | *46 | | 108 | 112 | 26 | *11 | 115 | 13 | 9.5 |
| 30 | 12 | 29 | 36 | 48 | | 112 | 108 | 32 | 21 | 82 | 12 | 8.5 |
| 31 | 17 | | 40 | 50 | | 118 | | 33 | | 161 | 14 | |
| Total | 780 | 708 | 859 | 1,949 | 1,986 | 2,904 | 3,791 | 1,585 | 630 | 2,051 | 1,806 | 1,630 |
| Mean | 25.2 | 23.6 | 27.7 | 62.9 | 70.9 | 93.7 | 126 | 51.1 | 21.0 | 66.2 | 583 | 54.3 |
| Ac-ft | 1,550 | 1,400 | 1,700 | 3,870 | 3,940 | 5,760 | 7,520 | 3,140 | 1,250 | 4,070 | 3,580 | 3,230 |

Calendar year 1964: Max 1,910 Min 6.9 Mean 40.2 Ac-ft 29,170
Water year 1964-65: Max 377 Min 8.5 Mean 56.7 Ac-ft 41,010

Peak discharge (base, 800 cfs)

| Date | Time | Gage height | Discharge | Date | Time | Gage height | Discharge |
|---|---|---|---|---|---|---|---|
| 7-24 | 2000 | 6.83 | 2,840 | 9-13 | 0545 | 4.28 | 890 |
| 9-8 | 2200 | 5.55 | 1,760 | | | | |

* Discharge measurement made on this day.

As the number of streams on which streamflow information is likely to be desired far exceeds the number of stream-gaging stations feasible to operate at one time, the Geological Survey collects limited streamflow data at sites other than stream-gaging stations. When limited streamflow data are collected on a systematic basis over a period of years for use in hydrologic analysis, the site at which the data are collected is called a partial-record station. Data collected at these partial-record stations are usable in low-flow or flood-flow analyses, depending on the type of data collected. In addition, discharge measurements are made at other sites not included in the partial-record program. These measurements are generally made in times of drought or flood to give better areal coverage to those events. Those measurements and others collected for some special reason are called measurements at miscellaneous sites.

Records collected at partial-record stations are presented in two tables. The first is a table of discharge measurements at low-flow partial-record stations, and the second is a table of annual maximum stage and discgarge at crest-stage stations. Discharge measurements made at miscellaneous sites for both low flow and high flow are given in a third table.

## Low-flow partial-record stations

Measurements of streamflow in the state at low-flow partial-record stations are given in the following table. Most of these measurements were made during periods of base flow when streamflow is primarily from ground-water storage. These measurements, when correlated with the simultaneous discharge of a nearby stream where continuous records are available, will give a general picture of the low-flow potentiality of the stream. The column headed "Period of record" shows the water years in which measurements were made at the same, or practically the same, site.

Discharge measurements made at low-flow partial-record stations during water year 1965

| Station No. | Station name | Location | Drainage area (sq mi) | Period of record | Measurements | |
|---|---|---|---|---|---|---|
| | | | | | Date | Discharge (cfs) |
| | | **Rio Grande basin** | | | | |
| 8-3865 | Rio Ruidoso near Ruidoso, N. Mex. | SW¼ sec.19, T.11 S., R.13 E., at Mescalero Apache Indian Reservation boundary, 3 miles west of Ruidoso. | 17.2 | 1953-65 | 12- 2-64<br>3- 9-65<br>6- 8-65<br>9-27-65 | 0.94<br>4.42<br>4.69<br>9.78 |
| 8-3866 | Carrizo Creek at Ruidoso, N. Mex. | SW¼ sec.26, T.11 S., R.13 E., at mouth at Ruidoso. | 24.2 | 1953-65 | 12- 2-64<br>3- 9-65<br>6- 7-65<br>9-27-65 | 2.00<br>1.88<br>2.16<br>2.77 |
| | | **Gila River basin** | | | | |
| 9-4299* | Snow Creek near Mogollon, N. Mex. | Lat 33°24'50", long 108°29'40", about 1,000 ft below Gila Wilderness boundary, 17.5 miles east of Mogollon. | 89.6 | 1958-65 | (a) | |

* Also a crest-stage station.
a No low-flow measurement made during year.

## Crest-stage partial-record stations

The following table contains annual maximum discharge for crest-stage stations. A crest-stage gage is a device which will register the peak stage occurring between inspections of the gage. A stage-discharge relation for each gage is developed from discharge measurements made by indirect measurements of peak flow or by current meter. The date of the maximum discharge is not always certain but is usually determined by comparison with nearby continuous-record stations, weather records, or local inquiry. Only the maximum discharge for each water year is given. Information on some lower floods may have been obtained, and discharge measurements made for purposes of establishing the stage-discharge relation, but these are not published herein. The years given in the period of record represent water years for which the annual maximum has been determined.

Annual Maximum discharge at crest-stage partial-record stations

| Station No. | Station name | Location | Drainage area (sq mi) | Period of record | Annual maximum | | |
|---|---|---|---|---|---|---|---|
| | | | | | Date | Gage height (feet) | Discharge (cfs) |
| | | **Arkansas River basin** | | | | | |
| 7-1544 | Carrizozo Creek near Kenton, Okla. | NE¼ sec.31, T.31 N., R.37 E., under bridge on New Mexico State Highway 18, 4 miles southwest of Kenton. | 111 | 1953-65 | 6-17-65 | (d) | 5,950 |
| 7-2010 | Raton Creek at Raton, N. Mex. | Lat 36°54', long 104°26', 60 ft above bridge on State Highway 72 at Raton | 14.4 | 1953-65 | 9-28-62<br>8- 4-63<br>8- 9-64<br>6-17-65 | 2.10<br>1.58<br>1.88<br>e14.8 | 174<br>116<br>150<br>4,140 |
| 7-2137 | Canadian River tributary near Mills, N. Mex. | NE¼ sec.3, T.22 N., R.25 E., on downstream end of left bridge abutment on State Highway 39, 6 miles north of Mills. | a4.2 | 1954-65 | 8- 9-63<br>1964<br>6-19-65 | 1.30<br>(e)<br>4.25 | b16<br>b0<br>1,100 |
| 7-2209 | Dog Creek near Shoemaker, N. Mex. | Lat 35°49'32", long 104°53'28", 0.5 mile above Valmora-Shoemaker road, and 1.8 miles northwest of Shoemaker. | 11.2 | 1954-65 | 6-15-65 | 9.88 | 2,050 |
| 7-2216 | Lagartija Creek tributary near Sanchez, N. Mex. | SW¼SE¼ sec.5, T.16 N., R.24 E., at bridge on State Highway 65, 0.9 mile northeast of Sanchez. | a1 | 1961-65 | 6-25-65 | 1.86 | (†) |
| 7-2223 | Trementina Creek at Trementina, N. Mex. | NW¼ sec.8, T.14 N., R.24 E., at bridge on State Highway 65 at Trementina. | a65 | 1959-65 | 9-11-65 | e12.0 | 14,100 |
| 7-2250 | Pajarito Creek at Newkirk, N. Mex. | SW¼SW¼ sec.24, T.10 N., R.25 E., on downstream side of bridge on U. S. Highway 66, 1 mile east of Newkirk. | a35 | 1954-65 | 8-4-65 | 3.30 | 690 |
| 7-2255 | Ute Creek near Gladstone, N. Mex. | On line of secs. 14 and 23, T.24 N., R.28 E., on bridge on State Highway 58, 3 miles east of Gladstone. | 256 | 1953-65 | 8-31-65 | .41 | (†) |
| 7-2262 | Bueyeros Creek at Bueyeros, N. Mex. | E½ sec.7, T.20 N., R.31 E., on upstream end of right abutment of bridge on State Highway 102 at Bueyeros. | a34 | 1957-65 | 7-30-57<br>9-23-58<br>7-20-59<br>8- 8-60<br>7-21-61<br>9- 2-62<br>1963<br>9-22-64<br>6-19-65 | 6.03<br>6.08<br>6.70<br>2.70<br>7.43<br>3.90<br>(c)<br>6.34<br>5.21 | 3,400<br>3,450<br>4,200<br>(†)<br>5,240<br>1,340<br>(†)<br>3,700<br>2,460 |
| 7-2263 | Carrizo Creek near Roy, N. Mex. | NW¼SE¼ sec.16, T.21 N., R.28 E., 800 ft below State Highway 120, and 15 miles northeast of Roy. | a68 | 1954-65 | 6-16-65 | 6.43 | 1,380 |
| 7-2270.5 | Plaza Larga Creek tributary near Ragland, N. Mex. | NE¼ sec.15, T.7 N., R.30 E., at culvert on State Highway 18, 1.2 miles northwest of Ragland. | a.5 | 1952-65 | 5-13-65 | 5.61 | 76 |
| 7-2271.5 | Arroyo del Puerto near Endee, N. Mex. | SW¼SW¼ sec.26, T.10 N., R.36 E., at bridge on State Highway 93, 5.4 miles south of Endee. | a25 | 1961-65 | 6-25-65 | 6.52 | (†) |
| 7-2272.95 | Sandy arroyo tributary near Clayton, N. Mex. | NW¼ sec.21, T.25 N., R.34 E., above culvert on State Highway 58, 8 miles southwest of Clayton. | 4.3 | 1952-65 | 6-17-65 | 4.22 | 172 |
| 7-2273 | Sandy Arroyo near Clayton, N. Mex. | At center of boundary of secs. 2 and 3, T.24 N., R.35 E., on downstream side of bridge on State Highway 18, 7.5 miles south of Clayton. | a42 | 1953-65 | 6-17-65 | 4.17 | (†) |
| | | **Brazos River basin** | | | | | |
| 8-0793 | Blackwater Draw tributary near Floyd, N. Mex. | NW¼SW¼ sec.13, T.1 S., R.30 E., 0.5 mile below section road and 10 miles west of Floyd. | a10 | 1963-65 | 5-12-65 | .73 | (†) |

Explanation of symbols used with partial-record crest-stage station listings are given at end of the tables.

Annual maximum discharge at crest-stage partial record stations--Continued

| Station No. | Station name | Location | Drainage area (sq mi) | Period of record | Annual maximum | | |
|---|---|---|---|---|---|---|---|
| | | | | | Date | Gage height (feet) | Discharge (cfs) |
| | | **Colorado River basin** | | | | | |
| 8-1236.1 | Seminole Draw tributary near Lovington, N. Mex. | NW¼NE¼ sec.4, T.17 S., R.35 E., ½ mile above culvert on State Highway 483, and 5.1 miles south of Lovington. | a2 | 1963-65 | 1965 | .64 | 0 |
| | | **Rio Grande basin** | | | | | |
| 8-2774 | Rio Grande tributary at Rinconada, N. Mex. | SW¼NW¼ sec.21, T.23 N., R.10 E., at culvert on U. S. Highway 64, 0.6 mile west of Rinconada. | .02 | 1952-65 | 1965 | - | 0 |
| 8-2812 | Wolf Creek near Chama, N. Mex. | Lat 36°57'20", long 106°32'10", at bridge on State Highway 17, and 4¼ miles northeast of Chama. | 27.7 | 1959-65 | 4-20-65 | 3.96 | (†) |
| 8-2840 | Rito de Tierra Amarilla at Tierra Amarilla, N. Mex. | Lat 36°41'55", long 106°33'25", 400 ft below culvert on U. S. Highway 84, at Tierra Amarilla. | 49.7 | 1957-65 | 5-19-65 | 4.02 | (†) |
| 8-2867 | Arroyo Seco near Abiquiu, N. Mex. | Lat 36°16'55", long 106°28'15", 1,000 ft below bridge, 3.5 miles southeast of Ghost Ranch Museum on abandoned section of highway, and 10 miles northwest of Abiquiu. | 162 | 1953-65f | 7-29-53<br>8- 7-54<br>8-21-55<br>1956<br>5-31-57<br>4-16-58<br>8-15-59<br>5- 2-60<br>9-19-61<br>4-16-62<br>8-15-63<br>8-12-64<br>1965 | e10.1<br>4.10<br>7.17<br>7.25<br>3.34<br>5.46<br>3.13<br>4.16<br>4.30<br>4.44<br>3.89<br>3.52<br>(g) | (†)<br>b435<br>(†)<br>(†)<br>138<br>(†)<br>105<br>480<br>630<br>810<br>b295<br>175 |
| 8-2880 | El Rito near El Rito, N. Mex. | Sec.19, T.25 N., R.7 E., 3 miles northwest of El Rito. | 49.8 | 1932-51‡<br>1952-65 | 4-15-65 | 3.02 | 216 |
| 8-2920 | Santa Clara Creek near Espanola, N. Mex. | SW¼SW¼ sec.11, T.20 N., R.7 E., 5½ miles southwest of Espanola. | 34.5 | 1936-41‡<br>1949-50‡<br>1952-65 | 8-18-65 | h3.73 | h225 |
| 8-2950 | Rio Nambe near Nambe, N. Mex. | SE¼ sec.24, T.19 N., R.9 E., in Nambe Pueblo Grant, 2¼ miles southeast of Nambe Pueblo and 3¼ miles southeast of Nambe. | 38.2 | 1931-51‡<br>1952-65f | 1965 | h3.26 | (†) |
| 8-3025 | Tesuque Creek above diversions, near Santa Fe, N. Mex. | NW¼ sec.5, T.17 N., R.10 E., 500 ft above point of diversion of Cajon Grande ditch, 1 mile above Little Tesuque Creek, and 4 miles northeast of Santa Fe. | 11.7 | 1936-51‡<br>1953-65 | 6-19-65 | 3.45 | 173 |
| 8-3131 | Canada Ancha tributary near Santa Fe, N. Mex. | Lat 35°44'05", long 106°07'00", in Caja del Rio Grant, 9 miles northwest of Santa Fe. | 1.23 | 1940-48i<br>1952-65 | 1965 | - | 0 |
| 8-3134 | Bland Canyon near Cochiti, N. Mex. | Lat 35°42'11", long 106°24'56", 200 ft south of Forest Service Road, 0.3 mile inside Santa Fe National Forest, 7.5 miles north of Cochiti. | a9 | 1962-65 | 6-19-65 | 1.03 | (†) |
| 8-3171 | Arroyo Yupa tributary near Cerrillos, N. Mex. | S½NE¼ sec.13, T.15 N., R.7 E., 300 ft above culvert on U. S. Highway 85, 1.4 miles southwest of Turquoise Trading Post, and 6.5 miles north of Cerrillos. | .47 | 1957-65 | 8- 1-65 | 1.31 | 52 |
| 8-3175 | Galisteo Creek at Canoncito, N. Mex. | NW¼NW¼ sec.7, T.15 N., R.11 E., above railroad bridge, 0.2 mile above Apache Canyon at Canoncito. | 11.3 | 1955-56<br>1959-65 | 7-15-59<br>7-15-60<br>8-28-61<br>7-25-62<br>9-21-63<br>7-11-64<br>6-19-65 | 3.03<br>2.42<br>2.81<br>2.79<br>3.78<br>3.04<br>3.17 | b1,030<br>b525<br>b830<br>b805<br>b1,740<br>b1,040<br>1,150 |
| 8-3176 | San Cristobal Arroyo near Galisteo, N. Mex. | Lat 35°22'55", long 105°51'05", at bridge on U. S. Highway 285, 5½ miles east of Galisteo. | 116 | 1955-65 | 7-16-64<br>6-19-65 | b3.41<br>4.12 | b240<br>420 |

Annual maximum discharge at crest-stage partial-record stations--Continued

| Station No. | Station name | Location | Drainage area (sq mi) | Period of record | Annual maximum | | |
|---|---|---|---|---|---|---|---|
| | | | | | Date | Gage height (feet) | Discharge (cfs) |
| | | Rio Grande basin--Continued | | | | | |
| 8-3177 | Jaspe Arroyo tributary near Galisteo, N. Mex. | Lat 35°21'55", long 105°50'40", at culvert on U. S. Highway 285, 6 miles southeast of Galisteo. | a1.5 | 1952-65 | 5-13-65 | 14.55 | 225 |
| 8-3178 | Canada de las Minas tributary near Santa Fe, N. Mex. | Lat 35°36'27", long 105°54'42", at culvert on U. S. Highway 84, 85, and 285, 1.3 miles northeast of Seton Village, and 5.7 miles south of Santa Fe. | .56 | 1952-65 | 8- 1-65 | 1.58 | (†) |
| 8-3189 | San Pedro Creek near Golden, N. Mex. | Lat 36°13'45", long 106°18'00", 1 mile below bridge on State Highway 10 and 5½ miles southwest of Golden. | 45.2 | 1953-65 | 7-27-65 | e6.62 | (†) |
| 8-3219 | Rio de las Vacas near Senorita, N. Mex. | Lat 35°59'35", long 106°47'45", at bridge on side road, 0.1 mile south of State Highway 126 and 6.5 miles east of Senorita. | 26.8 | 1957-65 | 5-26-64<br>5-10-65 | 3.31<br>4.22 | 163<br>345 |
| 8-3219.2 | Rock Creek near Cuba, N. Mex. | W½ sec.6, T.20 N., R.2 E., 1 mile east of State Highway 126, 8 miles east of village of Senorita, and 11 miles east of Cuba. | a3.7 | 1960-65 | 8- 1-65 | 2.55 | (†) |
| 8-3278 | Arroyo Ojito at Zia Pueblo, N. Mex. | SE¼SE¼ sec.21, T.15 N., R.2 E., 100 ft upstream from Culvert on State Highway 44, in Zia Pueblo Grant, 0.7 mile south of Zia Pueblo. | 17.7 | 1961-65 | 8-10-65 | e13.3 | 16,500 |
| 8-3304 | Juan Toro Canyon near Miera, N. Mex. | W½SE¼ sec.7, T.9 N., R.6 E., 150 ft east of State Highway 10, 1 mile southeast of Cedro, and 4½ miles northwest of Miera. | 1.57 | 1959-65 | 8- 3-65 | .83 | (†) |
| 8-3305 | Tijeras Arroyo at Albuquerque, N. Mex. | Lat 35°03'40", long 106°28'40", 300 ft south of U. S. Highway 66 and 0.4 mile southeast of city limits of Albuquerque. | 75.3 | 1943-48‡<br>1958-65 | 7-25-65 | 3.79 | (†) |
| 8-3306 | Tijeras Arroyo near Albuquerque, N. Mex. | SE¼SW¼ sec.17, T.9 N., R.3 E., at culvert on State Highway 47, 5.7 miles south of Central Avenue (U.S. Highway 66) in Albuquerque. | 133 | 1952-65 | 7-25-65 | 1.53 | (†) |
| 8-3311 | Belen Highline Canal tributary near Los Lunas, N. Mex. | Lat 34°49'20", long 106°49'10", above culvert on State Highway 6, 5.0 miles west of Los Lunas. | .16 | 1952-53<br>1955-65 | 7-11-65 | e9.52 | 754 |
| 8-3316.5 | Canada Montoso near Scholle, N. Mex. | SW¼SW¼ sec.12, T.2 N., R.4 E., 130 ft upstream from dip on abandoned highway, 700 ft upstream from bridge on U. S. Highway 60, 3.6 miles southwest of Scholle. | a35 | 1961-65 | 8- 1-65 | e6.27 | 3,830 |
| 8-3317 | Abo Arroyo tributary near Scholle, N. Mex. | Lat 34°24'10", long 106°30'35", at culvert on U. S. Highway 60, 2.5 miles southeast of junction of U. S. Highway 60 and State Highway 6, and 5.5 miles southwest of Scholle. | a.2 | 1954-65 | b9- 5-63<br>b5-31-64<br>7-15-65 | 4.30<br>b4.10<br>k18.15 | (†)<br>(†)<br>301 |
| 8-3413 | Bluewater Creek above Bluewater Dam, near Bluewater, N. Mex. | NE¼ sec.20, T.12 N., R.12 W., 2.3 miles south of Bluewater Dam, and 8 miles west of Bluewater. | a75 | 1953-65 | 4-16-65 | 1.96 | 76 |
| 8-3485 | Encinal Creek near Casa Blanca, N. Mex. | NW¼NW¼ sec.34, T.11 N., R.6 W., 1.8 miles north of village of Encinal and 6.8 miles north of Casa Blanca. | 6.19 | 1937-39‡<br>1959-65 | 8-17-65 | 3.65 | 123 |
| 8-3535 | La Jencia Creek near Magdalena, N. Mex. | S½ sec.1, T.2 S., R.4 W., 3½ miles northeast of Magdalena. | 195 | 1957-65 | 8- 1-65 | 5.56 | 2,900 |
| 8-3536 | La Jencia Creek tributary near Magdalena, N. Mex. | NE¼SE¼ sec.13, T.2 S., R.4 W., at Santa Fe Railroad bridge, 2.7 miles northeast of Magdalena. | 5.67 | 1957-65 | 9- 9-65 | 1.11 | (†) |
| 8-3586 | Chupadera Wash tributary at Bingham, N. Mex. | NE¼SW¼ sec.12, T.5 S., R.5 E., 75 ft upstream from culvert on U. S. Highway 380, 0.1 mile west of Bingham. | a1 | 1961-65 | 9- 8-65 | 4.23 | (†) |
| 8-3593 | San Jose Arroyo near Monticello, N. Mex. | NW¼SW¼ sec.3, T.10S., R.4 W., at head of box canyon just below major tributary, 800 ft below culvert on U. S. Highway 85, 13 miles northeast of Monticello. | a27 | 1959-65 | 9-12-65 | 2.57 | (†) |

Annual maximum discharge at crest-stage partial-record stations--Continued

| Station No. | Station name | Location | Drainage area (sq mi) | Period of record | Annual maximum | | |
|---|---|---|---|---|---|---|---|
| | | | | | Date | Gage height (feet) | Discharge (cfs) |
| | | Rio Grande basin--Continued | | | | | |
| 8-3594 | Lumber Canyon tributary near Monticello, N. Mex. | N½ NE¼ sec.5, T.11 S., R.4 W., at culvert on U. S. Highway 85, 0.2 mile north of road to Red Rock Ranger station, and 10.5 miles east of Monticello. | a.9 | 1952-65 | 9-12-65 | h,e2.0 | (†) |
| 8-3616.5 | Percha Creek near Kingston, N. Mex. | NE¼NE¼ sec.15, T.16 S., R.8 W., at bridge on State Highway 180, 3.3 miles east of Kingston. | 21.5 | 1953-65 | 1965 | 2.88 | (†) |
| 8-3616.6 | Percha Creek tributary near Kingston, N. Mex. | NW¼SW¼ sec.14, T.16 S., R.8 W., 500 ft above culvert on State Highway 180, and 3.5 miles east of Kingston. | .58 | 1957-65 | 1965 | - | 0 |
| 8-3617 | Percha Creek near Hillsboro, N. Mex. | SE¼NW¼ sec.18, T.16 S., R.7 W., 150 ft south of State Highway 180, and 2 miles west of Hillsboro. | 35.4 | 1957-65 | 9- 7-65 | 3.79 | 800 |
| 8-3618 | Percha Creek at Caballo Dam near Arrey, N. Mex. | SW¼ sec.24, T.16 S., R.5 W., at bridge on U. S. Highway 85, 0.5 mile above mouth and Caballo Reservoir, and 3.5 miles north of Arrey. | 119 | 1953-65 | 9- 7-65 | 1.62 | (†) |
| 8-3630.5 | Arroyo Angostura (formerly Rio Grande tributary) near Rincon, N. Mex. | SE¼ sec.13, T.19 S., R.3 W., 140 ft below dip on U. S. Highway 85, and 2.2 miles southwest of Rincon. | a8.5 | 1959-65 | 9- 2-65 | 1.69 | (†) |
| 8-3631 | Rio Grande tributary near Radium Springs, N. Mex. | N½NW¼ sec.9, T.21 S., R.1 W., above culvert on U. S. Highway 85, 120 ft above mouth, and 1.4 miles west of Radium Springs. | .40 | 1955-65 | 9- 8-65 | 4.64 | 85 |
| 8-3632 | Aleman Draw at Aleman, N. Mex. | SW¼ sec.13, T.15 S., R.2 W., on Santa Fe Railroad bridge, 140 ft above dip on Engle-Rincon road, and ½ mile west of Aleman. | a27 | 1959-65 | 9- 4-65 | 10.33 | 9,200 |
| 8-3793 | Tecolote Creek at Tecolote, N. Mex. | Lat 35°27'20", long 105°16'55", on bridge on U. S. Highway 85 at Tecolote. | 122 | 1954-65 | 7-31-65 | 9.57 | 4,180 |
| 8-3796 | Pecos River tributary near Dilia, N. Mex. | Lat 35°12'50", long 105°04'50", above culvert on U. S. Highway 84, and 1.7 miles northwest of Dilia. | .16 | 1952-65 | 9-27-65 | .87 | 12 |
| 8-3803 | Sandoval Canyon at Gallinas, N. Mex. | Lat 35°41'19", long 105°21'17", about 500 ft upstream from culvert on State Highway 65, at north edge of Gallinas. | 7.6 | 1957<br>1961-65 | 8-19-65 | 1.42 | 64 |
| 8-3829 | Pecos River tributary near Pintada, N. Mex. | Lat 34°58'06", long 105°05'38", in Anton Chico Grant, 1,500 ft south of U. S. Highway 66, 6.8 miles north of Pintada. | a16 | 1961-65 | 8-27-61<br>1962<br>1963<br>6- 3-64<br>4-26-65 | 1.45<br>(c)<br>-<br>2.51<br>2.15 | 117<br>(†)<br>0<br>960<br>518 |
| 8-3832 | Pintada Arroyo tributary near Clines Corners, N. Mex. | Lat 34°50'40", long 105°35'05", above culvert on U. S. Highway 285, 12.2 miles south of Clines Corners. | - | 1952-65 | 5-30-65 | 2.90 | (†) |
| 8-3832.1 | Pintada Arroyo tributary near Encino, N. Mex. | Lat 34°48'40", long 105°34'00", above culvert on U. S. Highway 285, 0.1 mile south of ranch road, and 12½ miles northwest of Encino. | a1 | 1959-65 | 6-19-65 | 1.60 | (†) |
| 8-3833 | Pintada Arroyo near Santa Rosa, N. Mex. | NE¼ sec.29, T.8 N., R.21 E., 300 ft above culvert on U. S. Highway 54, and 4½ miles southwest of Santa Rosa. | 896 | 1959-65 | 8- 5-65 | e6.02 | 2,920 |
| 8-3833.7 | Pecos River tributary near Puerto de Luna, N. Mex. | NE¼SW¼ sec.32, T.8 N., R.22 E., 25 ft upstream from culvert on State Highway 91, 3.1 miles north of Puerto de Luna. | a2 | 1961-65 | 8- 4-65 | 6.73 | (†) |
| 8-3855.3 | Alamosa Creek tributary near Jordan, N. Mex. | SW¼SW¼ sec.27, T.7 N., R.28 E., 500 ft upstream from dip on State Highway 156, 6.9 miles west of Jordan | a10 | 1962-65 | 5-13-65 | 2.01 | 23 |
| 8-3856 | Yeso Arroyo near Fort Sumner, N. Mex. | SE¼ sec.35, T.1 N., R.25 E., at abandoned bridge 1 mile below State Highway 20, and 14.5 miles south of Fort Sumner. | 242 | 1937<br>1952-65 | 5-13-65 | 3.70 | (†) |

Annual maximum discharge at crest-stage partial-record stations--Continued

| Station No. | Station name | Location | Drainage area (sq mi) | Period of record | Annual maximum | | |
|---|---|---|---|---|---|---|---|
| | | | | | Date | Gage height (feet) | Discharge (cfs) |
| | | Rio Grande basin--Continued | | | | | |
| 8-3856.7 | Aragon Creek tributary near Encinoso, N. Mex. | NE¼NE¼ sec.22, T.7 S., R.14 E., 0.3 mile upstream from wooden bridge on dirt road, 1.2 miles north of State Highway 48, 4.3 miles west of Encinoso. | 6.07 | 1961-65 | 9- 7-65 | 4.31 | 810 |
| 8-3856.9 | Bonita Canyon tributary near Corona, N. Mex. | S½ sec.7, T.1 S., R.13 E., above culvert on U. S. Highway 54, and 1.8 miles southwest of Corona. | a.6 | 1959-65 | 8-13-65 | 2.05 | 43 |
| 8-3857 | Cloud Canyon near Gallinas, N. Mex. | SW¼ sec.15, T.2 S., R.12 E., above culvert on U. S. Highway 54, and 2.0 miles southwest of Gallinas. | a10 | 1957-65 | 8-13-65 | e3.90 | 115 |
| 8-3859 | Salt Creek tributary near Roswell, N. Mex. | NE¼NE¼ sec.17, T.9 S., R.24 E., at culvert on U. S. Highway 285, 4.7 miles north of junction of U. S. Highways 70 and 285, and 10 miles north of Roswell. | .04 | 1952-65 | 7-29-65 | 2.02 | (†) |
| 8-3880 | Rio Ruidoso at Hondo, N. Mex. | NE¼SW¼ sec.4, T.11 S., R.17 E., ¼ mile above confluence with Rio Bonito, and ¼ mile southwest of Hondo. | 290 | 1931-55 ‡ 1956-65 | 6-17-65 | e24.4 | 42,700 |
| 8-3890 | Rio Bonito near Fort Stanton, N. Mex. | SW¼ sec.16, T.9 S., R.15 E., at bridge on U. S. Highway 380, 2.5 miles northeast of Fort Stanton. | a85 | 1955-65 | 6-17-65 | 6.35 | (†) |
| 8-3890.6 | Rio Bonito tributary near Fort Stanton, N. Mex. | SW¼SW¼ sec.15, T.9 S., R.15 E., at culvert on U. S. Highway 380, 150 ft above mouth, and 3.5 miles northeast of Fort Stanton. | .72 | 1955-65 | 6-17-65 | 4.63 | (†) |
| 8-3895 | Rio Bonito at Hondo, N. Mex. | NE¼NW¼ sec.4, T.11 S., R.17 E., at bridge on U. S. Highway 70, at Hondo. | 1,295 | 1931-55 ‡ 1956-65 | 6-17-65 | 21.1 | 28,200 |
| 8-3901 | Rio Hondo at Picacho, N. Mex. | W½W½ sec.15, T.11 S., R.18 E., by road bridge just off U. S. Highway 70, 1.3 miles northwest of Picacho. | 715 | 1956-62 ‡ 1963-65 | 6-17-65 | 26.9 | 115,000 |
| 8-3901.5 | Gallo Canyon near Picacho, N. Mex. | NE¼NE¼ sec.8, T.12 S., R.18 E., 500 ft east of road, 5 miles south of Picacho. | a2 | 1962-65 | 9- 9-65 | 7.38 | 1,060 |
| 8-3920 | Pancho Canyon near Arabella, N. Mex. | SE¼SE¼ sec.19, T.9 S., R.18 E., 200 ft downstream from dip on State Highway 368, 5.6 miles south of Arabella. | a16 | 1962-65 | 8-10-65 | 5.49 | 1,700 |
| 8-3934 | Eight Mile Draw near Roswell, N. Mex. | SW¼NE¼ sec.32, T.10 S., R.23 E., and 6.5 miles west of Roswell. | 397 | 1941 1952-65 | 7-29-65 | 14.15 | (†) |
| 8-3973.9 | Curtis Canyon near Mayhill, N. Mex. | E½NE¼ sec.4, T.17 S., R.14 E., ½ mile above SCS dam, 0.4 mile west of State Highway 130, and 2.5 miles southwest of Mayhill. | 10.3 | 1959-65 | 6-18-65 | 3.78 | 640 |
| 8-3974 | Hyatt Canyon near Cloudcroft, N. Mex. | NW¼NW¼ sec.9, T.16 S., R.13 E., ½ mile south of State Highway 83, and 7 miles east of Cloudcroft. | 3.08 | 1953-65 | 8- 4-65 | .90 | 62 |
| 8-3976 | Rio Penasco near Dunken, N. Mex. | NW¼NE¼ sec.35, T.16 S., R.17 E., on bridge on State Highway 24, 5 miles north of Dunken. | 583 | 1952-56 1956-62‡ 1963-65 | 9- 1-65 | k8.08 | (†) |
| 8-3978 | Bluewater Creek near Dunken, N. Mex. | SE¼NE¼ sec.33, T.17 S., R.17 E., 300 ft above dip on State Highway 24, and 1.3 miles south of Dunken. | 143 | 1958-65 | 9- 1-65 | 1.16 | (†) |
| 8-4018 | Rocky Arroyo near Carlsbad, N. Mex. | SW¼ sec.23, T.21 S., R.24 E., 0.1 mile north of State Highway 137, 0.7 mile above dip on State Highway 137, and 14 miles west of Carlsbad. | 254 | 1953-65 | 5-30-65 | 45.07 | 9,700 |
| 8-4050.5 | Last Chance Canyon tributary near Carlsbad Caverns, N. Mex. | E½NW¼ sec.21, T.23 S., R.23 E., above culvert on State Highway 137, 0.1 mile north of road to Sitting Bull Falls, and 12½ miles northwest of Carlsbad Caverns. | a.2 | 1959-65 | 5-30-65 | 1.37 | (†) |

Annual maximum discharge at crest-stage partial-record stations--Continued

| Station No. | Station name | Location | Drainage area (sq mi) | Period of record | Annual maximum | | |
|---|---|---|---|---|---|---|---|
| | | | | | Date | Gage height (feet) | Discharge (cfs) |
| | | **Rio Grande basin--Continued** | | | | | |
| 8-4051 | Mosley Canyon near White City, N. Mex. | SE¼ sec.34, T.23 S., R.25 E., 600 ft below dip on Dark Canyon road, and 5⅓ miles north of White City. | 14.6 | 1959-65 | 5-30-65 | e13.7 | 16,400 |
| 8-4360 | San Simon Swale tributary near Jal, N. Mex. | NE¼NE¼ sec.4, T.25 S., R.35 E., 0.4 mile south of State Highway 128 and 10.7 miles west of Jal. | a20 | 1963-65 | 1965 | (c) | (†) |
| | | **Mimbres River basin** | | | | | |
| 8-4772 | Iron Creek near Kingston, N. Mex. | Lat 32°54'50", long 107°46'35", 50 ft east of State Highway 180, 1.6 road miles west of Emory Pass, and 4.5 miles west of Kingston. | .74 | 1955-65 | 1965 | m | (†) |
| 8-4775.6 | Little Walnut Creek near Silver City, N. Mex. | NW¼NE¼ sec.28, T.17 S., R.14 W., 85 ft above dip on Bear Mountain Road, and 2 miles north of Silver City. | 5.10 | 1959-65 | 8- 8-65 | 2.08 | 480 |
| 8-4775.7 | Silva Creek tributary at Silver City, N. Mex. | SE¼SW¼ sec.27, T.17 S., R.14 W., 350 ft above dip on Little Walnut Road, and 0.7 mile north of boundary of Silver City. | 2.12 | 1958-65 | 8- 2-65 | 3.65 | 590 |
| 8-4775.8 | Silva Creek at Silver City, N. Mex. | Lat 32°46'41", long 108°16'41", 190 ft above Twelfth Street Bridge at Silver City. | 10.0 | 1958-65 | 8- 2-65 | 2.84 | 560 |
| 8-4775.9 | Pinos Altos Creek at Silver City, N. Mex. | Lat 32°46'52", long 108°16'04", 2 blocks below U. S. Highway 260 at Silver City. | 4.63 | 1958-65 | 8-21-58<br>8-15-59<br>8-11-60<br>7-30-61<br>7-20-62<br>8-16-63<br>7-15-64<br>8- 2-65 | 3.20<br>2.22<br>e4.7<br>3.90<br>3.49<br>e9.0<br>3.43<br>2.51 | b755<br>b500<br>bi,160<br>b935<br>b815<br>3,140<br>(†)<br>(†) |
| 8-4780 | Cameron Creek at Central, N. Mex. | SW¼NE¼ sec.36, T.17 S., R.13 W., 2,500 ft above culvert on U. S. Highway 260, at north edge of Central. | 18.8 | 1954-65 | 7-17-65 | n3.78 | (†) |
| 8-4782 | Mimbres River tributary near Spalding, N. Mex. | S½ sec.5, T.22 S., R.10 W., at culvert on U. S. Highway 260, 0.7 mile northeast of junction with State Highway 61, 4.5 miles southeast of Spalding. | 1.17 | 1952-65 | 9- 1-65 | 1.74 | (†) |
| 8-4785 | Mimbres River at Deming, N. Mex. | On section line 22 and 27, T.23 S., R.9 W., at bridge on U. S. Highway 260, at north end of Deming. | 1,370 | 1954-65 | 9- 3-65 | 2.50 | 835 |
| 8-4786 | Mimbres basin tributary near Florida, N. Mex. | Near boundary of sec.25 and 36, T.22 S., R.8 W., above culvert on State Highway 26, and 5 miles southwest of Florida. | a.4 | 1959-65 | b9-25-64<br>9- 7-65 | b2.38<br>1.08 | (†)<br>(†) |
| 8-4790 | Hermanas Draw tributary at Hermanas, N. Mex. | SW¼ sec.22, T.28 S., R.11 W., at Southern Pacific Railroad bridge, 110 ft above State Highway 9, 0.3 mile west of Hermanas. | 10.8 | 1059-65 | 9- 2-65 | 5.42 | (†) |
| 8-4793 | Deer Creek tributary near Antelope Wells, N. Mex. | Sec.6, T.34 S., R.18 W., 0.1 mile below dip on State Highway 79, 2½ miles east of San Luis Pass, and 12 miles west of Antelope Wells. | 4.3 | 1959-65 | 9- 9-65 | 2.01 | 305 |
| | | **Tularosa Valley** | | | | | |
| 8-4801 | White Oaks Canyon at White Oaks, N. Mex. | NW¼SW¼ sec.20, T.6 S., R.13 E., 40 ft upstream from culvert on State Highway 349, 1 mile northeast of White Oaks. | 1.14 | 1961-65 | 8-7-65 | 6.75 | 1,200 |
| 8-4801.5 | White Oaks Canyon near Carrizozo, N. Mex. | NW¼SE¼ sec.6, T.7 S., R.11 E., 100 ft upstream from culvert on U. S. Highway 54, 6 miles north of Carrizozo. | 31 | 1959<br>1961-65 | 8- 7-65 | e10.63 | 5,330 |
| 8-4802 | Taylor Canyon tributary near Bingham, N. Mex. | SE¼NE¼ sec.15, T.6 S., R.7 E., 200 ft north of U. S. Highway 380, 12 miles southeast of Bingham. | 2.66 | 1961-65 | 8- 1-65 | .81 | (†) |

Annual maximum discharge at crest-stage partial-record stations--Continued

| Station No. | Station name | Location | Drainage area (sq mi) | Period of record | Annual maximum | | |
|---|---|---|---|---|---|---|---|
| | | | | | Date | Gage height (feet) | Discharge (cfs) |
| | | **Tularosa Valley--Continued** | | | | | |
| 8-4805.9 | Tularosa basin tributary near Oscura, N. Mex. | SW¼NW¼ sec.25, T.10 S., R.8 E., 50 ft below culvert on U. S. Highway 54, and 5.2 miles south of Oscura. | 3.22 | 1958-65 | 8- 1-65 | e1.68 | (†) |
| 8-4806.5 | Minnie Hall Draw near Three Rivers, N. Mex. | NE¼SE¼ sec.35, T.10 S., R.9 E., 8 miles northeast of Three Rivers. | 9.70 | 1956-65 | 6-17-58<br>8-28-65 | b2.42<br>11.1 | b1,220<br>(†) |
| 8-4807 | Indian Creek near Three Rivers, N. Mex. | SW¼NE¼ sec.10, T.11 S., R.10 E., 150 ft above diversion dam, and 11½ miles east of Three Rivers. | a6.8 | 1956-58 ‡<br>1959-65 | 8- 1-65 | 4.44 | 318 |
| 8-4809 | Indian Creek at mouth near Three Rivers, N. Mex. | Lat 33°22'45", long 105°57'25", 75 ft above diversion dam, 0.35 mile above mouth, and 5½ miles east of Three Rivers. | 10.9 | 1956-58 ‡<br>1959-65 | 8- 1-65 | 4.00 | 278 |
| 8-4810 | Three Rivers at Three Rivers, N. Mex. | NE¼SW¼ sec.3, T.12 S., R.9 E., 150 ft below Southern Pacific Railroad bridge, 400 ft above bridge on U. S. Highway 54, and 1.3 miles south of Three Rivers. | 96.0 | 1956-65 | 9- 2-65 | 3.95 | 2,800 |
| 8-4811 | Tularosa basin tributary near Three Rivers, N. Mex. | SW¼SE¼ sec.3, T.12 S., R.9 E., at culvert on U. S. Highway 54, 1.6 miles south of Three Rivers. | 13.8 | 1952-65 | 8- 1-65 | 0.43 | 440 |
| 8-4862 | Black Prince Canyon tributary near Organ, N. Mex. | NE¼SE¼ sec.33, T.21 S., R.4 E., above culvert on U. S. Highway 70, 2.3 miles east of San Augustin Pass, and 4.0 miles east of Organ. | .73 | 1959-65 | 1965 | - | 0 |
| 8-4864 | Tularosa basin tributary near Orogrande, N. Mex. | S½SE¼ sec.1, T.22 S., R.8 E., at bridge on U. S. Highway 54, and 2.7 miles northeast of Orogrande. | 2.53 | 1959-65 | 8-23-65 | e7.19 | (†) |
| | | **Estancia Valley** | | | | | |
| 8-4880 | Estancia Valley tributary at Cedar Grove, N. Mex. | NE¼NE¼ sec.21, T.11 N., R.7 E., 50 ft upstream from culvert on State Highway 344, 0.1 mile south of Cedar Grove. | 1.21 | 1955<br>1961-65 | 8-16-65 | 7.99 | (†) |
| 8-4881 | Juan Tomas Canyon near Edgewood, N. Mex. | SE¼NE¼ sec.19, T.10 N., R.7 E., 140 ft upstream from culvert on U. S. Highway 66, 2.5 miles northwest of Edgewood. | a20 | 1962-65 | 7-26-65 | 3.40 | 887 |
| 8-4882 | Osita Draw near Clines Corners, N. Mex. | SW¼NW¼ sec.17, T.9 N., R.11 E., 100 ft upstream from culvert on U. S. Highway 66, 7.5 miles west of Clines Corners. | a10 | 1961-65 | 7-31-65 | 1.83 | (†) |
| 8-4885 | Canon de Torreon at Torreon, N. Mex. | Lat 34°43'20", long 106°17'50", at culvert on State Highway 19, in Torreon. | 18.2 | 1954-65 | 5-29-65 | 1.51 | 172 |
| 8-4890 | Canada del Leon near Mountainair, N. Mex. | SE¼ sec.10, T.2 N., R.7 E., ½ mile above culvert on State Highway 10, and 8.4 miles southeast of Mountainair. | 3.9 | 1953-65 | 5-26-64<br>8-15-65 | b3.74<br>4.11 | b14<br>55 |
| | | **Salt basin** | | | | | |
| 8-4925 | Cornucopia Canyon near Pinon, N. Mex. | NE¼ sec.6, T.21 S., R.16 E., 0.2 mile above dip in ranch road, and 7.5 miles south of Pinon. | 17.2 | 1959-65 | 6-10-65 | 5.86 | (†) |
| | | **San Juan River basin** | | | | | |
| 9-3462 | Rio Amargo at Dulce, N. Mex. | NW¼ sec.1, T.31 N., R.2 W., under bridge on State Highway 17, at Dulce. | 168 | 1956-65 | 6-11-65 | 5.33 | (†) |
| 9-3510 | Vaqueros Canyon near Gobernador, N. Mex. | SW¼ sec.17, T.29 N., R.4 W., 100 ft east of State Highway 17 and 4.2 miles east of Gobernador. | a60 | 1956-65 | 8- 2-65 | 10.37 | 2,520 |
| 9-3557 | Gobernador Canyon near Gobernador, N. Mex. | NW¼ sec.36, T.29 N., R.6 W., 0.2 mile south of State Highway 17, and 4 miles southwest of Gobernador. | a22 | 1956-65 | 8- 2-65 | 6.38 | 775 |
| 9-3564 | Manzanares Canyon near Turley, N. Mex. | W½SW¼ sec.8, T.29 N., R.8 W., 600 ft above culvert on State Highway 17 and 4.2 miles east of Turley. | a3.1 | 1956-65 | 8-17-65 | 2.19 | (†) |

Annual maximum discharge at crest-stage partial-record stations--Continued

| Station No. | Station name | Location | Drainage area (sq mi) | Period of record | Annual maximum | | |
|---|---|---|---|---|---|---|---|
| | | | | | Date | Gage height (feet) | Discharge (cfs) |
| | | **San Juan River basin--Continued** | | | | | |
| 9-3567.5 | Valdez Draw near Bloomfield, N. Mex. | NE¼SW¼ sec.20, T.29 N., R.10 W., above culvert on State Highway 17, 4 miles east of Bloomfield. | a1.3 | 1956-65 | 8- 6-63 | p5.49 | 367 |
| | | | | | 8-13-64 | 5.49 | (†) |
| | | | | | 8-17-65 | p,e13.9 | (†) |
| 9-3572 | Gallegos Canyon tributary near Nageezi, N.Mex. | E½ sec.11, T.25 N., R.10 W., at culvert on State Highway 44, 1.1 miles northwest of Huerfano Trading Post and 12.5 miles northwest of Nageezi. | .20 | 1952-65 | 7-12-64 | b8.00 | b580 |
| | | | | | 7-25-65 | 1.41 | 67 |
| 9-3675.3 | San Juan River tributary near Kirtland, N. Mex. | NW¼NE¼ sec.15, T.29 N., R.14 W., on upstream side of abandoned culvert, 200 ft above U. S. Highway 550, 0.4 mile above mouth, and 3.3 miles east of Kirtland. | a3.0 | 1951-65 | 8-17-65 | 2.57 | (†) |
| 9-3678.4 | Yazzie Wash near Mexican Springs, N. Mex. | Lat 35°50'40", long 108°53'00", 5.0 miles northwest of Mexican Springs and 23 miles north of Gallup. | a2.1 | 1953-54<br>1956-65 | 8- 1-65 | 5.01 | 625 |
| 9-3678.6 | Chusca Wash near Mexican Springs, N. Mex. | Lat 35°48'40", long 108°50'50", 1.8 miles northwest of Mexican Springs and 20 miles north of Gallup. | a8.7 | 1953-65 | 6-14-53 | 5.28 | b3,900 |
| | | | | | 7-22-54 | 3.78 | b1,340 |
| | | | | | 8-18-55 | 2.94 | 790 |
| | | | | | 8-16-56 | 3.04 | 840 |
| | | | | | 7-21-57 | e6.12 | b2,400 |
| | | | | | 7-27-58 | 1.28 | 165 |
| | | | | | 7-21-59 | 3.98 | 1,540 |
| | | | | | 6-10-60 | 2.00 | 385 |
| | | | | | 8-24-61 | 4.79 | b2,850 |
| | | | | | 9-25-62 | 1.57 | 242 |
| | | | | | b8-26-63 | 3.86 | 1,400 |
| | | | | | 7-25-64 | e5.39 | 1,430 |
| | | | | | 9- 3-65 | 5.82 | 5,520 |
| 9-3678.8 | Catron Wash near Mexican Springs, N. Mex. | Lat 35°46'15", long 108°49'40", 1.5 miles south of Mexican Springs and 18 miles north of Gallup. | 26.9 | 1954<br>1956-65 | 9- 3-65 | 5.82 | 4,100 |
| 9-3679 | Black Springs Wash near Mexican Springs, N. Mex. | Lat 35°45'40", long 108°49'00", 2.5 miles south of Mexican Springs and 17 miles north of Gallup. | 7.05 | 1954-65 | 8- 1-65 | e1.16 | 700 |
| 9-3679.5 | Chaco River near Waterflow, N. Mex. | NE¼ sec.19, T.29 N., R.16 W., at Stanolind, 7 miles southwest of Waterflow, and 8 miles southeast of Shiprock. | 4,350 | 1959-65 | 9-20-63 | 7.81 | 7,000 |
| | | | | | 8- 1-64 | 7.93 | 7,200 |
| | | | | | 8- 2-65 | 6.96 | 4,350 |
| | | **Little Colorado River basin** | | | | | |
| 9-3861 | Largo Creek near Quemado, N. Mex. | NE¼SE¼ sec.8, T.1 N., R.16 W., on downstream side of bridge on ranch road 2½ miles southwest of Quemado. | 151 | 1954-65 | 8- 6-54 | e4.70 | 1,320 |
| | | | | | 8-20-55 | 1.85 | 225 |
| | | | | | 7-29-56 | 1.83 | 220 |
| | | | | | 7-23-57 | 2.20 | 320 |
| | | | | | 7-28-58 | e4.00 | 985 |
| | | | | | 8- 6-59 | 2.14 | 300 |
| | | | | | 3-12-60 | 1.75 | 200 |
| | | | | | b8- 3-61 | 2.03 | 273 |
| | | | | | 4- 8-62 | 1.63 | 170 |
| | | | | | 8- 3-63 | 2.42 | 385 |
| | | | | | 8- 1-64 | 1.70 | 187 |
| | | | | | 8- 1-65 | 2.66 | 465 |
| 9-3861.5 | Mangas Creek tributary near Pietown, N. Mex. | About at corner common secs. 13,14, 23 and 24, T.1 N., R.13 W., above culvert on U. S. Highway 60, 1.3 miles west of Pietown Post Office. | a.08 | 1952-65 | 7-25-65 | 1.19 | (†) |
| 9-3862 | Carrizo Creek near Salt Lake, N. Mex. | SE¼ sec.3, T.3 N., R.21 W., on downstream side of bridge, 1.3 miles east of New Mexico-Arizona State line and 15 miles west of Salt Lake. | ± 560 | 1957-65 | 8-29-65 | 7.27 | (†) |
| 9-3870.5 | Galestena Canyon tributary near Black Rock, N. Mex. | SE¼ sec.30, T.9 N., R.17 W., 100 ft below bridge on State Highway 32 and 10.5 miles southeast of Black Rock. | a19 | 1957-65 | 8- 1-65 | 3.31 | 190 |

Annual maximum discharge at crest-stage partial-record stations--Continued

| Station No. | Station name | Location | Drainage area (sq mi) | Period of record | Annual maximum | | |
|---|---|---|---|---|---|---|---|
| | | | | | Date | Gage height (feet) | Discharge (cfs) |
| | | **Little Colorado River basin--Continued** | | | | | |
| 9-3954 | Puerco River tributary near Fort Wingate, N. Mex. | Lat 35°25'55", long 108°33'30", 0.5 mile below culvert on secondary road between Fort Wingate and McGaffey and 3 miles south of Fort Wingate. | 14.5 | 1949<br>1953-65 | 4-10-65 | 0.25 | 27 |
| 9-3955 | Puerco River at Gallup, N. Mex. | SW¼NW¼ sec.15, T.15 N., R.18 W., on right bank north of the Santa Fe RR freight depot, 1,500 ft above Second Street Bridge at Gallup. | 558 | 1940-46 ‡<br>1956-65 | 7-11-65 | 7.67 | 4,450 |
| 9-3956 | Puerco River tributary near Gamerco, N. Mex. | SE¼NE¼ sec.7, T.16 N., R.18 W., above abandoned culvert on former U. S. Highway 666, 0.5 mile north of junction of U. S. Highway 666 and State Highway 68, 4.5 miles north of Gamerco. | .42 | 1951-65 | 8- 1-65 | e4.60 | 330 |
| | | **Gila River basin** | | | | | |
| 9-4298 | Diamond Creek near Beaverhead, N. Mex. | E½ sec.7, T.12 S., R.12 W., 3.5 miles west of State Highway 61, 4 miles above Gila River and 13 miles south of Beaverhead. | 106 | 1957-65 | 8- 2-65 | 4.41 | (†) |
| *9-4299 | Snow Creek near Mogollon, N. Mex. | Lat 33°24'50", long 108°29'40", 1,000 ft below Gila Wilderness boundary and 17.5 miles east of Mogollon. | 89.6 | 1958-65 | 8-15-64<br>8- 2-65 | e11.4<br>8.31 | 608<br>47 |
| 9-4303 | Copperas Canyon near Pinos Altos, N. Mex. | NE¼SW¼ sec.17, T.14 S., R.13 W., on east side of Copperas Canyon road and 15 miles north of Pinos Altos. | a4 | 1963-65 | 7-28-65 | 1.22 | (†) |
| 9-4309 | Duck Creek at Cliff, N. Mex. | SW¼SW¼ sec.28, T.15 S., R.17 W., at Cliff below bridge on State Highway 211, and 0.6 mile above mouth. | 228 | 1957-65 | 8-13-57<br>8-11-58<br>8-19-59<br>3- -60<br>9- 8-61<br>9-26-62<br>8-21-63<br>7- 7-64<br>7-17-65 | 9.50<br>8.60<br>10.24<br>b4.88<br>3.71<br>5.96<br>10.30<br>4.17<br>5.20 | b5,650<br>b4,950<br>b6,250<br>2,330<br>1,600<br>3,030<br>6,300<br>1,860<br>2,540 |
| 9-4310 | Gila River near Cliff, N. Mex. | S½ sec.4, T.16 S., R.17 W., on downstream end of pier of bridge on U. S. Highway 260, 1¼ miles downstream from Bear Creek, 1½ miles south of Cliff, and 2½ miles southwest of Gila. | 2,438 | 1942-51 ‡<br>1952-65 | 7-18-65 | 8.66 | 5,440 |
| 9-4426.5 | Trout Creek near New Mexico-Arizona State line near Luna, N. Mex. | W½ sec.34, T.4 S., R.21 W., at culvert on Luna-Underwood Lake road, about 1 mile east of N. Mex.-Ariz. State line, and 8 miles northwest of Luna. | a9.9 | 1958-65 | b7- 8-64<br>3-11-65 | 9.18<br>8.22 | (†)<br>20 |
| 9-4426.6 | Trout Creek near Luna, N. Mex. | NW¼ sec.29, T.5 S., R.20 W., 500 ft downstream from bridge on Luna-Red Hill road and 2.6 miles north of Luna. | a32 | 1954-65 | 8- 1-65 | 1.35 | 58 |
| 9-4426.9 | Tularosa River near Aragon, N. Mex. | NW¼ sec.3, T.5S., R.16 W., about 100 ft to the left of State Highway 12 and 2 miles northeast of Aragon. | a89 | 1955-65 | 6-11-65 | 4.33 | 29 |
| 9-4426.95 | Rito Negrito at Aragon, N. Mex. | NW¼NW¼ sec.18, T.5S., R.16 W., above culvert on State Highway 12, at west edge of Aragon. | 9.46 | 1958-65 | 8-13-65 | 3.36 | 335 |
| 9-4427 | Apache Creek near Apache Creek, N. Mex. | E½ sec.25, T.4 S., R.18 W., 7 miles north of Apache Creek. | 94.6 | 1957-65 | 1965 | (c) | (†) |
| 9-4427.4 | Tularosa River near Reserve, N. Mex. | SE¼ sec.33, T.6 S., R.18 W., 150 ft west of Eagle Peak Lookout road and 3.3 miles northeast of Reserve. | 426 | 1956-65 | 8-13-65 | 5.76 | ‡ |
| 9-4439.5 | Colt Canyon at Pleasanton, N. Mex. | E½NE¼ sec.14, T.12 S., R.20 W., 175 ft above abandoned dip, 350 ft above culvert on U. S. Highway 260, about 1 mile south of Pleasanton. | 3.1 | 1959-65 | 9- 9-65 | 1.62 | (†) |
| 9-4558 | Steins Creek at Steins, N. Mex. | S½SE¼ sec.9, T.24 S., R.21 W., at culvert on State Highway 14, 0.9 mile west of Steins. | - | 1959-65 | 9- 3-65 | 4.80 | (†) |

Annual maximum discharge at crest-stage partial-record stations--Continued

| Station No. | Station name | Location | Drainage area (sq mi) | Period of record | Annual maximum | | |
|---|---|---|---|---|---|---|---|
| | | | | | Date | Gage height (feet) | Discharge (cfs) |
| | | Animas Valley | | | | | |
| 9-5390 | Animas Creek near Cloverdale, N. Mex. | NE¼ sec.33, T.31 S., R.20 W., near head of small box canyon, 0.1 mile west of State Highway 338, and 11 miles north of Cloverdale. | 157 | 1959-65 | 9- 9-65 | 4.18 | 430 |

† Discharge not determined
‡ Operated as a continuous-record gaging station.
* Also low-flow station.
a Approximately.
b Revised.
c Peak did not reach bottom of gage.
d Gage height not determined.
e From floodmark.
f Discontinued at end of water year.
g Gage submerged by backwater from Abiquiu Dam.
h Doubtful.
i Operated as a continuous-record gaging station by SCS.
j Discharge pending.
k New datum (Gage relocated; records equivalent).
l Contributing area.
m Gage damaged by vandals.
n This datum since Oct. 1960. May 1954 to Oct. 1960 at sites 0.5 mile downstream at different datum.
p Gage height unreliable (Backwater).

## Measurements at miscellaneous sites

Measurements of streamflow at points other than gaging stations or partial-record stations are given in the following table. Those that are measurements of base flow are designated by an asterisk (*); measurements of peak flow by a dagger(†). Listings are in downstream order, by basins, streams, and individual measuring points. The order of major basins in this report will be: LOWER MISSISSIPPI BASIN, WESTERN GULF OF MEXICO BASINS, COLORADO RIVER BASIN.

Discharge measurements made at miscellaneous sites during water year 1965

| Stream | Tributary to | Location | Drainage area (sq mi) | Measured previously (water years) | Measurements | |
|---|---|---|---|---|---|---|
| | | | | | Date | Discharge (cfs) |
| | | Arkansas River basin | | | | |
| Travesser Creek | Cimarron River | Near SW corner sec.20, T.31 N., R.33 E., approximately 8 miles above mouth, near Valley, N. Mex. | 74.7 | - | 6-17-65 | † 12,500 |
| Tributary | Canadian River | Lat 36°45'55", long 104°29'30", 500 ft above U.S. Highway 64-85 and 4.5 miles northeast of Hoxie Junction, N. Mex. | 2.01 | - | 6-17-65 | † 2,130 |
| Chicorica Creek | do | Lat 36°56'00", long 104°22'00", 1.0 mile above East Fork, and 5.5 miles northeast of Raton, N. Mex. | 36.3 | b 1955 | 6-17-65 | † 2,230 |
| East Fork | Chicorica Creek | Lat 36°55'40", long 104°21'35", ½ mile above State Highway 72, 1 mile above mouth and 3/4 mile southwest of Yankee, N. Mex. | 22.7 | - | 6-17-65 | † 13,500 |
| Chicorica Creek | Canadian River | Lat 36°52'05", long 104°22'50", 3 miles below East Fork, and 3.2 miles east of Raton, N. Mex. | 78.8 | b 1955 | 6-17-65 | † 12,800 |
| Tributary | Chicorica Creek | Lat 36°51'00", long 104°21'25", at U.S. Highway 64-87, 1.5 miles above mouth, and 4.8 miles east of Raton, N. Mex. | 1.33 | - | 6-17-65 | † 1,810 |
| Crow Creek | Canadian River | Lat 36°46'45", long 104°37'40", between Camp and Antler Canyons, and 3.2 miles north of Koehler, N. Mex. | 29 | - | 6-17-65 | † 10,600 |
| do | do | Lat 36°42'05", long 104°35'35", immediately below Weldron Canyon, 1.5 miles above U.S. Highway 64, and 3.2 miles southeast of Koehler, N. Mex. | 59.8 | - | 6-17-65 | † 30,500 |
| Crow Creek | Canadian River | Lat 36°37'55", long 104°32'25", 500 ft above U.S. Highway 85, and 6 miles north of Maxwell, N. Mex. | 78.4 | - | 6-17-65 | † 13,100 |

Note.--Symbols and footnotes are at end of list.

Measurements at miscellaneous sites

Discharge measurements made at miscellaneous sites during water year 1965

| Stream | Tributary to | Location | Drainage area (sq mi) | Measured previously (water years) | Measurements | |
|---|---|---|---|---|---|---|
| | | | | | Date | Discharge (cfs) |
| | | Arkansas River basin--Continued | | | | |
| Springer Arroyo | Crow Creek | Lat 36°42'20", long 104°33'00", at U.S. Highway 64, 0.7 mile southwest of Hoxie Junction, and 12 miles east of Colfax, N. Mex. | 3.00 | - | 6-17-65 | † 2,280 |
| Turkey Creek Canyon | Cimarron Creek | Lat 36°31'25", long 104°58'55", 1,000 ft above mouth and 4 miles west of Cimarron, N. Mex. | 5.25 | - | 6-17-65 | † 6,660 |
| Chase Canyon | Ponil Creek | Lat 36°34'30", long 104°56'25", 1,500 ft above mouth, and 5 miles north of Cimarron, N. Mex. | 23.0 | - | 6-17-65 | †10,800 |
| Plaza Larga Creek | Revuelto Creek | SE¼SW¼ sec.19, T.11 N., R.33 E., below Barranca Creek, ½ mile above U.S. Highway 66, 14 miles east of Tucumcari, N. Mex. | - | 1964 | 10- 2-64 | 0 |
| | | | | | 11- 6-64 | 2.46 |
| | | | | | 12-11-64 | 1.34 |
| | | | | | 1- 8-65 | 1.15 |
| | | | | | 2-19-65 | 1.72 |
| | | | | | 4- 2-65 | 1.01 |
| | | | | | 5- 7-65 | 0 |
| | | | | | 6- 7-65 | 0 |
| | | | | | 7- 1-65 | 6.27 |
| | | | | | 8- 6-65 | 32.3 |
| | | | | | 9-10-65 | 15.4 |
| Revuelto Creek | Canadian River | NE¼SE¼ sec.19, T.11 N., R.33 E., 100 ft above mouth of Plaza Larga Creek, below U.S. Highway 66, 14 miles east of Tucumcari, N. Mex. | - | - | 11- 6-64 | 0.02 |
| | | | | | 6- 7-65 | 0 |
| | | | | | 9-10-65 | 0.06 |
| Revuelto Creek | Canadian River | SE¼NE¼ sec.19, T.11 N., R.33 E., below mouth of Plaza Larga Creek ¼ mile below U.S. Highway 66, 14 miles east of Tucumcari, N. Mex. | - | 1958-60 | 10- 2-64 | 0 |
| | | | | | 11- 6-64 | 2.29 |
| | | | | | 12-11-64 | 2.43 |
| | | | | | 1- 8-65 | 1.08 |
| | | | | | 2-19-65 | 1.58 |
| | | | | | 4- 2-65 | 1.00 |
| | | | | | 5- 7-65 | 0 |
| | | | | | 6- 7-65 | 0 |
| | | | | | 7- 1-65 | 5.29 |
| | | | | | 8- 6-65 | 30.1 |
| | | | | | 9-10-65 | 13.9 |
| Rana Canyon | Canadian River | SW¼NW¼ sec.15, T.13 N., R.36 E., at mouth 13 miles north of Glenrio, N. Mex. | - | 1964 | 10-31-64 | 0 |
| | | | | | 11- 6-64 | 0 |
| | | | | | 12-11-64 | 0 |
| | | | | | 1- 8-65 | 0 |
| | | | | | 2-19-65 | 0 |
| | | | | | 4- 2-65 | 0 |
| | | | | | 4-23-65 | 0 |
| | | | | | 4-27-65 | 0 |
| | | | | | 5- 7-65 | 0 |
| | | | | | 6- 7-65 | 0 |
| | | | | | 6-11-65 | 4.85 |
| | | | | | 6-18-65 | c 10 |
| | | | | | 7-23-65 | 0 |
| | | | | | 8- 6-65 | 0 |
| | | | | | 9-10-65 | 0 |
| | | | | | 9-18-65 | 0 |
| | | | | | 9-24-65 | 0 |
| Martin Draw | Canadian River | NE¼NW¼ sec.15, T.13 N., R.36 E., at mouth 13 miles north of Glenrio, N. Mex. | - | - | 10-31-64 | 0 |
| | | | | | 11- 6-64 | 0 |
| | | | | | 12-11-64 | 0 |
| | | | | | 1- 8-65 | 0 |
| | | | | | 2-19-65 | c 0.03 |
| | | | | | 4- 2-65 | 0 |
| | | | | | 4-23-65 | c 0.02 |
| | | | | | 5- 7-65 | c 0.01 |
| | | | | | 6- 7-65 | 0 |
| | | | | | 6-11-65 | 0 |
| | | | | | 6-18-65 | c 0.25 |
| | | | | | 7-23-65 | 0 |
| | | | | | 8- 6-65 | 0 |
| | | | | | 9-10-65 | 0 |
| | | | | | 9-18-65 | 0 |
| | | | | | 9-24-65 | 0 |

Measurements at miscellaneous sites

Discharge measurements made at miscellaneous sites during water year 1965

| Stream | Tributary to | Location | Drainage area (sq mi) | Measured previously (water years) | Measurements | |
|---|---|---|---|---|---|---|
| | | | | | Date | Discharge (cfs) |
| **Arkansas River basin--Continued** | | | | | | |
| Canadian River | Arkansas River | Lat 35°21', long 103°06', in NW¼ sec.15, T.13 N., R.36 E., 300 ft below Martin Draw, 0.5 mile below Rana Canyon, about 6 miles upstream from New Mexico-Texas State line, and 13 miles north of Glenrio, N. Mex. | - | 1964 | 10- 2-64 | 2.37 |
| | | | | | 10- 9-64 | 2.02 |
| | | | | | 10-16-64 | 3.69 |
| | | | | | 10-23-64 | 3.30 |
| | | | | | 10-31-64 | 7.21 |
| | | | | | 11- 6-64 | 9.74 |
| | | | | | 11-13-64 | 4.08 |
| | | | | | 11-20-64 | 24.9 |
| | | | | | 11-27-64 | 9.50 |
| | | | | | 12- 4-64 | 15.7 |
| | | | | | 12-11-64 | 9.18 |
| | | | | | 12-18-64 | 4.56 |
| | | | | | 12-28-64 | 7.08 |
| | | | | | 1- 8-65 | 6.23 |
| | | | | | 1-15-65 | 8.28 |
| | | | | | 1-22-65 | 8.09 |
| | | | | | 1-29-65 | 7.85 |
| | | | | | 2- 5-65 | 7.82 |
| | | | | | 2-19-65 | 7.41 |
| | | | | | 3-12-65 | 17.9 |
| | | | | | 4- 2-65 | 7.21 |
| | | | | | 4- 9-65 | 4.22 |
| | | | | | 4-16-65 | 3.22 |
| | | | | | 4-23-65 | 2.39 |
| | | | | | 4-27-65 | 12.5 |
| | | | | | 4-30-65 | 6.95 |
| | | | | | 5- 7-65 | 1.60 |
| | | | | | 5-13-65 | 268 |
| | | | | | 5-27-65 | 60.2 |
| | | | | | 6- 7-65 | 3.35 |
| | | | | | 6-11-65 | 29.6 |
| | | | | | 6-18-65 | 73.8 |
| | | | | | 7- 1-65 | 20.6 |
| | | | | | 7-15-65 | 21.2 |
| | | | | | 7-23-65 | 21.7 |
| | | | | | 8- 2-65 | 68.4 |
| | | | | | 8- 6-65 | 41.5 |
| | | | | | 8-16-65 | 11.1 |
| | | | | | 8-25-65 | 44.1 |
| | | | | | 9-10-65 | 21.8 |
| | | | | | 9-18-65 | 221 |
| | | | | | 9-24-65 | 394 |
| Carrizo Creek | Mustang Creek | SE¼ sec.36, T.25 N., R.32 E., 1,000 ft above U.S. Highway 56, and 17.5 miles southwest of Clayton, N. Mex. | 477 | b 1957 | 6-17-65 | † 9,270 |
| Major Longs Creek | Mustang Creek | NE¼ sec.9, T.21 N., R.35 E., 800 ft above State Highway 18, and two miles south of Stead, N. Mex. | 556 | - | 6-17-65 | † 6,600 |
| Cieneguilla Creek | North Canadian River | S½ sec.1, T.27 N., R.33 E., 3.5 miles above Clayton Lake and 15 miles northwest of Clayton, N. Mex. | 112 | b1941,1955 | 6-17-65 | † 9,580 |
| **Rio Grande basin** | | | | | | |
| Tributary | Rio Grande | Lat 35°19'37", long 106°31'31", at culvert Nos. 5759 and 6200 on State Highway 422, and 2.1 miles northeast of Bernalillo, N. Mex. | 1.93 | - | 8- 3-63 | † 1,540 |
| Alameda Arroyo | Drains, canals, Rio Grande | Lat 32°20'43", long 106°46'03", at culvert No. 6194 on U.S. Interstate Highway 10, 0.1 mile south of U.S. 70 and 82 interchange, near Las Cruces, N. Mex. | 15.6 | - | 8-22-65 | † 1,960 |
| Tributary | Pecos River | NE¼ NW¼ sec.6, T.12 N., R.15 E., at State Highway 3, 0.1 mile above mouth, and in the village of Sena, N. Mex. | 0.45 | - | 5-12-65 | † 189 |
| Pecos River | Rio Grande | Lat 35°06'45", long 104°50'40", at old ford at Colonias, N. Mex., River mile 288.6. | - | 1912,1961 1963,1964 | 4-21-65 | 47.0 |
| | | | | | 4-28-65 | 183 |
| | | | | | 5- 5-65 | 237 |
| | | | | | 5-11-65 | 143 |
| | | | | | 5-18-65 | 181 |

Measurements at miscellaneous sites

Discharge measurements made at miscellaneous sites during water year 1965

| Stream | Tributary to | Location | Drainage area (sq mi) | Measured previously (water years) | Measurements | |
|---|---|---|---|---|---|---|
| | | | | | Date | Discharge (cfs) |
| | | Rio Grande basin--Continued | | | | |
| Tributary | Arroyo San Juan de Dios | Sec.3, T.6 N., R.23 E., at U.S. Highway 84, and 17 miles southeast of Santa Rosa, N. Mex. | 1.2 | - | 6-16-63 | † 1,700 |
| Carrizo Creek | Rio Ruidoso | SW¼ sec.33, T.11 S., R.13 E., at Mescalero Apache Indian Reservation boundary, 2 miles above mouth and 1½ miles south of Ruidoso, N. Mex. | - | 1961-1964 | 12- 2-64<br>3- 9-65<br>6- 7-65<br>9-27-65 | * 1.01<br>* .98<br>* 1.09<br>1.28 |
| Rio Ruidoso | Rio Hondo | SW¼ sec.33, T.10 S., R.15 E., 3 miles west of junction of U.S. Highway 70 and State Highway 214 near Glencoe, N. Mex. | 169 | - | 6-17-65 | † 7,920 |
| Silva Canyon | Rio Ruidoso | NW¼ sec.33, T.10 S., R.15 E., 0.6 mile above mouth, and 2 miles west of junction of U.S. Highway 70 and State Highway 214 near Glencoe, N. Mex. | 3.0 | - | 6-17-65 | † 2,940 |
| Devils Canyon | Rio Ruidoso | NW¼ sec.16, T.10 S., R.15 E., 0.4 mile above Little Creek, and 3 miles west of Glencoe, N. Mex. | 0.8 | - | 6-17-65 | † 1,740 |
| Eagle Creek | Devils Canyon | NE¼ sec.20, T.10 S., R.15 E., 1 mile above mouth, and 3.5 miles northwest of Glencoe, N. Mex. | 26.6 | - | 6-17-65 | † 2,700 |
| Devils Canyon | Rio Ruidoso | NE¼ sec.26, T.10 S., R.15 E., 0.2 mile above U.S. Highway 70, and 0.3 mile above mouth | 60 | - | 6-17-65 | † 16,200 |
| Tributary | Rio Bonito | SE¼ sec.12, T.10 S., R.16 E., 0.3 mile above mouth at U.S. Highway 380, and 5.5 miles northwest of Hondo, N. Mex. | 1.2 | - | 6-17-65 | † 850 |
| Chavez Canyon | Rio Hondo | SE¼NE¼ sec.10, T.11 S., R.17 E., 0.4 mile above mouth, and 1.3 miles west of Tinnie, N. Mex. | 46.4 | - | 6-17-65 | † 5,710 |
| Alamo Canyon | do | SW¼NW¼ sec.14, T.11 S., R.17 E., 0.6 mile above mouth, and 1.3 miles southwest of Tinnie, N. Mex. | 54.6 | - | 6-17-65 | † 38,400 |
| Patterson Canyon | do | NE¼SW¼ sec.24, T.11 S., R.18 E., at U.S. Highway 70-380, 0.2 mile above mouth, and 1.6 miles east of Picacho, N. Mex. | 3.39 | - | 6-28-65 | † 4,000 |
| Silver Canyon | do | NE¼NW¼ sec.27, T.11 S., R.19 E., at U.S. Highway 70-380, 0.2 mile above mouth, and 0.8 mile east of Riverside, N. Mex. | 3.96 | - | 6-28-65 | † 4,550 |
| Walnut Creek | Pecos River | NW¼NW¼ sec.27, T.15 S., R.25 E., 5 miles above mouth at new U.S. Highway 285 and 4 miles west of Lake Arthur, N. Mex. | 72 | - | 7-29-65 | † 10,000 |
| Tributary | Eagle Draw | E½ sec.15, T.17 S., R.25 E., 1.6 miles above mouth, and 2.7 miles west of Artesia, N. Mex. city limits. | 4.3 | - | 6-13-64 | † 10,700 |
| Eagle Draw | Pecos River | E½ sec.13, T.17 S., R.25 E., and in W½ sec.18, T.17 S., R.26 E., and 0.5 mile west of Artesia, N. Mex. city limits. | 185 | b 1955 | 6-13-64 | d† 7,000 |
| Silver Springs Canyon | Elk Canyon | SE¼SE¼ sec.15, T.15 S., R.13 E., at Mescalero Apache Indian Reservation boundary, 6.2 miles northeast of Cloudcroft, N. Mex. | - | 1958-1964 | 12- 2-64<br>3- 9-65<br>6- 7-65<br>9-27-65 | * .13<br>* .21<br>* .06<br>1.38 |
| do | do | SE¼NE¼ sec.14, T.15 S., R.13 E., at Parshall flume 1 mile downstream from Mescalero Apache Indian Reservation boundary, 7.2 miles northeast of Cloudcroft, N. Mex. | - | 1961-1964 | 12-2-64<br>3- 9-65<br>6- 7-65<br>9-27-65 | * .29<br>* .39<br>* .18<br>1.69 |
| Pecos River | Rio Grande | SW¼NW¼NW¼ sec.27, T.20 S., R.26 E., above Willow Draw, 12 miles northwest of Carlsbad, N. Mex. | - | - | 11-30-64<br>12- 9-64 | *14.7<br>*16.6 |

Measurements at miscellaneous sites

Discharge measurements made at miscellaneous sites during water year 1965

| Stream | Tributary to | Location | Drainage area (sq mi) | Measured previously (water years) | Measurements | |
|---|---|---|---|---|---|---|
| | | | | | Date | Discharge (cfs) |
| | | Rio Grande basin--Continued | | | | |
| Pecos River | Rio Grande | SW¼SW¼NW¼ sec.27, T.20 S., R.26 E., below Willow Draw, 12 miles northwest of Carlsbad, N. Mex. | - | 1964 | 10- 6-64 | *12.3 |
| | | | | | 10-12-64 | *11.1 |
| | | | | | 10-19-64 | * 9.95 |
| | | | | | 11-30-64 | *15.1 |
| | | | | | 12- 9-64 | *16.7 |
| | | | | | 12-15-64 | *18.5 |
| | | | | | 12-21-64 | *19.7 |
| | | | | | 12-29-64 | *20.2 |
| | | | | | 1- 4-65 | *20.3 |
| | | | | | 2- 1-65 | *20.2 |
| | | | | | 4- 1-65 | *18.2 |
| do | do | NW¼SE¼NW¼ sec.5, T.21 S., R.26 E., below Soapberry Draw, 8 miles northwest of Carlsbad, N. Mex. | - | 1960,1964 | 10- 6-64 | *10.6 |
| | | | | | 10-12-64 | * 9.82 |
| | | | | | 10-19-64 | * 9.17 |
| Cass Draw | Drains, canals, Pecos River | NW¼NW¼ sec.33, T.23 S., R.26 E., at U.S. Highway 62, and 6 miles south of Carlsbad, N. Mex. | 9.3 | - | 5-30-65 | † 32,500 |
| Elbow Canyon | Cass Draw | NE¼SW¼ sec.4, T.24 S., R.26 E., at U.S. Highway 62-180 and 7.2 miles south of Carlsbad, N. Mex. | 2.4 | - | 5-30-65 | † 6,410 |
| Black River | Pecos River | NE¼SE¼ sec.3, T.26 S., R.24 E., below Mayes Ranch, 10 miles southwest of White City, N. Mex. | - | 1953-1964 | 10-13-64 | e .39 |
| | | | | | 11-13-64 | e .47 |
| | | | | | 12-10-64 | e .44 |
| | | | | | 2- 4-65 | e .54 |
| | | | | | 3- 4-65 | e .52 |
| | | | | | 4-14-65 | e .56 |
| | | | | | 5-10-65 | e .40 |
| | | | | | 6-11-65 | e .30 |
| | | | | | 7- 6-65 | e .34 |
| | | | | | 8-10-65 | e .35 |
| | | | | | 9- 6-65 | e .37 |
| Rattlesnake Springs | Black River | SE¼SW¼ sec.23, T.25 S., R.24 E., 5 miles south of Carlsbad Caverns, 7.2 miles southwest of White City, and 25 miles southwest of Carlsbad, N. Mex. | - | 1952-1964 | 10-13-64 | e1.40 |
| | | | | | 11-13-64 | e1.57 |
| | | | | | 12-10-64 | e1.90 |
| | | | | | 2- 4-65 | e2.03 |
| | | | | | 3- 4-65 | f1.22 |
| | | | | | 4-14-65 | e .01 |
| | | | | | 5-10-65 | e .06 |
| | | | | | 6-11-65 | e .65 |
| | | | | | 7- 6-65 | e .01 |
| | | | | | 8-10-65 | g .87 |
| | | | | | 9- 06-65 | e .03 |
| Blue Springs | Black River | SE¼ sec.27, T.24 S., R.26 E., above all diversions 5½ miles east of White City, N. Mex. | - | 1907, 1952-1964 | 10-13-64 | e8.67 |
| | | | | | 11-13-64 | e8.08 |
| | | | | | 12-10-64 | e8.35 |
| | | | | | 2- 4-65 | e9.82 |
| | | | | | 3- 4-65 | e9.43 |
| | | | | | 3-30-65 | e9.31 |
| | | | | | 5-10-65 | e8.73 |
| | | | | | 6-11-65 | e8.52 |
| | | | | | 7- 6-65 | e8.53 |
| | | | | | 8-10-65 | e7.55 |
| | | | | | 9- 6-65 | e7.67 |
| Pecos River | Rio Grande | SE¼SW¼NE¼ sec.17, T.24 S., R.29 E., at Fishing Rock Crossing, 4 miles east of Malaga, N. Mex. | - | 1953,1954 1962-1964 | 10-30-64 | 11.0 |
| | | | | | 12- 7-64 | 11.3 |
| | | | | | 12-31-64 | 11.9 |
| | | | | | 2- 5-65 | 11.0 |
| | | | | | 3- 5-65 | 11.8 |
| | | | | | 4- 2-65 | 11.0 |
| | | | | | 4-30-65 | 9.30 |
| | | | | | 5-28-65 | 7.34 |
| | | | | | 6-25-65 | 232 |
| | | | | | 8- 6-65 | 9.5 |
| | | | | | 9- 3-65 | 16.8 |
| | | | | | 9-15-65 | 9.28 |

Measurements at miscellaneous sites

Discharge measurements made at miscellaneous sites during water year 1965

| Stream | Tributary to | Location | Drainage area (sq mi) | Measured previously (water years) | Measurements | |
|---|---|---|---|---|---|---|
| | | | | | Date | Discharge (cfs) |
| | | **Rio Grande basin--Continued** | | | | |
| Pecos River | Rio Grande | NE¼NE¼NE¼ sec.20, T.24 S., R.29 E., at old ford near well USGS 11, 4½ miles southeast of Malaga, N. Mex. | - | 1962-1964 | 10-30-64 | 12.0 |
| | | | | | 12- 7-64 | 12.5 |
| | | | | | 12-31-64 | 13.6 |
| | | | | | 2- 5-65 | 12.8 |
| | | | | | 3- 5-65 | 13.6 |
| | | | | | 4- 2-65 | 11.6 |
| | | | | | 4-30-65 | 9.41 |
| | | | | | 5-28-65 | h 2.44 |
| | | | | | 6-25-65 | h 2.49 |
| | | | | | 8- 6-65 | 10-5 |
| | | | | | 9- 3-65 | h 13.6 |
| | | **San Juan River basin** | | | | |
| San Juan River | Colorado River | SE¼ sec.10, T.30 N., R.8 W., at river mile 140, 5 miles below Navajo Dam. | - | - | 10-12-64 | 401 |
| do | do | SE¼ sec.21, T.29 N., R.13 W., at river mile 99, above Animas River, 1 mile south of Farmington, N. Mex. | a5,880 | 1962-1964 | 10-12-64 | 382 |
| | | | | | 10-28-64 | 445 |
| | | | | | 12- 9-64 | 285 |
| | | Corrections.--In the 1964 State report two dates were in error (the year). They should read: | | | | |
| | | | | | 4-28-64 | 168 |
| | | | | | 9-15-64 | 439 |
| Hogback Indian Canal | San Juan River | E½ sec.8, T.29 N., R.16 W., at river mile 75, below Hogback diversion, 7½ miles east of Shiprock, N. Mex. | - | 1963-1964 | 10-12-64 | 180 |
| | | | | | 12- 9-64 | 0 |
| San Juan River | Colorado River | E½ sec.8, T.29 N., R.16 W., at river mile 75, below Hogback diversion, 7.2 miles east of Shiprock, N. Mex. | - | 1963-1964 | 10-12-64 | 340 |
| | | | | | 11-24-64 | j 621 |
| | | | | | 11-25-64 | 653 |
| | | | | | 12- 9-64 | 556 |
| do | do | Lat 37°00;, long 109°02', in sec.21, T.32 N., R.20 W., on left bank at river mile 31.3, 0.1 mile north of New Mexico-Colorado State line, 1,300 ft upstream from bridge on Colorado State Highway 40, 24 miles northwest of Shiprock, N. Mex. | - | - | 1-20-65 | 2,120 |
| | | | | | 2-25-65 | 1,920 |
| | | | | | 3-30-65 | 1,510 |
| | | | | | 5- 3-65 | 6,030 |
| Sapillo Creek | Gila River | Lat 33°01'55", long 108°10'00", below Lake Roberts spillway, 1¼ miles upstream from Meerschaum, and 18 miles north of Silver City, N. Mex. | - | - | 9-30-64 | 5.61 |
| | | | | | 10-19-64 | 4.20 |
| | | | | | 11- 5-64 | 4.49 |
| | | | | | 12-16-64 | 2.65 |
| | | | | | 1-15-65 | 2.41 |
| | | | | | 2- 9-65 | 2.94 |
| | | | | | 3- 9-65 | 1.70 |
| | | | | | 3-25-65 | 2.96 |
| | | | | | 4-14-65 | 2.96 |
| | | | | | 4-23-65 | 3.18 |
| | | | | | 5-18-65 | 3.52 |
| | | | | | 6- 6-65 | 4.80 |
| | | | | | 6-27-65 | 1.83 |
| | | | | | 7-12-65 | 1.86 |
| | | | | | 7-26-65 | 2.23 |
| | | | | | 8-3-65 | 7.68 |
| | | | | | 9- 7-65 | 9.66 |
| | | | | | 9-24-65 | 4.87 |
| do | do | SW¼ sec.33, T.14 S., R.13 W., in Gila National Forest, above Heart Bar Ranch, 0.7 mile downstream from Meadow Creek, 2 miles downstream from Lake Roberts dam and 18 miles north of Silver City, N. Mex. | a 105 | 1962,1964 | 10-19-64 | 4.50 |
| | | | | | 11- 5-64 | 4.00 |
| | | | | | 12-16-64 | 2.04 |
| | | | | | 1-15-65 | |
| | | | | | 2- 9-6 | |
| | | | | | 3- | |

Measurements at miscellaneous sites

Discharge measurements made at miscellaneous sites during water year 1965

| Stream | Tributary to | Location | Drainage area (sq mi) | Measured previously (water years) | Measurements | |
|---|---|---|---|---|---|---|
| | | | | | Date | Discharge (cfs) |
| | | San Juan River basin--Continued | | | | |
| Mangas Creek | Gila River | NW¼SE¼SW¼ sec.5, T.17 S., R.16 W., about 2,300 ft downstream from old CCC Camp, 9½ miles southeast of Gila, N. Mex. | - | 1953-1956 | 1-16-65 | 1.70 |
| | | | | | 2-11-65 | 2.72 |
| | | | | | 3-24-65 | 2.28 |
| | | | | | 4-12-65 | 1.96 |
| | | | | | 5-17-65 | 1.74 |
| | | | | | 6-16-65 | 1.46 |
| | | | | | 7-16-65 | 1.43 |
| | | | | | 8-17-65 | 2.54 |
| | | | | | 9-16-65 | 1.68 |
| New Model Canal | Gila River | NE¼SW¼ sec.6, T.19 S., R.21 W., 500 ft above New Mexico-Arizona State line and 2-3/4 miles west of Virden, N. Mex. | - | 1939-1953 | 10- 3-64 | 14.0 |
| | | | | 1953-1965 | 10-14-64 | 0 |
| | | | | | 11- 2-64 | 0 |
| | | | | | 11-25-64 | 0 |
| | | | | | 12-14-64 | 8.05 |
| | | | | | 1- 5-65 | 5.85 |
| | | | | | 1-28-65 | 0 |
| | | | | | 2-13-65 | 0 |
| | | | | | 2-16-65 | 0 |
| | | | | | 3-16-65 | 21.2 |
| | | | | | 3-29-65 | 21.7 |
| | | | | | 4-26-65 | 12.6 |
| | | | | | 5-24-65 | 5.14 |
| | | | | | 5-10-65 | 20.8 |
| | | | | | 6-15-65 | 0 |
| | | | | | 6-23-65 | 0 |
| | | | | | 9- 8-65 | 0 |
| Tributary | Lordsburg Draw | NE¼NW¼ sec.36, T.22 S., R.19 W., at U.S. Highway 80, 1.6 miles above mouth, and 1.7 miles west of Lordsburg, N. Mex. city limits. | 2.32 | - | 9-11-64 | † 1,590 |

* Base flow
† Peak flow
a Approximately
b At different sites
c Estimated
d Published in 1964 as 7,170 cfs
e Spring flow
f Discharge affected by pumpage for Carlsbad Caverns water supply
g 0.03 cfs from springs; main flow from supplemental well
h Discharge affected by diversion between Fishing Rock Crossing and this site
j Listed also in San Juan Seepage Investigation

See paragraph under SUPPLEMENTAL DATA, page 7. A seepage or low-flow investigation along a watercourse involves discharge measurements or observations of no flow at selected sites in a given reach of the channel, plus measurements of inflow and diversions, field commentary relative to observations, water samples and temperatures, and any other relevant data. Measuring sites are described to the extent that they may be used in subsequent investigations. Sometimes temporary recording installations are used to supplement records at regular gaging stations in the study of flow trends.

Field work proceeds from the most upstream measuring site. Hydrographers may alternate measurements, or the main reach may be subdivided and hydrographers assigned to each subreach, with overlap measurements to be made at joining points (These would be listed together, the discharge above the line representing last measurement of hydrographer working the upper reach).

Processed data are tabulated and published in the current WSP, or "Surface Water Records of New Mexico" beginning with 1961. For 1965 the results of chemical analyses will be published in Part 2 of this report. Indicated gains or losses may sometimes appear incompatible because of diurnal or other flow variations, or because of small inaccuracies in open-channel measurements. Trends in a given reach may vary with the seasons, or because of regulation. Successive investigations can serve to delineate a progressive change.

## RIO GRANDE BASIN

### Rio Grande, Lobatos, Colo. to Embudo, N. Mex.

Reach.--From gaging station near Lobatos, Colo. to gaging station at Embudo, N. Mex, a river distance of about 68 miles. Most of the upper fifty miles is through deep canyon with little or no flood plain. Downstream portion of reach is still through canyon, but there are wider overflow bars, and small parcels of flood plain with some irrigation. Left-bank tributaries originate in high timbered mountains, and lower valleys have some irrigation. Right-bank tributaries contribute little surface flow except during sustained storms, or from snowmelt. In upper reach a few seeps and springs can be noted at base of canyon.

Previous investigations.--1945, Lobatos to Red River; 1959 and 1963, Lobatos to Embudo.

Date.--Oct. 7,8, 1964.

Summary.--General weather conditions were favorable. River stages were relatively stable. Mainstream discharge measurements were rated good-fair, except the one referenced to "Rattlesnake Trail" where rocky channel and some turbulence were noted. Measurements not used in computed gain or loss in mainstream are enclosed by parentheses.

| Stream and location | Time | Water temp. °F | Discharge, in cubic feet per second | | | |
|---|---|---|---|---|---|---|
| | | | Main Stream | Tributary inflow | Diversion from | Indicated gain or loss |
| **Oct. 7, 1964** | | | | | | |
| Rio Grande near Lobatos, Colo. gaging station | 0830 | 49 | 14.0 | | | |
| Costilla Creek near Jaroso, Colo. | | | | 0 | | |
| Latir Creek at mouth, sec.32, T.30 N., R.12 E. | | | | 0 | | |
| Rio Grande near Cerro, gaging station | 1015 | 56 | 57.0 | | | +43 |
| Rio Grande at Hole-in-Rock Trail, sec.6, T.28 N., R.12 E. | 1240 | 60 | 82.4 | | | +25.4 |
| South ditch near Questa | 0850 | 42 | | | (0.66) | |
| Red River near Questa (gaging station, river mile 9.0) | 1030 | 47 | | (19.4) | | |
| Red River at Canyon mouth, sec.2, T.28 N., R.12 E., at river mile 5.5 | 1200 | 56 | | (18.4) | | |
| Red River below State fish hatchery, sec.9, T.28 N., R.12 E., at river mile 3.5 | 1400 | 60 | | (41.6) | | |
| Red River at mouth, gaging station, river mile 0.15 | 1015 | 54 | | 48.4 | | |
| Rio Grande below Red River, sec.20, T.28 N., R.12 E. | 1100 | 58 | 156 | | | +25.2 |
| San Cristobal Creek below irrigation, sec.20, T.27 N., R.12 E. | 1400 | 60 | | 0.01 | | |
| Rio Hondo at mouth, sec.31, T.27 N., R.12 E. | 1530 | 60 | | 7.64 | | |
| Rio Grande near Arroyo Hondo, gaging station | 1400 | 50 | 150 | | | -13.6 |
| **Oct. 8, 1964** | | | | | | |
| Rio Grande near Arroyo Hondo, gaging station | 0810 | 50 | 156 | | | |
| Rio Grande above Gorge Bridge site | 0930 | 64 | 166 | | | +10 |
| Rio Grande at crossing of high-tension wires | 1330 | 58 | 180 | | | +14 |
| Rio Grande below Rattlesnake Trail, sec.36, T.26 N., R.11 E. | 0930 | 56 | 185 | | | + 5 |
| Rio Pueblo de Taos at mouth, sec.1, T.24 N., R.11 E. | 0900 | 47 | | 9.52 | | |
| Rio Grande below Taos Junction Bridge, gaging station | 0750 | 51 | 173 | | | -21.5 |
| Pilar diversion at Pilar, sec.32, T.24 N., R.11 E. | 1140 | 55 | | | 0.64 | |
| Rio Grande at Glenwoody Bridge, sec.12, T.23 N., R.10 E. | 1250 | 58 | 184 | | | +11.6 |
| Rinconada ditch near Rinconada, sec.15, T.23 N., R.10 E. | 1410 | 58 | | | 1.46 | |
| Bolso ditch at Rinconada, sec.15, T.23 N., R.10 E. | 1500 | 55 | | | .07 | |
| Embudo Creek at mouth, sec.19, T.23 N., R.10 E. | | 54 | | 17.9 | | |
| Rio Grande at Embudo, gaging station | 1240 | 55 | 200 | | | - 0.4 |

RIO GRANDE BASIN
SEEPAGE INVESTIGATIONS

Pecos River - Acme to Lake McMillan, N. Mex.

Reach.--From the regular gage "near Acme" (river mile 94.0) to the head of Lake McMillan, a distance of about 100 river miles. The streambed is generally sandy throughout the reach with long pools and mild riffles. Banks are relatively low and generally covered with salt cedars. The river channel from near Artesia to the head of Kaiser Channel has been realigned during recent years and many of the former elbows have been eliminated. Used U.S.G.S. Plan and Profile of the Pecos River, Lake McMillan to Pecos, N. Mex., maps for river mile and U.S.G.S. topographic maps for land location.
Previous investigations.--At least once a year, 1953-60, 1962-64.
Date.--Jan. 26-27, 1965.
Summary.--On Jan. 26 the weather was clear to overcast with moderate, gusty winds. On Jan. 27 the weather was clear with light winds. Temperatures ranged from a minimum of 16° on Jan. 26 to a maximum of 57° on Jan. 27. There was no precipitation during the period. Slight ice effect was noted on some early morning measurements on Jan. 26, this probably had little if any effect on the results below the "at Bitter Lakes" site (mile 84.9). River stage or discharge fluctuated at various regular and temporary gages as follows:

"Near Acme" (No. 8-3860), mile 94.0 - Discharge fell from 1.6 cfs at 0600 to no flow at 2200 on Jan. 25. On Jan. 26 the discharge changed from no flow at 0500 to 0.6 cfs at 0700 then to no flow again at 1000.

Below Rio Hondo, temporary gage, mile 74.5 -Stage remained nearly constant from 1000 Jan. 25 to 1400 Jan. 26, and then made a drop and recovery of 0.05 ft between 1400 and 2400.

At Dexter bridge, temporary gage, mile 58.1 - On Jan. 25 between 0600 and 1300 the stage fell 0.08 ft,between 1300 and 2400 the stage rose 0.05 ft, and then remained nearly constant through 1000 Jan. 27.

At Hagerman bridge, temporary gage, mile 46.7 - On Jan. 25 the stage dropped 0.12 ft between 1100 and 1600, then between 1600 and 2400 the stage rose 0.09 ft. The stage then remained nearly constant through 1000 Jan. 27.

"Near Lake Arthur" (No. 8-3955), mile 30.6 - Discharge dropped from 38.0 cfs on Jan. 25 to 27 cfs on Jan. 26. The discharge then fluctuated between 28 and 30 cfs through Jan. 27.

"Near Artesia" (No. 8-3965), mile 12.4 - The discharge fluctuated between 31 and 33 cfs Jan. 26-28.

"(Kaiser Channel) near Lakewood" (No. 8-3995) - The discharge fluctuated between 29 and 32 cfs Jan. 26-28.

| Pecos River mile | Stream | Location | Time | Water temp. °F | Discharge, in cubic feet per second | | |
|---|---|---|---|---|---|---|---|
| | | | | | Main stream | Tributary or Diversion | Indicated gain or loss |
| | | Jan. 26, 1965 | | | | | |
| 94.0 | Pecos River | NE¼SW¼NW¼ sec.14, T.9 S., R.25 E., near Acme (regular gaging station) | 0755 | 32 | 0.47 | - | - |
| 91.7 | do. | W½SW¼NE¼ sec.22, T.9 S., R.25 E., at pipeline crossing. | 0905 | 32 | .63 | - | +0.16 |
| 89.1 | do. | SE¼SW¼SE¼ sec.27, T.9 S., R.25 E., above Bitter Lakes.. | 1035 | 42 | 1.44 | - | +.81 |
| 84.9 | do. | NE¼SW¼SW¼ sec.11, T.10 S., R.25 E., at Bitter Lakes above inflow | 1145 | 42 | 2.31 | - | +.87 |
| 84.9 | Inflow* | NE¼SW¼SW¼ sec.11, T.10 S., R.25 E., from old river channel at Bitter Lakes | 1155 | 42 | - | 0.06 | - |
| 78.4 | Pecos River | NE¼NE¼NE¼ sec.33, T.10 S., R.25 E., above mouth of Bitter Creek | 1325 | 46 | 3.29 | - | +.92 |
| - | Bitter Creek* | NW¼NE¼SW¼ sec.28, T.10 S., R.25 E., 0.9 mile above mouth | - | 38 | - | (1.26) | - |
| 78.4 | do. | NE¼NE¼NE¼ sec.33, T.10 S., R.25 E., at mouth..... | 1400 | 46 | - | 1.00 | - |
| 77.3 | Pecos River | SE¼SW¼SW¼ sec.34, T.10 S., R.25 E., below Tatum bridge | 1520 | 46 | 4.59 | - | +.3 |
| 74.7 | do. | SE¼SE¼NE¼ sec.9, T.11 S., R.25 E., above Rio Hondo.... | 1615<br>0725 | 42<br>32 | 4.19<br>4.40 | -<br>- | -.4<br>- |
| - | Hagerman Canal | NW¼SW¼NE¼ sec.31, T.10 S., R.25 E., at head..... | 1445 | 48 | - | (9.16) | - |
| - | Roswell Drainage District Y-line* | NW¼SW¼SE¼ sec.5, T.11 S., R.25 E., at entrance to Hagerman Canal | - | 57 | - | (.7) | - |
| - | South Spring Creek* | SE¼SE¼SE¼ sec.8, T.11 S., R.25 E., at entrance to Hagerman Canal | - | 46 | - | (1.48) | - |
| - | Pamona Drain* | NW¼NW¼SE¼ sec.22, T.11 S., R.25 E., at entrance to Hagerman Canal | - | 57 | - | (1.57) | - |
| - | Rio Hondo | NE¼SW¼SE¼ sec.32, T.10 S., R.25 E., at U. S. Hwy. 380 bridge | - | 39 | - | (2.30) | - |
| 74.6 | do. | NE¼NE¼SE¼ sec.9, T.11 S., R.25 E., at mouth..... | 0755 | 41 | - | 5.50 | - |
| 74.5 | Pecos River | SE¼NE¼SE¼ sec.9, T.11 S., R.25 E., below Rio Hondo (temporary recorder) | 0835 | 37 | 9.62 | - | -.28 |

Note.--Measurements not involved in the computation of gains or losses of the Pecos River are enclosed in parentheses.
* Right bank.

Pecos River - Acme to Lake McMillan, N. Mex.--Continued

| Pecos River mile | Stream | Location | Time | Water temp. °F | Discharge, in cubic feet per second | | |
|---|---|---|---|---|---|---|---|
| | | | | | Main stream | Tributary or Diversion | Indicated gain or loss |
| | | Jan. 26, 1965 --Continued | | | | | |
| 74.1 | East Grand Plains Drainage District D-line* | SE¼SW¼SW¼ sec.10, T.11 S., R.25 E., at mouth..... | 0715 | 58 | - | 0.32 | - |
| 73.6 | East Grand Plains Drainage District A-B-C-line* | NW¼SW¼NE¼ sec.15, T.11 S., R.25 E., at mouth..... | 0730 | 44 | - | .76 | - |
| 72.7 | Gravel Pit Drain* | SE¼SE¼NW¼ sec.14, T.11 S., R.25 E., at mouth..... | - | 45 | - | .49 | - |
| 71.4 | Pecos River | NW¼SE¼SW¼ sec.13, T.11 S., R.25 E..... | 0935 | 37 | 14.1 | - | +2.9 |
| 67.6 | do. | SW¼SW¼NW¼ sec.36, T.11 S., R.25 E., below Oasis-Miller drain | 1110 | 41 | 16.4 | - | +2.3 |
| 64.5 | do. | S½NE¼NE¼ sec.17, T.12 S., R.26 E., at Transwestern pipeline crossing | 1215 | 44 | 18.0 | - | +1.6 |
| 61.7 | do. | SE¼NE¼SE¼ sec.29, T.12 S., R.26 E..... | 1320 | 45 | 17.2 | - | -.8 |
| 61.4 | Nine Mile Draw* | SW¼SE¼SE¼ sec.29, T.12 S., R.26 E., at mouth..... | 0815 | 34 | - | .46 | - |
| 60.9 | Pecos River | NW¼SW¼NW¼ sec.33, T.12 S., R.26 E..... | 1420 | 45 | 18.0 | - | +.34 |
| 58.4 | Zuber Hollow wasteway* | SE¼SE¼SE¼ sec.4, T.13 S., R.26 E., at mouth..... | 0925 | 33 | - | .38 | - |
| 58.1 | Pecos River | SW¼NW¼NW¼ sec.10, T.13 S., R.26 E., at Dexter bridge (temporary recorder) | 1510<br>0705 | 47<br>36 | 19.6<br>21.2 | -<br>- | +1.22<br>- |
| 55.5 | Berry drain* | NW¼NW¼SW¼ sec.14, T.13 S., R.26 E., at mouth..... | 1000 | 32 | - | .30 | - |
| 55.4 | Pecos River | NE¼NW¼SW¼ sec.14, T.13 S., R.26 E..... | 0755 | 34 | 20.6 | - | -.9 |
| 53.2 | do. | SW¼SW¼SE¼ sec.23, T.13 S., R.26 E..... | 0840 | 34 | 21.8 | - | +1.2 |
| 50.7 | do. | NW¼SW¼NW¼ sec.35, T.13 S., R.26 E..... | 0930 | 37 | 23.5 | - | +1.7 |
| - | Rio Felix* | SW¼SE¼SE¼ sec.34, T.13 S., R.26 E., ¼ mile above mouth | 1010 | 43 | - | (.92) | - |
| 50.0 | do. | NW¼SW¼SE¼ sec.35, T.13 S., R.26 E., at mouth..... | 1045 | 43 | - | 1.23 | (+.31) |
| 49.2 | Pecos River | SW¼SE¼NW¼ sec.2, T.14 S., R.26 E..... | 1120 | 42 | 23.3 | - | -1.43 |
| 47.4 | Hagerman Drainage District D-line* | SE¼NW¼NW¼ sec.12, T.14 S., R.26 E., at mouth..... | 1130 | 60 | - | .19 | - |
| 46.7 | Pecos River | SE¼NE¼NE¼ sec.12, T.14 S., R.26 E., at Hagerman bridge (temporary recorder) | 1240 | 45 | 26.5 | - | +3.01 |
| 44.2 | do. | SW¼SW¼SE¼ sec.13, T.14 S., R.26 E..... | 1325 | 47 | 24.7 | - | -1.8 |
| 43.0 | do. | NW¼NW¼NE¼ sec.25, T.14 S., R.26 E..... | 1410 | 47 | 27.0 | - | +2.3 |
| 41.9 | do. | NE¼SW¼SW¼ sec.25, T.14 S., R.26 E..... | 1520 | 46 | 26.7 | - | -.3 |

Note.--Measurements not involved in the computation of gains or losses of the Pecos River are enclosed in parentheses.
* Right bank.

Pecos River - Acme to Lake McMillan, N. Mex.--Continued

| Pecos River mile | Stream | Location | Time | Water temp. °F | Discharge, in cubic feet per second | | |
|---|---|---|---|---|---|---|---|
| | | | | | Main stream | Tributary or Diversion | Indicated gain or loss |
| | | Jan. 27, 1965 | | | | | |
| 41.9 | Pecos River | NE¼SW¼SW¼ sec.25, T.14 S., R.26 E. | 0800 | 34 | a 23.9 | - | -2.8 |
| 39.8 | do. | SE¼SE¼SW¼ sec.31, T.14 S., R.27 E., above Buffalo Valley pump | 0900 | 34 | 24.8 | - | +.9 |
| 38.6 | R. S. Derrick drain† | SE¼NE¼SE¼ sec.6, T.15 S., R.27 E. | 0800 | 38 | - | .04 | - |
| 35.1 | Steve Mason drain† | NE¼NW¼SW¼ sec.18, T.15 S., R.27 E., at mouth | 0830 | 38 | - | .08 | - |
| 34.7 | Pecos River | SW¼SE¼SE¼ sec.13, T.15 S., R.26 E. | 1000 | 36 | 26.7 | - | +1.78 |
| 30.6 | do. | NE¼SW¼NE¼ sec.27, T.15 S., R.26 E., near Lake Arthur (regular gaging station) | 1040 | 36 | 28.0 | - | +1.3 |
| 26.5 | do. | SE¼SE¼SE¼ sec.32, T.15 S., R.26 E. | 1135<br>0820 | 40<br>33 | 26.5<br>b 26.0 | -<br>- | -1.5<br>- |
| 21.1 | Lawrence Ranch drain* | SW¼SE¼SW¼ sec.23, T.16 S., R.26 E., at mouth | 0935 | 34 | - | .46 | - |
| 20.6 | Cottonwood Creek* | NE¼SE¼NW¼ sec.26, T.16 S., R. 26 E., at mouth | 0925 | 32 | - | .35 | - |
| 20.5 | Pecos River | NE¼SE¼NW¼ sec.26, T.16 S., R.26 E. | 0955 | 35 | 28.3 | - | +1.49 |
| 16.0 | do. | NW¼NW¼NW¼ sec.12, T.17 S., R.26 E. | 1150 | 41 | 28.2 | - | -.1 |
| 16.0 | Artesia sewage effluent* | NW¼NW¼NW¼ sec.12, T.17 S., R.26 E., at mouth | 1210 | 39 | - | .42 | - |
| 12.4 | Pecos River | SE¼NW¼NW¼ sec.18, T.17 S., R.27 E., near Artesia (regular gaging station) | 1305<br>0850 | 44<br>35 | 30.8<br>32.0 | -<br>- | +2.18<br>- |
| 3.4 | do. | NW¼NW¼SE¼ sec.7, T.18 S., R.27 E. | 1030 | 38 | 32.4 | - | +.4 |
| - | do. | NE¼NW¼SE¼ sec.5, T.19 S., R.27 E., (Kaiser Channel) near Lakewood (regular gaging station) | 1210 | 40 | 30.6 | - | -1.8 |
| - | do. | SE¼NE¼SE¼ sec.18, T.19 S., R.27 E. | 1400 | 46 | 32.6 | - | +2.0 |

* Right bank.
† Left bank.
a Stage dropped 0.01 ft from 1520 Jan. 26 to 0800 Jan. 27.
b Stage dropped 0.01 ft from 0820 to 1130.

## SAN JUAN RIVER BASIN
## SEEPAGE INVESTIGATIONS

### San Juan River - Navajo Dam to Mancos River

Reach.--From 150 ft below Navajo Dam outlets to a point just above Mancos River, a distance of 107 miles. Channel width will vary from 50 to 300 ft, with pools, riffles, and meanders. Banks may be bare, or covered with coarse grass, low brush, willows, cottonwoods. Salt cedars are not entrenched here as on Pecos River and lower Rio Grande. River miles are from a survey of 1939, printed in 1948. Mile 0 is about a mile downstream from Montezuma Creek in Utah.

Previous investigations.--WSP 859 contains results of a hydrographic survey made in 1938. In October 1958 a seepage study was made from Farmington to Shiprock. Runs from Rosa to Shiprock were made in December 1958 and September 1959. During 1963 water year a large number of miscellaneous measurements was made in San Juan basin (see p. 217, 218 of "Surface Water Records of New Mexico").

Date.--Nov. 24, 25, 1964.

Summary.--Daytime temperatures on the 24th varied from 27° to 48°, on the 25th from 33° to 48°. This range in temperature is not unfavorable; it did cause diurnal fluctuations in Animas and La Plata Rivers. No mention of ice was made with any measurement; observed water temperatures are listed below.

Overlap measurements were made at river mile 74.5 from 24th to 25th to preserve continuity on second day.

Results of discharge measurements are considered satisfactory. Return waste flow is not always obvious, and none was noted or measured. Flow reduction below Navajo Dam for several hours late on 23d caused a trough to move through the measured reach on 24th and 25th. Indicated gains and losses should be used with caution and due concern for the relatively unfavorable conditions.

San Juan River - Navajo Dam to Mancos River--Continued

| San Juan River mile | Stream and location | Time | Water temp. °F | Discharge, in cubic feet per second | | | |
|---|---|---|---|---|---|---|---|
| | | | | Main Stem | Tributary inflow | Diversion from | Indicated gain or loss |
| | **Nov. 24, 1964** | | | | | | |
| 143+ | San Juan River below Navajo Dam | 0920 | | 319 | | | |
| 140 | San Juan River below Simon Canyon | 1145 | | 308 | | | - 11 |
| | Lower Martinez ditch | | | | | 0 | |
| | Archuleta ditch | | | | | 0 | |
| 139 | San Juan River near Archuleta (gaging station) | 0830 | 44 | 322 | | | + 14 |
| | Citizens ditch | 0915 | 34 | | | 77 | |
| | Pump Canyon near Archuleta | 0905 | | | 0.035 | | |
| | Turley ditch | 0855 | 40 | | | 4.89 | |
| | Hammond Canal | | | | | 0 | |
| 124.8 | San Juan River near Blanco | 1000 | 43 | 251 | | | + 11a |
| | Slane Canyon near Blanco | 0950 | | | .025 | | |
| | Armenta ditch | | | | | 0 | |
| | Medina ditch | | | | | 0 | |
| 106.1 | San Juan River near Fair Grounds | 1100 | 37 | 361 | | | +110a |
| | Lawson ditch | | | | | 0 | |
| 98.5 | San Juan River above mouth of Animas | 1100 | 36 | 322b | | | - 39 |
| (1.3) | Animas River at Farmington (gaging station) | 1210 | 42 | | 220 | | |
| | Farmers Mutual ditch at Farmington | 1500 | 42 | | | 115c | |
| 97.5 | San Juan River at Farmington (gaging station) | 1425 | 38 | 514 | | | + 87d |
| | Glade Arroyo at Farmington | 1425 | 41 | | 8.56 | | |
| | Fruitland Indian Diversion | | | | | 0 | |
| (0.34) | La Plata River near Farmington (gaging station) | 1350 | 37 | | .43 | | |
| 93 | San Juan River below mouth of La Plata River | 1515 | 36 | 537 | | | + 14 |
| | Farmers Mutual below mouth of La Plata River | 1555 | 42 | | | 82.3 | |
| | Utah Diversion | | | | | 0 | |
| | Jewett Valley ditch | 1640 | 40 | | | 27.3 | |
| 74.5 | San Juan River at Hogback | 1455 | | 621 | | | +109a |
| | Hogback Indian Diversion | 1530 | | | | 0 | |
| | Indian Canals south of San Juan River at Hogback | 1430 | | | | 0 | |
| | **Nov. 25, 1964** | | | | | | |
| 74.5 | San Juan River at Hogback | 0915 | 34 | 653 | | | |
| | Hogback Indian Diversion | | | | | 0 | |
| | Indian Canals south of San Juan River at Hogback | | | | | 0 | |
| 70.4 | San Juan River 3.8 road miles below Hogback | 1000 | 39 | 673 | | | + 20 |
| 68 | San Juan River 6.0 miles below Hogback | 0920 | | 632 | | | - 41 |
| | Chaco Canyon near Shiprock | 1025 | 35 | | 10.4 | | |
| 63.6 | San Juan River at Bridge at Shiprock | 1030 | 34 | 651 | | | + 9 |
| | Drain at Shiprock | 1200 | 37 | | 1.35 | | |
| 60.8 | San Juan River at Shiprock (gaging station) | 1250 | 42 | 680 | | | + 28 |
| 36 | San Juan River above Mancos River | 0950 | | 626 | | | - 54 |

a Some of this apparent gain probably reflects return waste (minimum irrigation at this season).
b This measurement was in a trough created by regulation of Navajo Dam late on 23d.
c This diversion is from Animas River, not from San Juan.
d Some of apparent gain may be from return waste; Farmers Mutual ditch diverts from Animas River between gaging station and mouth and bypasses gaging station on San Juan River at Farmington. Therefore, the inflow from Animas River is 220 less 115, or 105 cfs.

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2.51
3.08
3.07
8.59
3.25
2.78
2.95
2.09
0.98
0.73
15.9
13.1
5.35
9-65
25-65
4-14-65
4-23-65
5-18-65
6- 6-65
6-27-65
7-12-65
8- 3-65
9- 7-65
9-24-65