

1962

# Surface Water Records of Colorado



UNITED STATES DEPARTMENT OF THE INTERIOR-GEOLOGICAL SURVEY

Prepared in cooperation with the State of Colorado  
and with other agencies

SURFACE WATER RECORDS  
OF COLORADO

1962

Prepared in cooperation with

Colorado Water Conservation Board  
Office of the State Engineer  
Southeastern Colorado Water Conservancy District  
Arkansas River Compact Administration  
Colorado Agricultural Experiment Station  
Colorado River Water Conservation District  
County of Boulder, Board of County Commissioners  
City and County of Denver, Board of Water Commissioners  
City of Colorado Springs, Department of Public Utilities  
Corps of Engineers, U.S. Army  
Bureau of Reclamation, U.S. Department of the Interior  
Soil Conservation Service, U.S. Department of Agriculture

Copies of this report may be obtained from  
District Engineer, Surface Water Branch  
U. S. Geological Survey  
Denver Federal Center  
Denver 25, Colorado



# CALENDAR FOR WATER YEAR 1962

## OCTOBER 1961

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
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29	30	31				

## NOVEMBER 1961

S	M	T	W	T	F	S
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## DECEMBER 1961

S	M	T	W	T	F	S
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10	11	12	13	14	15	16
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31						

## JANUARY 1962

S	M	T	W	T	F	S
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## FEBRUARY 1962

S	M	T	W	T	F	S
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25	26	27	28			

## MARCH 1962

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## APRIL 1962

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29	30					

## MAY 1962

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## JUNE 1962

S	M	T	W	T	F	S
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## JULY 1962

S	M	T	W	T	F	S
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15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

## AUGUST 1962

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 1962

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						

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## SURFACE WATER RECORDS OF COLORADO, 1962

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### INTRODUCTION

The surface-water records for the 1962 water year for gaging stations and miscellaneous sites within the State of Colorado 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 J. W. Odell, district engineer, Surface Water Branch.

Through September 30, 1960, the records of discharge and stage of streams and contents and stage of lakes and 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 Colorado were contained in Parts 6B, 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.



## COOPERATION

Cooperative agreements between the U.S. Geological Survey and organizations of the State of Colorado for the systematic collection of streamflow records began in 1895. Organizations that supplied data are acknowledged in station descriptions. Organizations that assisted in collecting data through cooperative agreements with the Survey are:

Colorado Water Conservation Board, F. L. Sparks, director.  
Office of the State Engineer, J. E. Whitten.  
Southeastern Colorado Water Conservancy District,  
C. H. Boustead, executive secretary.  
Arkansas River Compact Administration, F. M. Bell, chairman.  
Colorado Agricultural Experiment Station, S. G. Wheeler,  
director.  
Colorado River Water Conservation District, P. P. Smith,  
secretary-engineer.  
County of Boulder, Board of County Commissioners,  
Joe Smith, chairman.  
City and County of Denver, Board of Water Commissioners,  
T. P. Campbell, president.  
City of Colorado Springs, Department of Public Utilities,  
R. D. Nixon, director.

Financial assistance was also provided by Corps of Engineers, U.S. Army; Bureau of Reclamation, U.S. Department of the Interior; and Soil Conservation Service, U.S. Department of Agriculture.

The New Mexico district of the U.S. Geological Survey furnished records for six gaging stations published in this report.

## DEFINITION 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 gage stations where a continuous record of discharge is obtained.

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.

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.

#### 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 indentation in the listing of gaging stations in the table of contents of this report represents one rank. This downstream order and system of indentation 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 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. 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 6-7520.00, includes the part number "6" 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 6-7520.00 appears as 6-7520, 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 water-stage recorder that gives a continuous chart of 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.

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 is 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, 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 1962 water year is shown on page II 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 discharge if there is little or no regulation; the minimum daily discharge if there is extensive regulation (also the

minimum discharge if useful); and the minimum gage height if it is significant. 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. 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 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 or ditches.

The daily table gives the discharge corresponding to the daily mean gage height unless there are large or rapid changes in discharge during the 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. For stations equipped with nonrecording gages, the daily discharge corresponds to once-daily readings of the gage or to the mean of twice-daily readings; but for periods of rapidly changing stage the discharge is determined from a gage-height graph based on gage readings.

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. Discharge for the month is expressed in acre-feet (line headed "Ac-ft").

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. 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. The methods used in computing data for such footnoted periods have been explained in preceding paragraphs.

For most gaging stations on lakes and reservoirs the data presented comprise a description of the station a monthly summary table of stage and contents. For some reservoirs a table showing daily contents or stage is given. A skeleton table of capacity at given stages is published each year for all reservoirs for which records are published on a daily basis, but it is not published for reservoirs for which only monthly data are given.

#### 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 a few such stations,

monthly and annual figures are adjusted for diversions or storage above station. 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

Discharge measurements at miscellaneous sites are given at the end of this report.

Information of a more detailed nature than that published for most of the gaging stations is on file in the district office, such as discharge measurements and recorder charts or nonrecording-gage readings. Some gaging-station records in the State through 1957 have been analyzed with an 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. At some gaging stations water samples are collected from the streams for the purpose of making chemical analyses; computing dissolved solids, suspended sediment loads, and particle-size distribution; or measuring water temperatures. For most of these samples the results are published in an annual series of U.S. Geological Survey water-supply papers entitled "Quality of Surface Waters of the United States." Information on the availability of electronic computer analyses, unpublished data, or quality of water records may generally be obtained from the district office.

RECORDS OF DISCHARGE COLLECTED BY AGENCIES OTHER THAN THE  
GEOLOGICAL SURVEY

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The table below contains a list of gaging stations at which records of discharge were collected during the water year October 1961 to September 1962 by the Colorado Springs Water Department. The records of these stations are not contained in publications of the Geological Survey.

Stream	Location	Period
Bear Creek.....	Near Colorado Springs, Colo.....	1918-62*
Boehmer Creek.....	Near Pikes Peak, Colo.....	1909-62*
Cabin Creek.....	Near Halfway, Colo.....	1906-62*
Crystal Creek.....	Below reservoir near Green Mountain Falls, Colo.	1935-62
Do.....	Near Green Mountain Falls, Colo.	1935-62
French Creek.....	Near Cascade, Colo.....	1935-62
Lion Creek.....	Near Halfway, Colo.....	1908 62*†
Little Beaver Creek..	Near Pikes Peak, Colo.....	1909-62*†
North Cascade Creek..	At Cascade, Colo.....	1935-62
North Catamount Creek	Near Green Mountain Falls, Colo.	1935-62†
Sackett Creek.....	Near Pikes Peak, Colo.....	1909-62*†
Sheep Creek.....	Near Halfway, Colo.....	1908-62*†
South Cascade Creek..	At Cascade, Colo.....	1935-62†
South Catamount Creek	Below reservoir near Green Mountain Falls, Colo.	1935-62
Do.....	Near Green Mountain Falls, Colo.	1935-62
South Ruxton Creek...	At Halfway, Colo.....	1906-62*
Sutherland Creek.....	Near Manitou, Colo.....	1918-62*

\* Records prior to 1931 are contained in water-supply papers published by the Geological Survey.

† Records prior to 1951 published in WSP 1311.

## PLATTE RIVER BASIN

6-6160. North Fork Michigan River near Gould, Colo.

Location.--Lat 40°33'10", long 106°00'36", in NE¼NE¼ sec.27, T.7 N., R.77 W., on right bank 2 miles northeast of Gould, 3½ miles upstream from mouth, and 19 miles southeast of Walden.

Drainage area.--20.2 sq mi.

Records available.--October 1950 to September 1962.

Gage.--Water-stage recorder. Datum of gage is 8,848 ft above mean sea level, unadjusted.

Average discharge.--12 years, 17.8 cfs (12,890 acre-ft per year).

Extremes.--Maximum discharge during year, 282 cfs May 11 (gage height, 2.40 ft), from rating curve extended above 160 cfs; maximum gage height recorded, 3.96 ft Apr. 17 (backwater from ice); minimum discharge not determined.  
1950-62: Maximum discharge, 290 cfs May 25, 1961 (gage height, 3.15 ft), from rating curve extended above 160 cfs; maximum gage height recorded, that of Apr. 17, 1962 (backwater from ice); minimum discharge not determined.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. One diversion above station for irrigation of hay meadows below.

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	26	20	8.8					*52	103	68	15	5.5
2	26	19	8.5		(*)			52	110	61	12	5.2
3	26	17	8.5					72	112	*58	13	5.0
4	27	15	8.2					97	115	49	14	5.0
5	30	13	8.2					112	114	44	12	4.6
6	32	*13	*8.5			(*)		118	109	40	11	4.6
7	35	14	8.0					156	*108	38	*11	4.6
8	*35	15	8.0				5	130	96	36	11	5.0
9	36	16					(*)	164	87	33	11	5.0
10	35	16						210	89	32	10	4.8
11	32	16						210	90	30	9.2	*4.5
12	28	16		(*)				210	93	34	9.2	4.3
13	27	15						172	94	35	9.0	4.3
14	26	15						136	97	30	8.5	4.3
15	26	15						126	90	26	7.8	4.3
16	26	16		6	4.5	3.5		*128	86	25	7.5	4.5
17	26	15						124	83	24	7.2	4.5
18	26	15					30	120	78	22	7.5	4.3
19	25	14	7.5					112	*78	22	7.8	4.3
20	24	13						109	83	21	7.2	4.5
21	24	13					61	99	85	20	6.6	4.8
22	24	12					57	94	85	19	6.8	6.3
23	24	11					65	*100	83	18	7.2	5.5
24	23	11					90	96	80	18	7.8	5.2
25	24	10					109	93	78	17	6.6	5.2
26	23	10					*96	94	74	18	6.3	5.0
27	22	9.8					80	102	73	16	6.1	5.2
28	21	9.8					94	93	69	15	6.1	6.1
29	20	9.0					86	99	73	15	5.7	7.0
30	24	8.8					59	90	76	14	5.9	6.8
31	22	-----					-----	92	-----	15	5.9	-----
Total	825	412.4	239.2	186	126.0	108.5	1,022	3,662	2,691	913	271.9	150.2
Mean	26.6	13.7	7.72	6	4.5	3.5	34.1	118	89.7	29.5	8.77	5.01
Ac-ft	1,640	818	474	369	250	215	2,030	7,260	5,340	1,810	539	298

Calendar year 1961: Max 192 Min - Mean 22.3 Ac-ft 16,170

Water year 1961-62: Max 210 Min - Mean 29.1 Ac-ft 21,040

Peak discharge (base, 100 cfs).--Apr. 25 (2030) 127 cfs (2.56 ft); May 9 (1930) 258 cfs (2.75 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 3-8, Apr. 18-20 (no gage-height record Dec. 9 to Apr. 17).



## PLATTE RIVER BASIN

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6-6200. North Platte River near Northgate, Colo.

Location.--Lat 40°56'10", long 106°20'21", in SW¼SE¼ sec.11, T.11 N., R.80 W., on right bank 350 ft downstream from bridge on State Highway 125, 0.8 mile upstream from Camp Creek, 4.2 miles northwest of Northgate, and 4.4 miles south of Colorado-Wyoming State line.

Drainage area.--1,431 sq mi.

Records available.--May to November 1904 (published as "near Pinkhampton"), May 1915 to September 1962. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 7,810.39 ft above mean sea level, adjustment of 1912. May 11 to Nov. 9, 1904, staff gage 0.8 mile downstream at different datum. Apr. 30, 1915, to May 12, 1916, staff gage, May 13, 1916, to Sept. 17, 1917, chain gage, Sept. 18, 1917, to Apr. 7, 1918, staff gage, and Apr. 8, 1918, to Aug. 21, 1961, water-stage recorder, at site 0.8 mile downstream at datum 3.36 ft lower.

Average discharge.--47 years, 441 cfs (319,300 acre-ft per year).

Extremes.--Maximum discharge during year, 5,100 cfs Apr. 16 (gage height, 6.90 ft), from rating curve extended above 3,300 cfs; maximum gage height recorded, 8.84 ft Apr. 9 (ice jam); minimum daily discharge, 46 cfs Sept. 19: 1904, 1915-62: Maximum discharge, 6,720 cfs June 11, 1923 (gage height, 6.24 ft, site then in use); maximum gage height recorded, that of Apr. 9, 1962; minimum daily discharge, 19 cfs July 17-19, 1934.

Remarks.--Records good except those for periods of ice effect, which are poor. Diversions for irrigation of about 130,000 acres of hay meadows above station. Transbasin diversions above station to Cache la Poudre River basin (see elsewhere in this report).

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

Oct. 1 to Apr. 17

Apr. 18 to Sept. 30

2.1	58	3.5	770	1.8	38	3.5	700
2.3	115	4.0	1,200	2.2	112	4.0	1,090
2.6	235	6.0	3,650	2.6	225	5.0	2,190
3.0	435	6.9	5,100	3.0	395	6.5	4,360

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,070	514	312	110	143	110	250	*2,640	1,250	2,060	422	146
2	826	495	340	100	*132	110	350	2,120	1,330	2,030	406	130
3	681	350	355	100	132	120	550	1,870	1,160	1,880	380	119
4	625	365	289	100	132	120	600	1,760	1,080	1,600	375	112
5	592	350	280	110	132	120	800	1,820	1,060	1,440	365	105
6	573	*330	270	120	136	*132	1,100	2,050	*1,120	1,350	*340	97
7	560	429	230	120	140	122	1,500	2,270	1,310	*1,240	322	94
8	*560	411	240	120	146	122	1,400	2,490	1,640	1,170	300	90
9	580	417	200	120	146	122	1,300	2,620	1,570	1,160	284	86
10	592	411	170	80	150	126	1,300	2,740	1,330	1,150	284	*85
11	566	405	170	*74	140	130	1,300	2,840	1,120	1,030	272	79
12	540	399	180	74	140	130	1,500	2,900	1,150	944	253	76
13	521	340	190	76	130	130	2,180	2,950	1,220	928	250	68
14	495	307	210	76	130	130	*2,960	3,060	1,320	976	242	61
15	477	335	210	72	130	130	3,900	2,800	1,450	1,000	225	56
16	465	370	180	74	130	130	4,590	*2,320	1,630	856	208	51
17	471	370	180	77	120	125	4,860	2,140	2,170	798	202	51
18	477	320	190	80	120	130	4,220	2,110	2,060	770	195	49
19	477	302	200	82	110	130	3,720	1,930	1,670	749	202	46
20	453	335	180	85	120	140	3,640	1,610	1,320	735	215	49
21	453	335	170	100	120	140	3,620	1,380	1,390	694	215	49
22	471	289	150	106	120	140	3,370	1,290	1,560	648	202	59
23	453	266	150	122	110	140	3,160	1,260	1,650	622	183	68
24	429	325	140	126	100	140	2,950	1,250	*1,720	602	205	72
25	411	387	140	126	110	140	2,940	1,090	1,810	576	225	76
26	411	350	140	126	110	160	*3,150	1,060	1,810	564	202	76
27	447	355	150	126	100	220	3,300	994	1,710	558	174	72
28	521	381	130	132	100	280	3,130	1,100	1,580	546	162	70
29	521	370	140	136	-	280	2,850	1,200	1,570	516	151	76
30	459	370	140	136	-----	270	2,840	1,160	1,910	468	140	99
31	495	-----	130	143	-----	260	-----	1,120	-----	439	140	-----
Total	16,672	10,983	6,156	3,229	3,529	4,679	73,330	59,944	44,670	30,099	7,741	2,367
Mean	538	366	199	104	126	151	2,444	1,934	1,489	971	250	78.9
Ac-ft	33,070	21,780	12,210	6,400	7,000	9,280	145,400	118,900	88,600	59,700	15,350	4,690

Calendar year 1961: Max 1,670 Min 56 Mean 394 Ac-ft 285,000  
 Water year 1961-62: Max 4,860 Min 46 Mean 722 Ac-ft 522,400

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 5, 6, Dec. 5 to Apr. 12 (no gage-height record Jan. 8-11, Feb. 27 to Mar. 5, Mar. 11 to Apr. 5).

## PLATTE RIVER BASIN

6-6575. Laramie River near Glendevey, Colo.

Location.--Lat 40°48'00", long 105°52'40", in NW¼ sec.25, T.10 N., R.76 W., on left bank just upstream from Stub Creek, 180 ft downstream from bridge on county road, 250 ft downstream from Nunn Creek, and 1½ miles north of Glendevey Post Office.

Drainage area.--101 sq mi.

Records available.--June 1904 to October 1905, August 1910 to September 1962. Monthly discharge only for some periods, published in WSP 1310. Published as "at Glendevey" 1905, 1910-18.

Gage.--Water-stage recorder. Altitude of gage is 8,230 ft (from topographic map). Prior to Nov. 7, 1910, staff gage, water-stage recorder thereafter. Prior to Sept. 21, 1922, at datum 1.22 ft higher, Sept. 21, 1922, to Sept. 26, 1923, at datum 1.94 ft higher, July 9, 1929, to July 22, 1931, at datum 2.73 ft higher, and July 23, 1931, to Sept. 19, 1935, at datum 2.09 ft higher; all at site 180 ft upstream. Sept. 27, 1923, to July 8, 1929, at site 140 ft upstream at datum 1.35 ft higher.

Average discharge.--53 years, 74.1 cfs (53,650 acre-ft per year).

Extremes.--Maximum discharge during year, 563 cfs May 9 (gage height, 3.38 ft); minimum daily, 16 cfs Mar. 14, 15. 1904-5, 1910-62: Maximum discharge, 2,240 cfs June 9, 1923 (gage height, 4.55 ft, site and datum then in use, from floodmarks), from rating curve extended above 1,400 cfs; minimum daily recorded, 5 cfs Feb. 14, 15, 1911, but may have been less during winter periods of no gage-height record.

Remarks.--Records good except those June 12 to July 14 and those for periods of ice effect, which are fair. Diversions for irrigation of about 700 acres of hay meadows above station. Transbasin diversions above station to Cache la Poudre River and tributaries (see elsewhere in this report).

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

0.6	11	2.0	190
.8	20	3.0	440
1.0	38	3.8	760
1.5	100		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	85	71	40	35	25	18	22	139	244	308	52	20
2	77	59	39	33	*24	19	21	132	228	383	47	21
3	77	59	39	31	24	19	22	132	236	434	47	20
4	77	56	42	32	22	20	25	166	342	410	46	20
5	81	35	*47	32	20	20	26	222	353	389	41	29
6	88	*35	42	32	18	*20	26	288	*350	371	*39	38
7	91	45	40	33	18	21	26	398	371	*365	38	39
8	*90	61	45	33	18	20	24	464	348	371	36	40
9	88	57	40	30	18	20	24	488	315	348	37	37
10	91	57	35	25	20	19	*24	473	328	318	37	*34
11	86	54	35	*27	22	18	25	470	368	295	36	32
12	88	51	36	30	26	17	26	464	374	295	36	31
13	80	51	38	29	25	17	32	425	428	325	36	27
14	80	45	40	29	26	16	46	362	473	285	35	29
15	80	50	39	29	27	16	71	300	479	230	33	30
16	81	52	39	28	22	17	84	*270	*431	214	33	29
17	82	50	39	28	22	18	88	270	383	196	34	29
18	84	51	40	28	23	19	108	244	332	102	36	28
19	84	45	40	27	24	20	125	242	318	72	35	27
20	78	50	39	28	24	21	152	250	270	54	33	30
21	76	47	36	30	22	20	152	230	440	45	30	33
22	76	45	37	29	23	20	152	206	*518	40	30	52
23	59	46	37	28	22	20	148	210	500	48	32	39
24	65	45	37	27	24	20	176	212	521	48	33	35
25	65	44	37	26	26	21	216	222	494	56	27	33
26	70	42	36	27	23	19	222	222	476	75	26	31
27	72	45	37	27	20	21	212	218	368	85	25	31
28	72	41	39	27	17	22	188	210	226	80	24	34
29	65	38	39	26	-	24	190	210	255	72	21	40
30	72	40	39	25	-----	21	158	200	345	65	19	47
31	73	-----	37	25	-----	21	-----	212	-----	54	21	-----
Total	2,433	1,467	1,205	896	625	604	2,811	8,551	11,114	6,433	1,055	965
Mean	78.5	48.9	38.9	28.9	22.3	19.5	93.7	276	370	208	34.0	32.2
Ac-ft	4,830	2,910	2,390	1,780	1,240	1,200	5,580	16,960	22,040	12,760	2,090	1,910

Calendar year 1961: Max 680 Min 11 Mean 87.7 Ac-ft 63,520

Water year 1961-62: Max 521 Min 16 Mean 105 Ac-ft 75,690

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 4-7, 14-17, 19, 20, 22, 29, Dec. 5, 7-13, Jan. 8 to Feb. 3, Feb. 18-20, 22, 24, Feb. 26 to Mar. 19, Mar. 25-27.

6-6950. South Platte River above Elevenmile Canyon Reservoir, near Hartsel, Colo.

Location.--Lat 38°58'03", long 105°34'51", in NE¼ sec.32, T.12 S., R.73 W., on left bank 200 ft (revised) downstream from highway bridge, 2.5 miles upstream from water line of Elevenmile Canyon Reservoir at elevation 8,561 ft, and 13 miles southeast of Hartsel.

Drainage area.--880 sq mi.

Records available.--June 1933 to September 1962 (no winter records prior to 1940). Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder and Parshall flume. Datum of gage is 8,512.83 ft above mean sea level (datum of Denver Board of Water Commissioners). Prior to May 27, 1939, water-stage recorder near present site at different datum. May 27, 1939, to Nov. 4, 1961, at datum 0.46 ft lower.

Average discharge.--23 years (1939-62), 81.2 cfs (58,790 acre-ft per year).

Extremes.--Maximum discharge determined during year, 315 cfs July 13 (gage height, 2.12 ft); minimum daily, 12 cfs Sept. 13, 14, 19. 1933-62: Maximum discharge recorded, 1,290 cfs June 19, 1949; maximum gage height, 4.76 ft (present datum) July 22, 1957; minimum daily discharge recorded, 0.9 cfs Apr. 22, 1940.

Remarks.--Records good except those for periods of twice-daily staff-gage readings, which are fair, and those for periods of no gage-height records, which are poor. Flow regulated by Antero Reservoir (capacity, 22,300 acre-ft). Many small diversions above station for irrigation of about 24,000 acres.

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

Oct. 1 to Nov. 4

Nov. 5 to Sept. 30

0.4	88	0.2	7.2	1.0	95
.7	115	.3	14	1.5	181
1.0	164	.6	42	2.0	287

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	116	g 149						106	93	257	134	29
2	g 112	*g 134						79	101	*227	118	23
3	g 116	g 94					240	59	115	205	*104	24
4	*g 115	88						46	87	179	102	*23
5	g 102	70						66	65	158	83	22
6	g 112						*260	61	89	158	70	16
7	115						193	76	*117	166	60	15
8	118				(*)		151	80	189	249	54	16
9	g 122					(*)	141	80	213	287	55	16
10	g 153						153	*98	177	273	60	15
11	g 134						168	117	160	249	65	14
12	g 124						153	129	168	242	69	14
13	g 124						185	144	164	269	77	*12
14	125	(*)					225	160	173	255	*89	12
15	127						264	172	207	193	86	13
16	g 128		44	30	35	30	273	157	201	149	76	14
17	g 126						257	164	199	*117	65	14
18	*g 122	80					249	148	187	99	50	13
19	g 112						201	96	*157	110	54	12
20	g 110						173	68	132	155	65	14
21	107						151	54	155	148	72	15
22	104						127	46	219	136	93	16
23	g 101						112	*43	215	141	99	16
24	g 92						107	41	181	179	96	15
25	g 89			(*)			*117	70	173	209	90	16
26	g 91						144	76	193	189	66	18
27	g 92						158	61	130	157	*49	20
28	92						158	90	134	124	41	26
29	120						153	77	149	124	35	30
30	g 147	(*)					129	46	255	124	31	31
31	g 140							45		125	30	
Total	3,588	2,535	1,364	930	980	930	5,602	2,755	4,798	5,653	2,238	534
Mean	116	84.5	44	30	35	30	187	88.9	160	182	72.2	17.8
Ac-ft	7,120	5,030	2,710	1,840	1,940	1,840	11,110	5,460	9,520	11,210	4,440	1,060

Calendar year 1961: Max 600 Min 1.7 Mean 79.5 Ac-ft 57,550  
 Water year 1961-62: Max 287 Min 12 Mean 87.4 Ac-ft 63,280

\* Discharge measurement made on this day.

g Computed from twice-daily staff-gage readings.

Note.--No gage-height record Oct. 1, 7, 8, 14, 15, 21, 22, 28, 29, Nov. 4 to Apr. 5 (stage-discharge relation affected by ice during most of period).

## PLATTE RIVER BASIN

6-6960. South Platte River near Lake George, Colo.

Location.--Lat 38°54'19", long 105°28'22", in SW¼ sec.20, T.13 S., R.72 W., on left bank 700 ft downstream from Elevenmile Canyon Reservoir and 8.2 miles southwest of town of Lake George.

Drainage area.--963 sq mi.

Records available.--October 1929 to September 1962. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 8,458 ft (from topographic map). Prior to Oct. 26, 1940, at site 1 mile downstream at datum 8,423.95 ft above mean sea level, adjustment of 1912.

Average discharge.--33 years, 69.5 cfs (50,320 acre-ft per year).

Extremes.--Maximum discharge during year, 376 cfs Apr. 19 (gage height, 3.22 ft); minimum daily, 6.4 cfs Sept. 25-28.

1929-62: Maximum discharge, 990 cfs Aug. 15, 1930, from rating curve extended above 600 cfs; maximum gage height, 5.85 ft June 20, 1949; no flow at times in January 1930, February 1931, November 1935.

Remarks.--Records good. Discharge measurements generally made twice a month. Natural flow of stream affected by transmountain diversions through East and West Hoosier ditches at Hoosier Pass prior to 1941, storage in Elevenmile Canyon Reservoir (see elsewhere in this report) and Antero Reservoir (capacity, 22,300 acre-ft), diversions for irrigation, and return flow from irrigated areas.

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

0.2	4.0	1.5	115
.3	8.0	2.0	182
.5	19	3.0	337
1.0	60	4.0	531

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	20	101	71	32	26	48	91	165	27	238	167	12
2	24	105	69	32	26	46	109	86	39	328	141	12
3	28	104	71	32	26	46	126	47	72	293	91	12
4	35	90	68	32	26	46	148	36	108	185	76	8.0
5	40	81	66	32	26	44	175	30	110	144	76	8.0
6												
6	47	77	62	32	26	45	196	36	86	134	47	8.0
7	49	71	61	32	27	46	211	55	86	183	25	8.0
8	51	71	56	33	27	45	204	64	121	214	25	8.5
9	60	72	56	36	28	44	193	79	205	287	25	8.0
10	73	73	53	36	28	43	185	96	264	344	25	8.0
11												
11	73	74	54	35	27	43	183	111	206	297	25	8.0
12	78	80	51	34	31	40	179	127	139	235	25	8.0
13	81	82	50	33	34	40	187	115	183	230	25	8.0
14	85	84	47	34	35	40	198	88	229	228	27	8.0
15	89	83	46	34	36	40	206	101	211	224	42	8.0
16												
16	93	83	45	32	39	39	217	105	96	161	48	8.0
17	95	84	45	32	42	40	266	134	162	113	48	8.0
18	96	84	44	32	44	39	308	240	222	80	48	7.2
19	98	81	41	32	45	39	335	195	247	60	48	7.2
20	99	77	40	35	48	37	308	78	193	85	50	7.2
21												
21	96	72	38	32	49	36	306	36	123	141	64	7.2
22	95	72	36	31	50	35	306	23	131	161	81	6.8
23	90	68	34	30	49	37	306	24	190	130	96	6.8
24	85	69	34	29	49	38	305	26	240	199	94	6.8
25	76	67	33	28	48	38	287	25	252	214	86	6.4
26												
26	73	67	32	28	49	40	254	22	202	212	59	6.4
27	72	68	32	28	49	42	235	22	158	147	49	6.4
28	71	69	32	28	49	46	238	21	146	81	36	6.4
29	77	70	32	28	-	50	139	22	158	91	28	7.2
30	83	70	31	27	-----	59	140	21	181	105	20	7.6
31	90	-----	31	26	-----	76	-----	21	-----	120	15	-----
Total	2,222	2,349	1,461	977	1,039	1,347	6,541	2,251	4,787	5,664	1,712	238.1
Mean	71.7	78.3	47.1	31.5	37.1	43.5	218	72.6	160	183	55.2	7.94
Ac-ft	4,410	4,660	2,900	1,940	2,060	2,670	12,970	4,460	9,490	11,230	3,400	472

Calendar year 1961: Max 465 Min 1.4 Mean 71.4 Ac-ft 51,680  
 Water year 1961-62: Max 344 Min 6.4 Mean 83.8 Ac-ft 60,660



## PLATTE RIVER BASIN

15

6-7005. Goose Creek above Cheesman Lake, Colo.  
(Known also as Lost Park Creek)

Location.--Lat 39°12'32", long 105°18'11", in sec.2, T.10 S., R.71 W., on right bank 1 mile upstream from water line of Cheesman Lake at elevation 6,842 ft and 1.7 miles west of Cheesman Dam.

Drainage area.--86.6 sq mi.

Records available.--August to December 1899, October 1924 to September 1962 (no winter records in some years). Monthly discharge only for some periods, published in WSP 1310. Published as "at Lake Cheesman" 1899.

Gage.--Water-stage recorder and compound rectangular weir. Altitude of gage is 6,910 ft (from topographic map). Aug. 1 to Dec. 31, 1899, staff gage at site about 2 miles downstream at different datum.

Average discharge.--25 years (1924-30, 1935-36, 1939-41, 1943-47, 1950-62), 27.5 cfs (19,910 acre-ft per year).

Extremes.--Maximum discharge during year, 190 cfs May 10 (gage height, 2.58 ft); minimum daily, 7.2 cfs Sept. 30.  
1924-62: Maximum discharge, 487 cfs June 9, 1957 (from rating curve extended above 170 cfs); maximum gage height, 4.57 ft May 30, 1942; minimum discharge not determined.

Remarks.--Records good except those for period of no gage-height record, which are poor. Small diversions above station for irrigation of about 100 acres.

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

0.3	5.0	1.5	55
.5	10	2.0	100
.7	16	3.0	253
1.0	28		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	63	(*)					14	67	63	42	20	9.5
2	58						14	76	75	*47	18	9.5
3	*61						15	86	66	36	17	9.0
4	57						15	104	56	30	17	9.0
5	55						*15	103	50	32	15	8.8
6	53						16	130	49	31	14	*8.8
7	51						17	144	*51	29	14	8.8
8	49						18	137	82	28	13	9.0
9	49						20	*146	82	30	12	9.5
10	55						22	151	64	28	12	10
11	51						24	144	56	25	12	9.2
12	57						26	134	54	26	12	*8.5
13	51						30	127	55	30	15	8.5
14	47						36	114	53	22	15	8.5
15	43						51	103	50	20	12	8.8
16	42	22	15	14	15	13	61	103	48	20	12	8.8
17	41						54	98	50	*20	12	8.5
18	*40						65	104	48	20	11	8.2
19	38						93	118	*47	20	12	8.2
20	38						121	93	45	22	13	9.0
21	36						122	87	43	20	13	9.5
22	38						80	80	42	18	13	9.5
23	36						65	*79	45	28	12	8.8
24	34						92	77	43	44	12	8.2
25	30						132	72	44	30	12	*8.2
26	31						125	68	42	26	10	8.5
27	34						74	68	38	22	9.8	8.5
28	32						88	72	36	20	9.2	8.5
29	25						117	66	36	18	9.0	8.2
30	27						73	60	45	17	9.0	7.2
31	32							58		18	9.2	
Total	1,354	660	465	434	420	403	1,695	3,069	1,558	819	396.2	263.2
Mean	43.7	22	15	14	15	13	56.5	99.0	51.9	26.4	12.8	8.77
Ac-ft	2,690	1,310	922	861	833	799	3,360	6,090	3,090	1,620	786	522

Calendar year 1961: Max 125 Min - Mean 34.1 Ac-ft 24,690  
Water year 1961-62: Max 151 Min 7.2 Mean 31.6 Ac-ft 22,880

Peak discharge (base, 110 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-21	0800	2.48	172	4-29	1030	2.35	153
4-25	0900	2.52	179	5-10	0900	2.58	190

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 30 to Apr. 14 (stage-discharge relation affected by ice during most of period).

## PLATTE RIVER BASIN

6-7015. South Platte River below Cheesman Lake, Colo.

Location.--Lat 39°12'33", long 105°16'02", in SE¼NW¼ sec.6, T.10 S., R.70 W., on left bank 1,400 ft downstream from toe of Cheesman Dam and 4 miles southwest of Deckers.

Drainage area.--1,752 sq mi.

Records available.--October 1924 to September 1962. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder and Parshall flume. Datum of gage is 6,609.29 ft above mean sea level, datum of 1929. Prior to May 14, 1956, at site 370 ft upstream at datum 0.50 ft higher.

Average discharge.--38 years, 156 cfs (112,900 acre-ft per year).

Extremes.--Maximum discharge during year, 702 cfs Apr. 29 (gage height, 3.13 ft); minimum daily, 35 cfs Oct. 1-3.

1924-62: Maximum discharge, 3,020 cfs Apr. 23, 1942 (gage height, 8.46 ft, site and datum then in use), from rating curve extended above 1,800 cfs; minimum daily determined, 1.6 cfs Apr. 8-14, 1957.

Remarks.--Records good. Discharge measurements generally made twice a month. Natural flow of stream affected by minor transmountain diversion from Colorado River basin through Boreas Pass ditch (see elsewhere in this report), Elevenmile Canyon Reservoir and Cheesman Lake (see elsewhere in this report), diversions for irrigation of about 40,000 acres, and return flow from irrigated areas.

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

0.4	23	2.0	343
.6	50	3.0	656
1.0	113	4.0	1,040
1.5	216		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	35	189	176	49	53	76	160	264	228	287	435	216
2	35	196	198	49	53	76	201	277	192	365	519	207
3	35	189	203	50	53	76	238	287	176	453	503	201
4	36	176	203	50	53	76	247	262	189	397	351	183
5	36	172	160	50	53	76	262	262	245	266	332	181
6	36	146	115	50	53	84	298	305	349	214	262	194
7	37	142	108	54	53	87	351	343	254	305	247	203
8	53	142	103	61	53	89	385	414	73	300	221	212
9	119	144	86	61	53	92	365	402	51	402	219	183
10	166	146	64	61	53	92	329	438	53	484	231	170
11	185	151	58	61	64	91	316	475	124	512	233	203
12	196	181	70	61	73	81	292	459	274	496	235	203
13	194	164	76	61	82	76	282	444	259	397	233	194
14	194	136	82	61	101	76	316	444	228	420	242	212
15	201	146	89	61	115	75	408	432	231	459	259	210
16	205	158	89	61	103	75	500	382	233	414	266	207
17	207	151	89	61	92	75	618	354	205	316	238	205
18	203	160	91	61	92	73	660	311	207	238	235	203
19	201	149	91	61	94	72	660	388	335	250	266	207
20	201	142	91	61	94	76	509	377	444	259	423	207
21	196	147	91	60	94	76	551	259	414	250	441	210
22	194	142	91	61	94	76	335	162	305	295	459	192
23	192	136	81	65	96	86	459	136	247	349	481	170
24	183	136	75	60	96	113	512	115	313	357	450	170
25	176	140	75	51	96	122	548	146	397	382	290	170
26	170	142	75	53	96	146	535	153	426	365	287	170
27	162	140	76	53	96	136	481	162	394	351	269	166
28	160	134	76	53	82	108	564	164	272	298	228	166
29	176	160	72	53	-	138	615	174	269	226	210	156
30	172	181	61	53	-----	149	487	170	290	388	212	136
31	181	-----	58	53	-----	149	-----	179	-----	478	223	-----
Total	4,537	4,638	3,073	1,760	2,190	2,893	12,484	9,140	7,677	10,973	9,500	5,707
Mean	146	155	99.1	56.8	78.2	93.3	416	295	256	354	306	190
Ac-ft	9,000	9,200	6,100	3,490	4,340	5,740	24,760	18,130	15,230	21,760	18,840	11,320

Calendar year 1961: Max 598 Min 5.9 Mean 124 Ac-ft 90,130  
 Water year 1961-62: Max 660 Min 35 Mean 204 Ac-ft 147,900

## PLATTE RIVER BASIN

17

6-7060. North Fork South Platte River below Geneva Creek, at Grant, Colo.

Location.--Lat 39°27'28", long 105°39'28", in NW¼ sec.10, T.7 S., R.74 W., on left bank at Grant, 1,600 ft downstream from Geneva Creek and 1.3 miles downstream from east portal of Roberts tunnel.

Drainage area.--127 sq mi.

Records available.--July 1908 to November 1913 (published as "at Cassells"), June 1942 to September 1962. Monthly discharge only for some periods, published in WSP 1310. December 1913 to March 1918 equivalent records may be obtained by summation of flow of North Fork South Platte River at Grant (above Geneva Creek) and Geneva Creek at Grant.

Gage.--Water-stage recorder. Datum of gage is 8,558.60 ft above mean sea level (Bureau of Reclamation bench mark). July 4 to Dec. 13, 1908, and May 23 to Nov. 30, 1913, staff gages at site 185 ft downstream from bridge at Santa Maria (formerly Cassells) about 2 miles downstream at various datums. Dec. 14, 1908, to May 22, 1913, chain gage on bridge at Santa Maria about 2 miles downstream at different datum. June 19, 1942, to Mar. 15, 1948, staff gage at site 1,200 ft upstream from present site at datum 13.07 ft higher. Mar. 16 to July 22, 1948, staff gage at site 400 ft upstream from present site at datum 6.35 ft higher than present datum.

Average discharge.--25 years, 75.2 cfs (54,440 acre-ft per year).

Extremes.--Maximum discharge during year, 390 cfs May 10 (gage height, 3.91 ft); minimum daily, 23 cfs Feb. 25, Mar. 11, 13, 25. 1908-13, 1942-62: Maximum discharge observed, 990 cfs June 7, 8, 1912 (gage height, 3.30 ft, site and datum then in use), from rating curve extended above 530 cfs by logarithmic plotting; maximum gage height, 4.72 ft, present site, Feb. 11, 1952 (backwater from ice); minimum daily discharge, 6.5 cfs Nov. 27, 1958.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Discharge measurements generally made two or more times a month. Small diversions above station for irrigation of about 200 acres.

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

2.5	19	3.3	155
2.7	38	3.8	335
3.0	85		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	96	62	38	27	27	24	28	80	167	232	65	34
2	89	49	37	29	27	24	28	91	173	226	60	31
3	89	42	36	28	27	24	29	96	197	209	58	31
4	89	57	34	28	27	24	29	106	212	200	58	31
5	85	52	32	28	26	24	27	124	209	191	54	30
6	83	48	32	28	26	24	27	161	203	182	52	30
7	80	52	30	28	27	24	27	188	215	176	49	30
8	78	54	27	28	26	24	26	212	191	179	48	31
9	87	54	27	27	26	24	27	266	161	170	49	31
10	83	54	28	27	26	24	26	299	170	161	49	30
11	83	52	30	27	27	23	27	294	179	150	46	30
12	83	49	b 28	27	28	24	28	299	191	150	46	30
13	80	44	27	27	27	23	35	270	212	147	48	30
14	78	37	26	26	25	25	46	215	222	131	44	30
15	78	49	26	27	25	25	66	191	218	119	42	30
16	76	48	27	27	25	25	71	179	200	115	41	30
17	75	46	26	28	25	25	70	167	176	106	41	30
18	75	42	25	27	24	25	85	170	170	106	46	29
19	71	39	25	26	24	25	110	179	188	104	48	29
20	71	39	25	27	24	25	126	188	203	93	46	31
21	68	44	26	27	24	24	110	173	212	89	46	32
22	70	38	26	26	24	24	89	155	212	85	46	35
23	63	42	26	26	24	24	100	155	209	89	44	31
24	65	42	25	25	24	24	131	173	209	91	45	31
25	62	41	25	24	23	23	150	176	209	82	39	31
26	63	41	25	25	24	25	121	167	212	80	37	30
27	66	39	25	25	24	27	102	176	215	75	36	34
28	65	38	25	26	24	29	113	161	212	70	36	34
29	58	36	27	26	-	30	113	161	209	66	35	31
30	65	37	27	25	-----	29	83	158	232	66	35	29
31	66	-----	28	27	-----	27	-----	170	-----	66	35	-----
Total	2,340	1,367	871	829	710	771	2,050	5,600	5,988	4,006	1,424	926
Mean	75.5	45.6	28.1	26.7	25.4	24.9	68.3	181	200	129	45.9	30.9
Ac-ft	4,640	2,710	1,730	1,640	1,410	1,530	4,070	11,110	11,880	7,950	2,820	1,840

Calendar year 1961: Max 185 Min 14 Mean 64.6 Ac-ft 46,780  
 Water year 1961-62: Max 299 Min 23 Mean 73.6 Ac-ft 53,330

Peak discharge (base, 450 cfs).--No peak above base.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Jan. 16 to Feb. 7.



## PLATTE RIVER BASIN

6-7070. North Fork South Platte River at South Platte, Colo.

Location.--Lat 39°24'30", long 105°10'30", in SW¼ sec.25, T.7 S., R.70 W., on left bank 0.2 mile west of South Platte and 0.3 mile upstream from mouth.

Drainage area.--479 sq mi.

Records available.--June 1909 to September 1910, April 1913 to September 1962. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 6,090.55 ft above mean sea level, adjustment of 1912. Prior to May 13, 1925, staff gage at same site and datum.

Average discharge.--50 years, 157 cfs (113,700 acre-ft per year).

Extremes.--Maximum discharge during year, 631 cfs May 10 (gage height, 3.52 ft); minimum daily, 40 cfs Sept. 14. 1909-10, 1913-62: Maximum discharge, 2,050 cfs June 13, 1949 (gage height, 6.30 ft); minimum observed, 4.0 cfs Dec. 8, 1932 (discharge measurement).

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. Small diversions above station for irrigation of about 2,000 acres.

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

1.8	40	2.6	220
2.0	61	3.0	385
2.3	122	3.5	620

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	248	145	82	58	56	42	59	268	312	349	136	53
2	224	134	84	60	56	44	56	312	316	344	128	53
3	232	96	84	58	56	50	66	320	324	308	120	47
4	228	134	84	56	58	50	72	336	340	292	122	47
5	220	117	82	56	60	54	71	354	344	276	112	48
6	212	96	76	58	62	66	83	394	332	264	105	46
7	205	b88	68	60	64	70	85	452	358	256	103	45
8	197	b94	66	56	64	72	83	457	398	256	98	45
9	201	b94	62	48	66	70	81	516	349	252	94	53
10	209	b92	55	46	68	70	90	570	324	232	98	51
11	193	b94	48	52	72	62	81	555	332	216	96	47
12	205	b98	46	54	80	56	85	560	332	244	96	44
13	186	b90	48	60	78	52	105	555	358	248	100	42
14	182	82	55	56	76	50	139	466	367	216	96	40
15	176	88	64	54	76	54	166	398	358	201	85	42
16	173	94	68	52	74	52	209	398	336	197	83	43
17	170	94	70	52	68	52	197	362	312	190	83	45
18	166	92	68	52	66	52	209	350	296	179	83	43
19	163	88	62	52	70	52	256	355	296	187	88	43
20	163	84	62	54	66	52	300	370	316	173	90	44
21	157	90	64	56	60	56	324	350	320	163	85	46
22	157	b92	68	56	56	56	288	330	320	154	88	53
23	148	b90	72	56	52	52	264	310	320	163	85	53
24	142	b90	70	58	52	46	296	295	316	190	96	47
25	142	b90	66	56	54	50	349	310	320	163	88	51
26	142	b90	68	56	50	58	358	316	324	157	81	51
27	145	b86	70	54	47	67	308	320	316	148	77	51
28	142	b80	66	54	45	77	292	312	308	139	77	53
29	142	80	68	54	-	79	328	296	332	134	69	54
30	136	82	66	54	-----	66	296	292	349	134	51	53
31	154	-----	64	56	-----	56	-----	312	-----	139	55	-----
Total	5,560	2,864	2,076	1,704	1,752	1,785	5,596	11,791	9,925	6,564	2,868	1,433
Mean	179	95.5	67.0	55.0	62.6	57.6	187	380	331	212	92.5	47.8
Ac-ft	11,030	5,680	4,120	3,380	3,480	3,540	11,100	23,390	19,690	13,020	5,690	2,840

Calendar year 1961: Max 390 Min 24 Mean 149 Ac-ft 108,000  
 Water year 1961-62: Max 570 Min 40 Mean 148 Ac-ft 107,000

Peak discharge (base, 450 cfs).--May 10 (0600) 631 cfs (3.52 ft); June 29 (1700) 575 cfs (3.41 ft).

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 14-21, Nov. 29 to Mar. 26 (stage-discharge relationship affected by ice during most of periods), May 18-25.

## PLATTE RIVER BASIN

19

6-7075. South Platte River at South Platte, Colo.

Location.--Lat 39°24'30", long 105°10'10", in SE¼ sec.25, T.7 S., R.70 W., on left bank at South Platte, 200 ft downstream from bridge on State Highway 75 and 400 ft downstream from North Fork.

Drainage area.--2,579 sq mi.

Records available.--July 1887 to September 1891, May to October 1892, October 1895 to September 1897, October 1898 to June 1900, October 1900 to September 1962. Monthly discharge only for some periods, published in WSP 1310. Published as "at" or "near Deansbury," "at Deansbury and Platte Canyon," "at," or "near Platte Canyon," prior to 1901, and as "below North Fork, at South Platte" 1914.

Gage.--Water-stage recorder. Datum of gage is 6,078.43 ft above mean sea level, adjustment of 1912. Prior to Mar. 28, 1902, staff gages or water-stage recorder at several sites less than 9 miles downstream at various datums. Mar. 28, 1902, to May 6, 1905, staff gage at bridge 200 ft upstream at different datum. May 7, 1905, to Mar. 13, 1910, staff gage at present site and datum.

Average discharge.--69 years (1887-91, 1895-97, 1898-99, 1900-62), 358 cfs (259,200 acre-ft per year).

Extremes.--Maximum discharge during year, 1,190 cfs May 11 (gage height, 4.25 ft); minimum daily, 66 cfs Dec. 12. 1887-92, 1895-97, 1898-1962: Maximum discharge, 6,320 cfs June 8, 1921 (gage height, 8.95 ft), from rating curve extended above 3,500 cfs; minimum daily determined, 10 cfs Dec. 5, 1899.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor. Discharge measurements generally made twice a month. Natural flow of stream affected by transmountain diversions (see elsewhere in this report), Elevenmile Canyon Reservoir and Cheesman Lake (see elsewhere in this report), diversions above station for irrigation of about 45,000 acres, and return flow from irrigated areas.

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

1.6	104	3.0	520
2.0	186	3.5	765
2.5	325	4.3	1,220

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	318	372	297	120	140	115	260	620	570	630	565	278
2	297	368	308	115	140	120	287	665	565	700	630	266
3	304	314	318	125	140	135	350	710	542	804	675	260
4	297	353	297	125	145	130	368	705	575	760	512	239
5	287	332	275	130	150	130	396	690	585	630	472	234
6	281	278	215	130	150	150	424	787	730	472	392	239
7	275	290	203	135	150	190	472	858	745	565	353	247
8	269	297	191	130	150	182	524	968	605	570	336	266
9	308	300	179	125	155	175	508	1,030	464	630	304	247
10	384	300	115	115	160	171	488	1,080	424	735	325	224
11	396	300	90	120	170	162	460	1,120	432	725	322	237
12	416	342	66	130	195	151	452	1,110	625	809	332	255
13	404	318	68	150	220	138	448	1,090	690	665	339	229
14	400	255	72	145	210	142	496	996	645	630	336	247
15	400	287	100	135	210	149	645	908	630	675	346	252
16	400	318	150	135	200	151	755	848	615	630	364	252
17	396	294	140	130	200	155	880	809	590	538	332	252
18	384	300	160	130	170	157	952	735	516	452	328	250
19	376	278	130	130	200	153	1,010	765	605	408	332	250
20	376	269	130	130	180	171	974	886	814	440	472	255
21	364	290	160	140	177	157	848	730	804	408	529	260
22	364	300	175	140	177	155	720	556	730	408	565	263
23	360	300	155	140	166	157	765	496	600	504	575	234
24	346	297	150	140	150	184	870	492	660	538	605	224
25	342	300	155	140	160	191	974	504	715	552	404	229
26	336	304	160	135	150	229	985	500	814	538	384	227
27	332	300	150	135	125	252	897	529	765	512	368	224
28	332	278	150	140	110	224	902	508	640	480	332	227
29	350	260	160	140	-	278	1,020	508	625	372	281	227
30	342	300	150	140	-----	287	963	500	685	440	266	200
31	368	-----	125	140	-----	257	-----	500	-----	655	278	-----
Total	10,804	9,094	5,194	4,115	4,650	5,398	20,093	23,203	19,005	17,875	12,654	7,294
Mean	349	303	168	133	166	174	670	748	634	577	408	243
Ac-ft	21,430	18,040	10,300	8,160	9,220	10,710	39,850	46,020	37,700	35,450	25,100	14,470

Calendar year 1961: Max 1,100 Min 46 Mean 314 Ac-ft 227,600  
 Water year 1961-62: Max 1,120 Min 66 Mean 382 Ac-ft 276,400

Note.--Stage-discharge relation affected by ice Dec. 11-22, Dec. 31 to Jan. 10, Jan. 13-19, 21, Feb. 8-16, 24-28. No gage-height record Dec. 23-30, Jan. 11, 12, 20, Jan. 22 to Feb. 7, Feb. 17-20, Mar. 1-7 (stage-discharge relation affected by ice during most of periods).

## PLATTE RIVER BASIN

6-7080. South Platte River at Waterton, Colo.

Location.--Lat 39°29'18", long 105°05'32", in NE¼ sec.34, T.6 S., R.69 W., on left bank 168 ft (revised) downstream from bridge on State Highway 221, half a mile east of Waterton, 5 miles west of Louviers, and 6 miles upstream from Plum Creek.

Drainage area.--2,621 sq mi.

Records available.--May 1926 to September 1962. Monthly discharge only prior to 1934, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 5,484.43 ft above mean sea level, adjustment of 1912.

Average discharge.--36 years, 176 cfs (127,400 acre-ft per year).

Extremes.--Maximum discharge during year, 970 cfs Apr. 20 (gage height, 2.50 ft); maximum gage height, 2.74 ft Dec. 13 (backwater from ice); minimum daily discharge, 18 cfs Sept. 5, 6.

1926-62: Maximum discharge, 5,700 cfs Apr. 23, 1942 (gage height, 5.68 ft); minimum daily, 0.1 cfs Mar. 6, 7, 1933, Feb. 28 to Mar. 2, Mar. 20, 1938.

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. Natural flow of stream affected by transmountain diversions (see elsewhere in this report), Eleven-mile Canyon Reservoir and Cheesman Lake (see elsewhere in this report), diversions for irrigation of about 55,000 acres and municipal use, and return flow from irrigated areas.

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 May 1, June 2-5)

0.7	10	1.4	213
.9	46	2.0	570
1.1	100	2.5	970

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	204	310	246	26	56	100	88	498	170	357	140	42
2	196	304	255	36	46	70	94	550	218	310	187	36
3	196	255	260	35	44	40	209	598	209	401	246	30
4	187	282	246	40	48	34	321	591	227	375	236	21
5	174	266	236	38	56	32	351	577	236	251	236	18
6	155	232	166	46	44	42	382	598	345	97	163	18
7	140	232	148	51	42	70	427	648	408	255	113	26
8	144	227	130	48	46	183	498	760	339	315	103	36
9	183	232	148	44	44	148	492	648	222	363	74	46
10	255	241	94	38	51	80	460	598	148	505	88	30
11	282	241	82	40	80	54	414	680	116	492	91	26
12	271	276	90	38	123	48	414	640	227	584	94	38
13	260	271	80	58	163	97	401	619	351	420	97	21
14	246	222	86	58	166	140	446	524	276	357	91	26
15	227	236	130	52	196	155	564	427	255	414	97	30
16	204	266	150	46	209	152	633	531	236	382	100	24
17	163	246	140	43	107	144	768	544	222	298	74	26
18	148	246	170	40	100	137	832	401	140	200	68	26
19	137	222	150	36	174	130	832	310	266	140	71	24
20	148	232	160	38	163	159	832	434	544	170	88	30
21	166	218	170	40	103	94	680	276	598	137	94	36
22	179	232	150	60	100	46	577	126	518	130	130	56
23	179	227	100	56	88	34	612	64	369	218	140	44
24	170	218	60	62	113	30	688	170	408	298	196	32
25	163	218	64	70	155	28	760	246	408	310	170	32
26	174	232	48	60	152	46	816	148	466	293	163	26
27	179	241	38	60	137	74	760	100	388	260	144	24
28	170	232	44	64	140	42	760	94	276	241	120	23
29	187	200	60	74	-	83	856	137	266	137	58	77
30	227	213	54	86	-----	123	808	144	382	88	38	86
31	310	-----	34	66	-----	83	-----	163	-----	218	51	-----
Total	6,024	7,270	3,989	1,549	2,946	2,698	16,775	12,844	9,234	9,016	3,761	1,010
Mean	194	242	129	50.0	105	87.0	539	414	308	291	121	33.7
Ac-ft	11,950	14,420	7,910	3,070	5,840	5,350	33,270	25,480	18,320	17,880	7,460	2,000

Calendar year 1961: Max 752 Min 3.0 Mean 154 Ac-ft 111,400  
Water year 1961-62: Max 856 Min 18 Mean 211 Ac-ft 153,000

Note.--Stage-discharge relation affected by ice Dec. 11 to Jan. 1, Jan. 5, 8-29, Mar. 1. No gage-height record Jan. 2-4, Mar. 2-7, 10-12 (stage-discharge relation affected by ice during most of periods).

## PLATTE RIVER BASIN

21

6-7095. Plum Creek near Louviers, Colo.

Location.--Lat 39°29'04", long 105°00'07", in SE¼ sec.33, T.6 S., R.68 W., on right bank at downstream side of bridge on county road from U. S. Highway 85 to Louviers, three-quarters of a mile northeast of Louviers, 1½ miles downstream from Indian Creek, and 7½ miles upstream from mouth.

Drainage area.--302 sq mi.

Records available.--October 1947 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 5,585 ft (from topographic map). Prior to Feb. 12, 1957, at site 2½ miles downstream; prior to Oct. 1, 1954, at datum 5,518.71 ft above mean sea level, datum of 1929, and Oct. 1, 1954, to Feb. 11, 1957, at datum 5,517.19 ft above mean sea level, datum of 1929.

Average discharge.--15 years, 22.7 cfs (16,430 acre-ft per year).

Extremes.--Maximum discharge during year, 215 cfs Apr. 22 (gage height, 3.38 ft); minimum daily, 0.1 cfs for many days.  
1947-62: Maximum discharge, 3,800 cfs July 21, 1954 (gage height, 5.07 ft, site and datum then in use); no flow at times in 1951-52, 1956-60.

Remarks.--Records poor. Discharge measurement generally made twice a month. Diversions above station for irrigation.

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	29	29	31	19	35	15	28	118	14	8	2.0	0.1
2	32	29	29	19	46	19	28	101	14	7.7	1.4	.1
3	31	29	27	19	56	21	28	80	11	4.4	.9	.1
4	29	24	28	19	50	24	41	67	9	1.6	.7	3.2
5	26	23	25	18	38	27	44	58	8	1.4	.4	1.6
6	25	20	23	14	32	31	52	54	11	1.1	.2	.1
7	25	22	21	14	36	36	58	54	21	.9	.2	.1
8	24	22	19	14	36	41	78	52	24	.9	.2	.1
9	23	23	14	14	36	36	80	50	21	7.0	.2	.1
10	24	21	14	14	36	27	91	44	12	3.8	.2	.1
11	23	21	14	15	38	23	91	39	14	2.3	.2	.1
12	22	21	15	15	39	20	91	35	12	2.5	.1	.1
13	21	19	15	17	38	19	91	23	9.9	2.5	.1	.1
14	21	18	15	18	38	20	88	17	9.0	2.0	.1	.1
15	21	23	16	19	27	21	91	16	8.4	1.4	.1	.1
16	20	24	16	19	27	22	114	17	8.4	1.6	.1	.1
17	20	21	16	19	27	23	138	16	12	1.9	.1	.1
18	20	21	16	18	18	22	142	21	11	.2	.1	.1
19	22	18	16	17	20	25	155	18	9.9	.4	.1	.1
20	23	21	16	16	22	29	173	9.0	7.0	1.1	.1	.1
21	23	28	16	15	21	26	189	6.4	9.0	.7	.1	.1
22	20	22	16	15	21	24	194	7.7	9.9	.9	.1	.2
23	19	23	16	15	21	29	179	7.7	9.0	2.3	.5	.1
24	20	27	15	16	20	31	173	5.8	9.0	2.5	.6	.1
25	19	28	15	16	18	31	168	5.1	7.7	1.8	.4	.1
26	19	28	16	17	15	31	159	5.1	7.7	2.3	.2	.1
27	18	32	17	19	13	31	146	8.4	9.0	1.6	.1	.1
28	19	31	18	20	11	31	129	14	7.0	.9	.1	.2
29	26	28	17	22	-	31	125	11	8	.2	.1	.2
30	24	31	18	23	-----	32	129	6.4	9	5.8	.1	.2
31	25	-----	21	27	-----	29	-----	7.0	-----	5.8	.2	-----
Total	713	727	571	542	835	827	3,293	973.6	331.9	77.5	10.0	8.0
Mean	23.0	24.2	18.4	17.5	29.8	26.7	110	31.4	11.1	2.50	0.32	0.27
Ac-ft	1,410	1,440	1,130	1,080	1,660	1,640	6,530	1,930	658	154	20	16

Calendar year 1961: Max 342 Min 4.4 Mean 40.7 Ac-ft 29,480

Water year 1961-62: Max 194 Min 0.1 Mean 24.4 Ac-ft 17,670

Peak discharge (base, 220 cfs).--No peak above base.

Note.--No gage-height record Nov. 14, 16-20, Dec. 12, Jan. 9, Feb. 2, 24-28, Mar. 2-16, June 4-6, June 29 to July 1, Aug. 23-29, Sept. 2. Stage-discharge relation affected by ice Dec. 11, 13-27, Dec. 29 to Jan. 2, Jan. 10 to Feb. 1.



## PLATTE RIVER BASIN

6-7100. South Platte River at Littleton, Colo.

Location.--Lat 39°37'10", long 105°01'10", in NE¼ sec.17, T.5 S., R.68 W., on left bank 200 ft downstream from Crestline Avenue (formerly Hazard Street) Bridge at Littleton and 3.1 miles upstream from Bear Creek.

Drainage area.--3,069 sq mi.

Records available.--July 1941 to September 1962.

Gage.--Water-stage recorder. Datum of gage is 5,304.36 ft above mean sea level, datum of 1929 (levels by Corps of Engineers). Prior to Nov. 23, 1948, wire-weight gage on bridge 200 ft upstream at datum 1.00 ft higher. Nov. 23, 1948, to Sept. 30, 1951, water-stage recorder at present site at datum 1.00 ft higher.

Average discharge.--21 years, 234 cfs (169,400 acre-ft per year).

Extremes.--Maximum discharge during year, 1,150 cfs Apr. 30 (gage height, 5.60 ft); minimum daily, 20 cfs Sept. 20.  
1941-62: Maximum discharge, 9,720 cfs Apr. 23, 1942 (gage height, 8.55 ft, from floodmark, site and datum then in use), from rating curve extended above 4,800 cfs; minimum daily, 7.2 cfs Oct. 2, 1956.

Remarks.--Records good except those for period of ice effect, which are fair. Discharge measurements generally made twice a month. Natural flow of stream affected by transmountain diversions, storage reservoirs, power developments, diversions for irrigation and municipal use, and return flow from irrigated areas.

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	200	358	292	88	110	172	143	680	206	376	154	45
2	210	367	304	88	120	135	146	688	284	300	160	40
3	200	312	312	86	132	104	227	744	300	324	200	33
4	203	316	296	84	125	100	385	760	292	324	190	31
5	193	312	264	92	113	96	376	672	304	234	190	27
6	184	276	210	86	100	118	385	688	358	106	149	25
7	166	272	172	88	102	157	424	768	470	166	98	24
8	154	284	127	80	110	276	521	848	440	272	86	26
9	178	272	160	75	106	234	521	800	320	308	70	48
10	253	288	96	70	113	120	507	688	223	424	70	37
11	288	292	100	75	140	90	458	744	169	440	77	26
12	320	308	113	85	178	106	464	760	234	514	81	32
13	296	304	125	85	223	122	452	744	358	402	86	36
14	276	245	178	80	227	169	521	633	300	354	83	26
15	256	264	203	74	234	213	648	542	268	358	84	25
16	253	296	245	68	288	213	744	535	253	336	84	26
17	213	280	220	66	193	220	920	619	245	308	70	28
18	187	276	234	66	125	200	987	494	166	213	65	26
19	178	249	200	66	213	197	987	354	213	152	64	21
20	181	242	238	66	234	216	1,000	429	470	172	70	20
21	193	292	245	68	166	157	792	336	598	152	68	24
22	197	264	200	70	130	100	776	206	500	127	98	41
23	203	260	157	72	132	84	736	122	380	172	110	48
24	190	253	98	74	106	79	840	146	362	256	184	37
25	187	253	94	76	166	74	888	256	407	249	169	34
26	193	256	94	76	143	84	1,000	210	429	242	146	33
27	203	268	84	78	122	110	952	127	362	230	149	30
28	197	268	79	84	127	108	912	138	276	230	122	28
29	216	238	96	90	-	118	1,010	157	249	160	74	60
30	253	256	100	95	-----	181	1,060	166	396	113	48	84
31	344	-----	88	100	-----	154	-----	187	-----	175	54	-----
Total	6,765	8,421	5,424	2,451	4,278	4,507	19,782	15,241	9,832	8,189	3,353	1,021
Mean	218	281	175	79.1	133	145	659	492	328	264	108	34.0
Ac-ft	13,420	16,700	10,760	4,860	8,490	8,940	39,240	30,230	19,500	16,240	6,650	2,030

Calendar year 1961: Max 972 Min 39 Mean 207 Ac-ft 150,100  
Water year 1961-62: Max 1,060 Min 20 Mean 245 Ac-ft 177,100

Note.--Stage-discharge relation affected by ice Jan. 8 to Feb. 2.

## PLATTE RIVER BASIN

23

6-7105. Bear Creek at Morrison, Colo.

Location.--Lat 39°39'11", long 105°11'43", in SE¼SW¼ sec.35, T.4 S., R.70 W., on left bank at Morrison, 180 ft upstream from bridge on U. S. Highway 285 and a quarter of a mile upstream from Mount Vernon Creek. Prior to Oct. 11, 1961, at site 80 ft downstream.

Drainage area.--164 sq mi.

Records available.--September 1887 to September 1891, May 1895 to December 1901, February 1902 (gage heights only), October 1919 to September 1962. No winter records for water years 1888-90, 1896, 1898, 1900. Monthly discharge only for some periods, published in WSP 1310. Published as "near Morrison" 1900-1902, as "at Starbuck" 1919-28, and as "at Idledale" 1929-34.

Gage.--Water-stage recorder. Datum of gage is 5,780.43 ft above mean sea level, datum of 1929. Prior to Apr. 1, 1899, staff gage at site a quarter of a mile downstream at different datum. Apr. 1, 1899, to Feb. 28, 1902, staff gage at site a quarter of a mile upstream at different datum. Oct. 1, 1919, to Feb. 28, 1921, staff gage and Mar. 1, 1921, to Sept. 30, 1934, water-stage recorder, at Idledale 4 miles upstream at different datum. Oct. 1, 1934, to Oct. 10, 1961, water-stage recorder at site 80 ft downstream at same datum.

Average discharge.--47 years (1890-91, 1896-97, 1898-99, 1900-1901, 1919-62), 54.7 cfs (39,600 acre-ft per year).

Extremes.--Maximum discharge during year, 152 cfs May 7 (gage height, 4.13 ft); minimum daily, 9.5-cfs Sept. 13, 14. 1887-91, 1895-1901, 1919-62: Maximum discharge, 8,600 cfs (estimated) July 24, 1896; minimum daily, 0.8 cfs Nov. 26, 1939, result of freezeup.

Remarks.--Records good except those prior to Oct. 11 and those for periods of ice effect or no gage-height record, which are poor. Discharge measurements generally made three times a month. Small 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)  
(Shifting-control method used Oct. 5-10)

Oct. 11 to Sept. 30

3.1	8.0	3.7	65
3.2	13	4.1	144
3.4	30		

Discharge, in cubic feet per second, water year October 1961 to September 1962												
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	92	55	33	b19	24	19	24	92	56	79	28	12
2	98	47	30	b20	27	20	22	107	64	76	26	12
3	90	33	30	b19	33	22	26	110	56	62	24	10
4	90	51	27	b18	37	22	28	114	53	57	23	12
5	94	39	b25	b17	31	23	27	120	51	55	21	12
6	86	29	b26	b18	31	25	35	130	51	51	20	11
7	82	39	b25	b18	26	23	38	139	67	47	19	10
8	75	40	b24	b16	25	23	39	130	97	48	18	12
9	73	40	b22	13	26	22	40	134	71	53	19	12
10	68	40	19	13	30	21	44	134	61	47	20	12
11	65	39	21	16	38	19	38	120	57	41	19	12
12	65	39	22	17	42	b25	40	116	60	47	19	10
13	62	35	23	17	40	b27	42	112	61	50	23	9.5
14	61	27	25	17	30	b27	52	97	60	42	19	9.5
15	60	38	24	16	26	26	60	88	57	38	16	10
16	60	38	23	16	26	26	73	85	51	37	15	10
17	60	36	22	16	27	24	73	85	53	37	15	10
18	57	34	21	15	25	20	76	81	50	36	18	10
19	56	32	21	15	b25	21	88	76	47	35	21	10
20	56	32	21	15	b25	25	97	76	50	33	19	10
21	53	34	22	15	26	19	105	70	52	30	17	12
22	53	32	20	15	b26	19	97	64	56	27	16	12
23	48	34	20	16	b25	19	86	60	58	29	15	15
24	48	34	20	18	b23	19	88	60	56	44	19	12
25	45	34	21	19	21	19	97	60	53	35	18	12
26	48	34	21	18	20	28	101	57	52	33	14	12
27	47	32	20	18	19	29	95	62	50	30	13	12
28	47	32	17	18	18	29	90	65	48	26	12	13
29	47	31	16	19	-	29	99	53	61	25	11	14
30	58	34	b18	20	-----	23	94	48	79	25	10	13
31	55	-----	b19	21	-----	19	-----	50	-----	28	12	-----
Total	1,999	1,094	698	528	772	712	1,914	2,795	1,738	1,303	559	343.0
Mean	64.5	36.5	22.5	17.0	27.6	23.0	63.8	90.2	57.9	42.0	18.0	11.4
Ac-ft	3,960	2,170	1,380	1,050	1,530	1,410	3,800	5,540	3,450	2,580	1,110	680

Calendar year 1961: Max 210 Min 10 Mean 65.1 Ac-ft 47,130

Water year 1961-62: Max 139 Min 9.5 Mean 39.6 Ac-ft 28,660

Peak discharge (base, 250 cfs).--No peak above base.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Oct. 27, Nov. 15-30, Dec. 10-29, Jan. 9-29, Feb. 25 to Mar. 9 (stage-discharge relation affected by ice during part of periods).

## PLATTE RIVER BASIN

6-7115. Bear Creek at mouth, at Sheridan, Colo.

Location.--Lat 39°39'08", long 105°01'57", in NW¼NW¼ sec.5, T.5 S., R.68 W., on left bank just downstream from bridge on State Highway 70 at northwest city limits of Sheridan, 1.3 miles upstream from mouth and 2.3 miles west of city hall in Englewood.

Drainage area.--260 sq mi.

Records available.--April to November 1914, March 1927 to September 1962. Monthly discharge only prior to October 1933, published in WSP 1310. Published as "at Sheridan Junction" 1934-41.

Gage.--Water-stage recorder. Altitude of gage is 5,295 ft (from topographic map). Apr. 1 to Nov. 30, 1914, staff gage and Feb. 23, 1927, to June 18, 1931, water-stage recorder, at site 1 mile downstream at different datums. June 19, 1931, to Oct. 8, 1953, water-stage recorder at site 0.8 mile downstream at datum 5,282.72 ft above mean sea level, datum of 1929, prior to June 6, 1949, and at datum 5,280.72 ft thereafter.

Average discharge.--35 years (1927-62), 34.5 cfs (24,980 acre-ft per year).

Extremes.--Maximum discharge during year, 156 cfs June 8; maximum gage height, 3.78 ft May 7; minimum daily discharge, 2.0 cfs Aug. 9, 1914, 1927-62: Maximum discharge, 3,000 cfs July 7, 1933 (gage height, 6.95 ft, site and datum then in use), from rating curve extended above 1,100 cfs on basis of slope-area measurement of peak flow; maximum gage height, 7.21 ft Sept. 2, 1938 (site and datum then in use); no flow July 13, 1954.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor. Discharge measurements generally made twice a month. Storage and diversions above station for irrigation of about 12,000 acres.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Sept. 26-30; stage-discharge  
relation indefinite Sept. 23-25)

2.3	1.2	2.9	20
2.4	2.8	3.2	43
2.5	4.8	3.5	86
2.7	11	3.9	170

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	120	64	52	37	54	28	43	86	13	28	8.3	4.8
2	114	55	50	36	56	31	41	112	22	27	5.9	4.2
3	110	46	50	35	60	34	50	133	28	21	5.4	4.2
4	108	59	44	37	66	37	55	118	21	17	5.9	4.8
5	106	52	43	34	42	40	53	110	16	16	4.8	5.6
6	100	43	42	38	38	40	67	114	13	11	3.8	5.1
7	95	47	40	36	37	39	83	135	28	7.9	2.8	4.6
8	91	47	35	32	39	38	86	118	110	9.0	2.2	4.6
9	93	56	33	26	42	37	86	116	78	12	2.0	5.9
10	90	47	31	28	50	36	90	112	50	12	2.6	6.5
11	91	47	29	33	54	32	86	99	39	11	2.2	6.5
12	88	51	29	35	56	32	81	90	32	11	3.0	5.4
13	78	44	31	38	50	38	84	83	29	13	3.2	4.6
14	80	43	36	37	46	34	91	75	28	11	3.0	4.4
15	70	47	41	38	45	37	88	50	21	11	2.6	4.8
16	72	47	43	35	36	34	102	32	16	11	2.8	4.8
17	64	42	43	32	35	37	88	29	15	11	4.0	4.8
18	66	39	42	31	36	37	88	25	10	10	3.4	4.2
19	67	40	40	30	39	38	90	21	7.0	7.0	3.6	3.0
20	66	41	41	34	41	47	93	20	5.1	6.5	3.6	3.2
21	62	42	42	32	43	39	100	21	6.8	6.2	3.8	4.0
22	59	44	43	32	39	35	95	20	9.6	6.2	4.6	4.0
23	56	45	44	32	32	33	86	18	9.3	7.6	4.8	4.5
24	70	46	42	34	28	32	70	15	8.6	15	4.6	5.0
25	48	47	41	36	27	31	56	13	7.9	15	4.4	5.4
26	52	48	39	39	24	39	55	13	6.8	15	4.4	5.9
27	59	50	41	41	22	51	67	19	6.8	16	3.6	5.4
28	59	52	44	42	21	53	66	20	6.2	14	3.0	5.1
29	67	52	37	45	-	55	62	22	13	13	3.2	5.6
30	55	52	36	48	-----	47	84	18	39	13	3.8	5.6
31	78	-----	35	50	-----	39	-----	13	-----	10	5.4	-----
Total	2,434	1,435	1,239	1,113	1,158	1,180	2,286	1,870	695.1	394.4	120.7	146.5
Mean	78.5	47.8	40.0	35.9	41.4	38.1	76.2	60.3	23.2	12.7	3.89	4.88
Ac-ft	4,830	2,850	2,460	2,210	2,300	2,340	4,530	3,710	1,380	782	239	291

Calendar year 1961: Max 344 Min 8.6 Mean 62.5 Ac-ft 45,280  
Water year 1961-62: Max 135 Min 2.0 Mean 38.6 Ac-ft 27,920

Note.--Stage-discharge relation affected by ice Nov. 19-22, Dec. 19-22, Jan. 7, 8, Feb. 11. No gage-height record Nov. 23-30, Dec. 10-15, Dec. 27, 28, Jan. 9 to Feb. 2, Feb. 5-8, 12-20, Feb. 25 to Mar. 9 (stage-discharge relation affected by ice during part of periods).

## PLATTE RIVER BASIN

25

6-7120. Cherry Creek near Franktown, Colo.

Location--Lat 39°21'30", long 104°45'50", in NE¼ sec.15, T.8 S., R.66 W., on right bank 1½ miles upstream from Russellville Gulch and 2½ miles south of Franktown.

Drainage area--169 sq mi.

Records available--November 1939 to September 1962.

Gage--Water-stage recorder. Altitude of gage is 6,150 ft (from topographic map). Prior to Oct. 1, 1953, at site 1,000 ft downstream, at datum 6,149.53 ft above mean sea level (unadjusted) prior to Apr. 13, 1942, and at datum 6,147.53 ft above mean sea level Apr. 13, 1942, to Sept. 30, 1953.

Average discharge--22 years (1940-62), 9.88 cfs (7,150 acre-ft per year).

Extremes--Maximum discharge during year, 68 cfs Mar. 7 (gage height, 3.64 ft); minimum daily, 0.6 cfs for many days.

1939-62: Maximum discharge, 9,170 Aug. 5, 1945 (gage height, 4.91 ft, site and datum then in use), by float measurement; minimum daily, 0.2 cfs July 13, 1946, Sept. 30, Oct. 1, 1950.

Highest flood known occurred Aug. 3, 1933, when Castlewood Dam failed.

Remarks--Records good except those for periods of no gage-height record, which are poor. Discharge measurements generally made twice a month. Many small diversions above station for irrigation of about 800 acres.

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

1.5	0.5	2.4	5.6
1.6	.7	2.6	8.5
1.8	1.5	2.8	14
1.9	1.9	3.1	25
2.1	3.2	3.4	45

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6.7	1.6	8.2	4.9	13	5	12	8.0	4.9	1.9	0.7	1.0
2	8.2	14	8.0	5.1	14	7	12	6.1	5.6	1.6	.6	.9
3	7.6	10	8.2	4.9	15	9	13	5.2	6.0	1.7	.7	1.0
4	6.7	11	6.0	5.1	12	10	19	4.3	5.2	1.5	.7	1.1
5	6.0	9.0	5.2	5.0	10	11	16	4.1	3.7	1.6	.6	1.1
6	5.4	6.6	4.5	5.3	10	16	17	3.9	4.6	1.4	.6	.9
7	5.2	7.3	4.4	5.4	11	33	19	3.5	11	1.4	.6	.9
8	5.1	7.5	4.1	5.3	11	40	19	3.1	20	1.8	.6	1.1
9	5.4	8.2	5.2	5.2	10	26	20	2.7	15	1.9	.7	1.3
10	5.8	7.5	4.5	5.0	9	19	18	2.7	8.5	1.5	.6	1.2
11	5.7	8.0	4.3	5.0	10	13	17	2.3	6.6	1.4	.6	.9
12	5.4	8.3	4.3	5.2	12	12	16	2.1	5.1	2.4	.6	.7
13	5.2	5.4	3.6	5.4	14	12	15	2.0	3.8	1.5	.6	.7
14	5.2	5.3	3.6	6.0	14	12	14	2.0	3.3	1.3	.6	.7
15	5.2	11	3.6	6.5	13	13	14	1.9	3.1	1.3	.6	.7
16	5.4	8.0	3.7	6.7	12	13	13	2.3	2.5	2.2	.6	.7
17	5.5	8.0	4.1	6.7	12	16	12	7.7	2.1	1.5	.7	.7
18	5.6	7.6	3.9	6.6	7.6	19	10	3.1	2.1	1.2	.7	.6
19	5.3	5.7	3.6	6.3	7.5	19	10	1.7	1.9	1.2	.7	.7
20	5.3	6.4	3.6	6.4	9.2	20	7.5	6.7	1.9	1.0	.7	.7
21	5.3	9.5	3.8	6.1	11	14	7.1	5.0	1.7	.9	.7	1.0
22	5.3	9.0	3.8	5.4	8.2	11	8.3	4.8	1.8	.9	.7	.9
23	5.1	8.5	4.0	5.1	7.3	12	6.6	4.5	1.7	1.2	2.1	.8
24	5.2	10	4.4	4.9	6	10	6.0	4.2	1.7	1.6	1.7	.9
25	5.2	12	5.0	5.2	5	9.5	5.7	3.7	2.3	1.1	.8	.9
26	5.3	14	5.4	5.2	5	12	5.6	3.4	2.5	.8	.6	.9
27	5.6	14	5.2	5.5	4.5	12	5.5	4.5	1.8	.9	.8	.9
28	5.8	11	5.4	5.7	4	11	5.5	6.7	1.6	1.0	.6	.9
29	6.0	9.0	5.3	6.0	-	9.0	6.1	5.2	2.0	.9	.7	.9
30	9.2	10	5.2	6.6	-----	12	6.8	5.1	2.1	.7	.9	.9
31	15	-----	5.2	9.8	-----	13	-----	4.3	-----	.8	1.3	-----
Total	188.9	277.8	149.3	177.5	277.3	450.5	356.7	170.0	136.1	42.1	23.7	26.6
Mean	6.09	9.26	4.82	5.73	9.90	14.5	11.9	5.48	4.54	1.36	0.76	0.89
Ac-ft	375	551	296	352	550	894	708	337	270	84	47	53

Calendar year 1961: Max 359 Min 1.5 Mean 10.0 Ac-ft 7,280  
 Water year 1961-62: Max 40 Min 0.6 Mean 6.24 Ac-ft 4,520

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

Note--No gage-height record Oct. 30, Nov. 3, Dec. 10-12, Jan. 9-15, Feb. 1-15, Feb. 24 to Mar. 5 (stage-discharge relation affected by ice during part of period).



## PLATTE RIVER BASIN

6-7125. Cherry Creek near Melvin, Colo.

Location.--Lat 39°35'42", long 104°48'44", in SE¼SE¼ sec.19, T.5 S., R.66 W., near right bank on downstream side of Arapahoe Road bridge, 0.9 mile upstream from Piney (South Cherry) Creek, 2.3 miles southeast of former site of Melvin, 5½ miles upstream from Cherry Creek Dam, and 6.0 miles northwest of Parker. Prior to Oct. 1, 1960, at site 1 mile downstream.

Drainage area.--336 sq mi.

Records available.--October 1939 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 5,630 ft (from topographic map). Prior to Oct. 1, 1960, at site 1 mile downstream at datum 5,608.21 ft above mean sea level, datum of 1929.

Average discharge.--23 years, 13.7 cfs (9,920 acre-ft per year).

Extremes.--1960-61: Maximum discharge during water year, 5,600 cfs July 31 (gage height, 4.76 ft), from rating curve extended above 35 cfs; no flow for many days.

1961-62: Maximum discharge during water year, not determined; no flow for many days.

1939-62: Maximum discharge, 17,600 cfs July 18, 1946 (gage height, 7.45 ft, site and datum then in use), from rating curve extended above 11,000 cfs; no flow at times in most years.

Maximum stage known, 9.72 ft, former site and datum, Aug. 3, 1933, from floodmarks (discharge, 34,000 cfs, by slope-area measurement of peak flow at Kenwood damsite 6 miles downstream), caused by failure of Castlewood Dam.

Remarks.--Records poor. Discharge measurements or observations of no flow generally made twice a month. Diversions above station for irrigation of about 1,800 acres.

Discharge, in cubic feet per second, water year October 1960 to September 1961

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1						10	21	2	1.2	0	339	0
2						12	30	2	4	0	17	
3						12	30	2.5	8	0	25	
4						10	9.9	4.5	12	0	8.5	5
5						6	15	4.5	9.9	0	2	
6					0	8	20	3	7.8	0		
7						6	21	2.5	20	0		
8						10	25	3	16	0	0	
9						24	22	1	6.4	0		
10						25	21	0	6.4	0		
11						3.0	24	0	5.6	0	7.5	
12						4.0	17	0	6.4	0	0	
13						5.7	20	12	7.8	0		
14						3.0	25	8.6	7.8	0		
15					16	12	34	58	17	0		0
16						16	24	72	21	0	2	
17						12	13	36	13	0		
18						22	11	18	.5	0		
19						20	15	15	0	0		
20						17	11	17	1.7	0		
21						25	5.5	11	3.3	0		
22						18	5	6.4	1.6	0		
23					12	4.5	5	6.4	5	0		
24						6.4	5	6.4	5	0		
25						4.5	18	7.8	0	0	0	4.5
26						1	11	9.2	0	0		
27						.1	8.5	6.4	0	0		
28						20	5	2.2	0	0		
29						22	5	2.6	.1	0		
30						21	3	2	0	0		
31						16		0		452		
Total	0	0	0	0	220	379.2	479.9	399.4	187.5	452	411.0	66.0
Mean	0	0	0	0	7.9	12.2	16.0	12.9	6.25	14.6	13.3	2.2
Ac-ft	0	0	0	0	436	752	952	792	372	897	815	131

Calendar year 1960: Max 1,280 Min 0 Mean 20.6 Ac-ft 14,980

Water year 1960-61: Max 452 Min 0 Mean 7.11 Ac-ft 5,150

Peak discharge (base, 1,400 cfs).--July 31 (2120) 5,600 cfs (4.76 ft).

Note.--No gage-height record Feb. 1 to Mar. 9 (stage-discharge relation affected by ice during most of period), Mar. 26-29, Apr. 4, 5, Apr. 17 to May 13, May 27 to June 3, June 9-14, June 18 to July 30, Aug. 4-10, Aug. 12 to Sept. 30.

## PLATTE RIVER BASIN

27

6-7125. Cherry Creek near Melvin, Colo.--Continued

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.0	15			14	8	20	4.5	0			
2	4.5	9.9			20	12	16	4.0	0			
3	2.5	8.6			30	16	13	3.5	0			
4	3.5	5.0			38	20	16	2.5	0			
5	1.9	1.4			40	34	16	1.0	0			
6	0	4.1			34	24	17	0	.2			
7	0	1.0			25	30	13	0	8			
8	0	4.5			36	40	12	0	25			
9	.8	7.0			46	34	17	0	16			
10	2.2	8.7	0.7		45	22	17	0	10			
11	0	3.0			44	22	22	0	6			
12	.2	17			40	22	22	0	1			
13	0	16			34	24	20	0	0			
14	.5	18			32	26	17	0	0			
15	3.5	18		2	22	30	11	0	0			
16	3				21	32	11	0	0			
17	3				24	25	16	0	0			
18	2.5				18	30	15	0	0			
19	1.0				14	30	15	.9	0			
20	.2				14	32	13	0	0			
21	.2				12	25	9.9	0	0			
22	.4				12	20	7.8	0	0			
23	.4	4			8	15	9.2	0	0			
24	.4				6	21	9.2	0	0			
25	.2				6	21	7.8	0	0			
26	3.0		2		4	18	7.8	0	0			
27	4.5				4	15	7.8	0	0			
28	5.7				4	18	7.8	0	0			
29	8.5				-	21	7.8	0	0			
30	30				-----	22	7.8	0	0			
31	12	-----			-----	17	-----	0	-----			-----
Total	96.6	197.2	36.0	62	647	726	401.9	16.4	66.2	0	0	0
Mean	3.12	6.57	1.2	2	23.1	23.4	13.4	0.53	2.21	0	0	0
Ac-ft	192	391	71	123	1,280	1,440	797	33	131	0	0	0

Calendar year 1961: Max 452 Min 0 Mean 8.01 Ac-ft 5,800

Water year 1961-62: Max 46 Min 0 Mean 6.16 Ac-ft 4,460

Peak discharge (base, 1,400 cfs).--No peak above base.

Note.--No gage-height record Oct. 1, 5-26, Nov. 3-11, Nov. 14 to Feb. 13, Feb. 17 to Mar. 8, Mar. 10-15 (stage-discharge relation affected by ice during parts of periods), May 2 to Sept. 30.

## PLATTE RIVER BASIN

6-7130. Cherry Creek below Cherry Creek Reservoir, Colo.

Location.--Lat 39°39'10", long 104°51'40", in SW¼SW¼ sec.35, T.4 S., R.67 W., on right bank 2,000 ft downstream from Cherry Creek Dam, 2 miles southeast of Sullivan, 9 miles southeast of Civic Center in Denver, and 11 miles upstream from mouth.

Drainage area.--385 sq mi.

Records available.--June 1950 to September 1962.

Gage.--Water-stage recorder and concrete control. Datum of gage is 5,490.51 ft above mean sea level, datum of 1929 (Corps of Engineers bench mark).

Average discharge.--12 years, 3.19 cfs (2,310 acre-ft per year), unadjusted.

Extremes.--Maximum discharge during year, 139 cfs Feb. 12 (gage height, 4.80 ft); no flow Dec. 23-31, July 30.

1951-62: Maximum discharge, 1,440 cfs July 31, 1956 (gage height, 6.07 ft); no flow for many days in 1957-62.

Maximum flood known, 34,000 cfs Aug. 3, 1933, by slope-area measurement near present site (Castlewood Dam failure).

Remarks.--Records good except those for periods of ice effect, which are fair. Flow regulated by Cherry Creek Reservoir (capacity, 247,500 acre-ft). Reservoir was completed in June 1950. Permanent storage started May 15, 1957. Contents Sept. 30, 1962, 14,050 acre-ft. Change in contents during water year 1962, -1,010 acre-ft. Diversions above station for irrigation of about 1,800 acres.

Rating table (gage height, in feet, and discharge,  
in cubic feet per second)  
(Shifting-control method used Feb. 12)

2.9	0	3.7	14
3.1	1.3	4.0	29
3.2	2.3	4.3	58
3.3	3.8	4.5	92
3.5	8.0	4.8	180

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.1	.1	.1	0.1	0.1	0.3	0.4	0.2	0.3	0.2	0.1	0.2
2	.1	.1	.1	.1	*.1	.2	.4	.2	.3	*.2	.1	.2
3	.1	*.2	.1	.1	.1	.2	.4	*.2	.2	.2	.1	.2
4	*.1	.1	.1	*.1	.1	.2	*.4	.2	.2	.2	.1	.2
5	.1	.1	.1	.1	.1	.2	.4	.2	.2	.2	.1	.2
6	.1	.2	*.1	.1	.1	*.2	.4	.2	*.2	.2	.1	.2
7	.1	.1	.1	.1	.1	.2	.4	.2	.3	.2	.1	.2
8	.1	.1	.1	.1	.1	.2	.4	.2	.3	.3	.1	.2
9	.2	.1	.1	b.1	**1	.2	.2	.2	.2	.2	.1	.2
10	.1	.1	.3	b.1	.1	.2	.2	.2	.2	.2	.1	.2
11	.2	.1	.2	b.1	.1	.2	.2	.2	.2	.2	.1	*.2
12	.1	.1	.1	b.1	*88	.2	.2	.2	.2	.2	.1	.2
13	.2	.1	.2	b.1	*136	.2	.2	.2	.2	.2	.1	.2
14	.2	.1	.2	b.1	136	.2	.2	.2	.2	.2	.1	.2
15	.1	.1	.2	*.1	136	.3	.2	.2	.2	.2	*.1	.2
16	.1	.1	.2	.1	*136	.4	*.2	.2	.2	.2	.1	.2
17	.1	*.1	.2	.1	136	.4	.2	.2	.2	.2	.1	.2
18	*.1	.1	.1	.1	44	.4	.2	*.2	.1	*.2	.1	.2
19	.1	.1	*.1	.1	.3	.4	.2	.2	.1	.2	.1	.2
20	.1	.1	.1	.1	.2	82	.2	.2	.1	.2	.1	.2
21	.1	.1	.1	.1	.2	*130	.2	.2	.1	.1	.1	.2
22	.1	.1	.1	.1	.2	128	.2	.2	*.2	.1	.1	.2
23	.1	.1	0	.1	.2	*128	.2	.2	.2	.1	.1	.1
24	.1	.1	0	.1	.2	76	.2	.2	.2	.1	.1	.1
25	.1	.1	0	.1	.2	.4	.2	.2	.3	.1	.1	.1
26	.1	.1	0	.1	.2	.4	.2	.2	.3	.1	.1	.1
27	.1	.1	0	.1	.2	.4	.2	.2	.3	.1	.1	.1
28	.1	.1	0	.1	.3	.4	.2	.2	.3	.1	.1	.1
29	.2	.1	0	.1	-	.4	.2	.2	.4	.1	.2	.1
30	.1	.1	0	.1	-----	.4	.2	.2	.3	0	.2	.1
31	.1	-----	0	.1	-----	.4	-----	.2	-----	.1	.2	-----
Total	3.6	3.2	3.0	3.1	815.3	551.6	7.6	6.2	6.7	5.1	3.4	5.2
Mean	0.12	0.11	0.10	0.10	29.1	17.8	0.25	0.20	0.22	0.16	0.11	0.17
Ac-ft	7.1	6.3	6.0	6.1	1,620	1,090	15	12	13	10	6.7	10

Calendar year 1961: Max 328 Min 0 Mean 1.31 Ac-ft 950  
 Water year 1961-62: Max 136 Min 0 Mean 3.87 Ac-ft 2,800

\* Discharge measurement made on this day.

\*\* Field estimate made on this day.

b Stage-discharge relation affected by ice.

6-7135. Cherry Creek at Denver, Colo.

Location.--Lat 39°44'58", long 105°00'08", in NE¼ sec.33, T.3 S., R.68 W., on right bank on downstream side of Wazee Street Bridge in Denver, 0.5 mile upstream from mouth.

Drainage area.--409 sq mi.

Records available.--August 1942 to September 1962.

Gage.--Water-stage recorder. Datum of gage is 5,176.34 ft above mean sea level, datum of 1929. Prior to Jan. 23, 1945, wire-weight gage at Broadway Bridge 1.8 miles upstream at datum 57.29 ft higher. Jan. 23 to Feb. 26, 1945, wire-weight gage at Downing Street Bridge 2.8 miles upstream from present site at different datum. Feb. 27, 1945, to Sept. 30, 1947, wire-weight gages at Washington Street Bridge 2.4 miles upstream from present site at datum 72.31 ft higher and Oct. 1, 1947, to Sept. 30, 1949, at datum 71.31 ft higher than present datum. Oct. 1, 1949, to July 15, 1951, wire-weight gage at Market Street Bridge 0.1 mile upstream from present site at datum 8.49 ft higher.

Average discharge.--20 years, 16.5 cfs (11,950 acre-ft per year).

Extremes.--Maximum discharge during year, 381 cfs June 29 (gage height, 4.72 ft); minimum daily, 4.0 cfs May 1.

1942-62: Maximum discharge observed, 3,120 cfs Aug. 5, 1945 (gage height, 5.25 ft, site and datum then in use); minimum daily, 0.4 cfs June 16-18, 1948.

Flood of July 26, 1885, reached a discharge of 20,000 cfs, by float measurement. Flood of May 19, 20, 1864, reached a somewhat higher stage. Flood of Aug. 3, 1933, reached a discharge of about 15,000 cfs, as determined by rise of South Platte River at Denver.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Several diversions above station for irrigation of about 1,900 acres. Flood flow regulated by Cherry Creek Reservoir 11 miles upstream (capacity, 247,500 acre-ft).

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

3.2	3.3	3.8	67
3.3	8.3	4.1	137
3.4	16	4.4	236
3.6	36		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	25	14	8.3	13	15	4.5	9.3	4.0	29	7.6	13	14
2	29	11	7.6	8.3	*14	5.0	7.0	7.0	9.0	8.3	*11	13
3	18	*9.0	7.6	8.3	14	5.0	8.3	*9.7	7.6	8.3	9.0	17
4	*14	7.6	7.6	*7.6	9.7	6.0	*9.7	7.0	9.0	9.0	9.7	12
5	20	7.6	7.6	7.6	7.6	7.0	10	5.3	9.7	9.7	9.7	10
6	19	8.3	*7.0	7.6	8.3	*7.6	10	4.8	*9.0	9.7	10	11
7	18	7.6	7.0	b7.6	9.0	7.0	17	7.6	39	9.7	13	9.0
8	18	8.3	7.0	b7.0	8.3	5.9	14	7.0	33	7.6	9.7	9.0
9	18	8.3	7.0	b5.0	8.3	5.9	7.6	7.0	7.0	9.7	10	17
10	17	8.3	b7.0	b5.0	9.7	5.9	6.4	7.0	9.7	8.3	7.6	15
11	16	7.6	b6.4	b5.0	9.7	7.0	6.4	17	9.0	*7.6	9.0	*8.3
12	12	21	b6.0	b6.4	54	4.8	6.4	12	16	11	11	9.0
13	11	13	5.9	7.6	140	5.3	6.4	13	12	9.7	9.0	9.7
14	13	8.3	5.9	b6.4	143	6.4	7.0	14	12	9.0	8.3	8.3
15	13	8.3	5.9	b5.6	*143	7.0	6.4	14	11	9.0	*9.0	9.7
16	16	7.6	6.4	*5.9	146	8.3	6.4	15	10	9.0	9.0	11
17	15	*8.3	6.4	5.6	*149	9.0	6.4	14	14	10	18	12
18	*15	10	7.0	5.6	90	9.0	6.4	*12	12	10	7.0	10
19	14	8.3	7.6	5.6	15	*9.0	*6.4	5.3	10	9.7	6.4	12
20	17	7.6	*9.7	6.0	9.7	50	8.3	13	9.7	9.7	10	9.7
21	14	9.7	7.6	7.0	7.6	124	10	14	9.7	9.7	9.7	14
22	19	10	5.9	8.0	7.6	*127	6.4	8.3	*9.0	10	9.0	9.7
23	19	11	5.9	9.0	6.4	*127	9.7	8.3	9.0	14	23	15
24	20	9.7	7.6	9.5	5.3	107	20	8.3	8.3	10	7.6	15
25	19	9.0	7.6	10	5.3	14	21	9.7	9.7	11	7.0	10
26	17	9.7	7.0	10	b5.0	9.0	13	5.9	9.0	14	8.3	7.6
27	13	8.3	6.4	10	5.0	7.6	6.4	24	9.0	7.6	9.7	11
28	14	8.3	5.9	12	4.5	7.6	6.4	5.9	8.3	13	9.7	9.0
29	36	8.3	6.4	14	-	9.7	30	7.6	38	11	10	7.0
30	19	8.3	11	19	-----	15	16	11	12	10	9.7	15
31	14	-----	19	16	-----	6.4	-----	13	-----	23	9.7	-----
Total	542	282.3	231.2	261.2	1050.0	729.9	304.7	311.7	399.7	315.9	312.8	340.0
Mean	17.5	9.41	7.46	8.43	37.5	23.5	10.2	10.1	13.3	10.2	10.1	11.3
Ac-ft	1,080	560	459	518	2,080	1,450	604	618	793	627	620	674

Calendar year 1961: Max 235 Min 3.3 Mean 12.9 Ac-ft 9,330  
 Water year 1961-62: Max 149 Min 4.0 Mean 13.9 Ac-ft 10,080

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Oct. 15-18, Dec. 13-16, Jan. 17-28, Feb. 27 to Mar. 4 (stage-discharge relation affected by ice during part of periods).



## PLATTE RIVER BASIN

6-7140. South Platte River at Denver, Colo.

Location.--Lat 39°45'35", long 105°00'10", in NW¼SE¼ sec.28, T.3 S., R.68 W., on right bank 20 ft upstream from Nineteenth Street Bridge in Denver and 0.4 mile downstream from Cherry Creek.

Drainage area.--3,804 sq mi.

Records available.--May to October 1889, June to October 1890, July 1895 to September 1962. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 5,162.12 ft above mean sea level, datum of 1929. Prior to Aug. 12, 1909, staff gages and Aug. 12, 1909, to Aug. 28, 1931, water-stage recorder, at several sites within half a mile of present site at approximately present datum.

Average discharge.--67 years, 345 cfs (249,800 acre-ft per year).

Extremes.--Maximum discharge during year, 1,610 cfs June 29 (gage height, 2.42 ft); minimum daily, 39 cfs Sept. 14, 20. 1889-90, 1895-1962: Maximum discharge, 22,000 cfs Sept. 10, 1933 (gage height, 10.98 ft), from rating curve extended above 8,800 cfs on basis of float-area measurement at gage height 9.44 ft; minimum daily, 8.8 cfs Mar. 25, 1951.

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. Natural flow of stream affected by transmountain diversions, storage reservoirs, power developments, ground-water withdrawals and diversions for irrigation of about 79,000 acres and municipal use, and return flow from irrigated areas.

Rating tables, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 1-6, Apr. 18, 19)

Oct. 1 to Mar. 28

Mar. 29 to Sept. 30

0.7	116	0.5	36	1.2	230
.9	232	.6	45	1.5	480
1.2	490	.8	79	2.0	1,080
		1.0	136	2.5	1,740

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	463	481	355	152	287	150	198	838	230	491	198	84
2	472	454	382	152	287	180	181	813	348	380	156	65
3	436	418	382	158	302	206	208	888	340	380	203	69
4	427	418	373	163	287	181	390	875	316	390	219	63
5	418	409	364	158	255	187	410	813	316	316	214	56
6	400	391	346	174	219	200	420	801	356	198	187	48
7	373	364	328	174	206	232	480	875	624	168	136	43
8	346	373	302	142	226	364	568	925	801	286	110	42
9	355	364	271	110	213	328	568	950	480	348	99	79
10	409	364	190	100	226	226	568	765	308	450	82	77
11	436	364	170	115	232	181	524	825	251	470	86	49
12	445	418	175	120	337	163	502	801	265	590	89	42
13	427	400	180	120	463	213	502	753	390	491	94	46
14	400	346	180	120	454	255	557	682	348	400	94	39
15	355	337	190	115	454	302	624	602	316	400	89	40
16	346	364	195	110	481	302	765	557	300	390	89	40
17	248	364	210	105	454	302	938	705	308	348	99	42
18	271	355	205	100	302	287	1,020	624	225	251	71	41
19	271	328	210	95	271	279	1,020	430	214	192	62	40
20	271	328	220	105	302	328	1,140	460	400	176	84	39
21	271	364	230	95	255	355	1,000	410	568	168	82	43
22	294	355	250	100	200	271	912	272	513	148	96	53
23	310	364	220	105	200	263	813	172	410	181	144	67
24	310	355	195	115	163	248	850	152	364	308	181	61
25	310	355	170	125	155	126	888	316	410	300	181	48
26	319	340	150	130	150	147	1,040	293	430	300	160	48
27	328	320	120	145	130	194	1,120	219	380	272	152	49
28	328	335	b105	155	120	213	976	244	300	258	136	45
29	427	355	b110	170	-	203	1,220	203	425	187	104	44
30	382	346	b135	200	-----	265	1,300	203	524	130	71	99
31	454	-----	b145	250	-----	219	-----	206	-----	181	79	-----
Total	11,302	11,129	7,058	4,178	7,631	7,370	21,702	17,672	11,460	9,548	3,854	1,601
Mean	365	371	228	135	273	238	723	570	382	308	124	53.4
Ac-ft	22,420	22,070	14,000	8,290	15,140	14,620	43,050	35,050	22,730	18,940	7,640	3,180

Calendar year 1961: Max 1,090 Min 44 Mean 311 Ac-ft 224,900  
Water year 1961-62: Max 1,300 Min 39 Mean 314 Ac-ft 227,100

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 26-28, Dec. 10-27, Jan. 9-31, Feb. 25 to Mar. 2 (stage-discharge relation affected by ice during part of periods), May 31 to June 3.

6-7165. Clear Creek near Lawson, Colo.

Location.--Lat 39°45'40", long 105°39'06", in SE¼NE¼ sec.27, T.3 S., R.74 W., on right bank 500 ft south of U. S. Highway 6 and 40, 0.4 mile downstream from West Fork Clear Creek, and 1 mile west of Lawson.

Drainage area.--145 sq mi.

Records available.--March 1946 to September 1962. Records prior to 1959 include inflow from Jones Pass tunnel.

Gage.--Water-stage recorder. Datum of gage is 8,193.72 ft above mean sea level (State Highway Department bench mark).

Average discharge.--16 years, 141 cfs (102,100 acre-ft per year), adjusted for inflow from Jones Pass tunnel prior to 1959.

Extremes.--Maximum discharge during year, 965 cfs June 21 (gage height, 4.98 ft); minimum daily, 25 cfs Feb. 26, 27.

1946-62: Maximum discharge, 6,130 cfs June 4, 1956 (gage height, 7.41 ft), from rating curve extended above 1,600 cfs on basis of computation of peak flow over dam, caused by failure of Georgetown Dam on White Reservoir about 3 miles upstream; minimum daily, 13 cfs Feb. 20, 1955.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Natural flow affected by minor transmountain diversion from Colorado River basin through Berthoud Pass ditch (see elsewhere in this report). No diversion above station.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 19, 20)

2.3	24	3.5	245
2.5	42	4.0	415
2.7	65	4.5	630
3.0	118	5.0	965

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	174	89	47	40	32	28	31	*145	251	740	193	72
2	164	80	47	40	34	29	31	136	303	707	180	66
3	162	66	46	40	34	31	31	133	345	685	172	64
4	159	85	45	38	33	33	31	145	390	*636	172	64
5	157	71	*45	41	33	33	31	164	*401	603	159	63
6	154	72	45	41	37	36	31	190	418	567	150	61
7	157	82	44	*38	34	32	31	225	426	531	145	61
8	154	77	42	39	33	32	31	254	404	522	138	63
9	154	76	40	35	*33	*33	32	300	373	504	136	60
10	150	71	35	30	36	34	33	348	398	472	*131	*57
11	145	70	35	32	37	32	31	366	464	450	122	55
12	142	70	39	35	37	32	32	390	513	464	116	54
13	140	61	41	35	35	31	36	387	580	450	114	52
14	138	*52	42	34	35	30	42	356	685	401	110	52
15	136	56	43	34	33	31	53	317	*690	362	106	51
16	133	54	43	34	33	32	*63	303	621	338	102	51
17	131	50	43	34	33	33	66	269	531	320	102	50
18	129	50	44	34	31	31	82	257	536	306	112	48
19	131	52	45	33	37	32	106	248	608	289	107	48
20	*127	54	45	33	36	31	142	269	690	275	99	51
21	118	52	45	32	37	31	157	263	740	263	93	54
22	116	52	42	32	30	31	136	225	758	251	90	59
23	106	52	43	32	29	30	133	*225	724	*260	87	52
24	106	52	44	32	27	30	180	248	718	266	84	51
25	106	50	45	31	28	30	204	275	718	239	86	50
26	106	50	45	31	25	30	206	266	*707	234	86	49
27	106	49	44	31	25	32	174	286	734	217	84	52
28	102	49	43	31	26	33	172	251	724	206	80	59
29	93	48	42	31	-	32	185	251	707	201	76	53
30	96	47	40	31	-----	30	159	239	734	198	78	50
31	93	-----	40	32	-----	29	-----	248	-----	195	76	-----
Total	4,085	1,839	1,329	1,066	913	974	2,672	7,979	16,891	12,152	3,586	1,672
Mean	132	61.3	42.9	34.4	32.6	31.4	89.1	257	563	392	116	55.7
Ac-ft	8,100	3,650	2,640	2,110	1,810	1,930	5,300	15,830	33,500	24,100	7,110	3,320

Calendar year 1961: Max 626 Min 19 Mean 138 Ac-ft 99,970  
Water year 1961-62: Max 758 Min 25 Mean 151 Ac-ft 109,400

Peak discharge (base, 600 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-14	2130	4.82	875	6-30	2200	4.94	947
6-21	2100	4.98	965				

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 14 to Jan. 1, Jan. 9-29, Feb. 23-28, Mar. 12-16. No gage-height record Dec. 12-14, Mar. 1-5 (stage-discharge relation affected by ice during part of periods), June 1, 2, Aug. 19-26.

## PLATTE RIVER BASIN

6-7195. Clear Creek near Golden, Colo.

Location.--Lat 39°45'05", long 105°14'55", in NE¼ sec.32, T.3 S., R.70 W., on left bank half a mile downstream from Golden Canal diversion and 1 mile west of Golden.

Drainage area.--399 sq mi.

Records available.--October 1908 to December 1909, June 1911 to September 1962. Monthly discharge only for some periods, published in WSP 1310. Records for 1940-58 include inflow from Jones Pass tunnel.

Gage.--Water-stage recorder. Datum of gage is 5,735.27 ft above mean sea level (State Highway bench mark). Prior to May 15, 1919, at site half a mile upstream at different datum. May 15, 1919, to Mar. 16, 1934, at present site at datum 3.13 ft higher. Mar. 17, 1934, to Aug. 29, 1941, at present site at datum 4.00 ft higher. Aug. 30, 1941, to Apr. 16, 1942, at present site at datum 2.00 ft higher. Apr. 17, 1942, to Jan. 20, 1943, at site 600 ft downstream at datum 7.50 ft lower.

Average discharge.--52 years, 233 cfs (168,700 acre-ft per year), adjusted for inflow from Jones Pass tunnel and Berthoud Pass ditch 1940-58.

Extremes.--Maximum discharge during year, 1,110 cfs June 22 (gage height, 4.76 ft); maximum gage height, 6.12 ft Jan. 20 (backwater from ice); minimum daily discharge, 41 cfs Feb. 28.  
1908-9, 1911-62: Maximum discharge, 5,890 cfs Sept. 9, 1933 (gage height, 11.57 ft, present datum, from floodmarks), from rating curve extended above 2,200 cfs on basis of slope-area measurement of peak flow; minimum daily recorded, 11 cfs Mar. 13, 1954.  
Maximum discharge known, 8,700 cfs Aug. 1, 1888, from reports of State engineer of Colorado for station 5½ miles upstream.

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. Natural flow affected by minor transmountain diversion from Colorado River basin through Berthoud Pass ditch (see elsewhere in this report) and several small reservoirs above station. Diversion a quarter of a mile above station by Welch ditch for irrigation of about 1,000 acres below station.

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

Oct. 1 to Feb. 28

Mar. 1 to Sept. 30

2.5	47	2.4	37	4.0	470
2.8	96	2.7	70	4.5	840
3.2	196	3.0	126	4.8	1,150
3.6	325	3.5	265		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	314	188	105	b66	78	b44	60	308	416	940	248	100
2	311	168	103	b68	b80	b48	60	300	445	890	234	92
3	311	116	100	b70	b80	b52	65	290	518	831	230	92
4	311	176	90	b72	b64	b56	62	296	614	768	227	98
5	297	140	80	b74	b58	b59	64	324	614	726	215	98
6	297	133	88	b69	b60	b60	69	364	628	686	209	94
7	287	148	84	b71	b64	b63	67	420	678	649	183	92
8	287	162	70	b71	73	72	67	470	628	649	172	96
9	283	162	76	59	73	62	67	544	544	628	165	96
10	276	161	59	58	82	55	72	649	551	579	165	88
11	263	164	56	70	90	48	67	670	642	551	165	83
12	263	171	51	78	92	42	67	710	710	558	165	80
13	253	158	54	78	88	57	78	726	777	579	165	78
14	250	147	58	78	70	60	92	663	870	488	155	76
15	243	140	b60	70	66	58	114	593	890	435	148	80
16	237	136	b63	72	71	60	148	572	804	408	146	80
17	234	118	b68	73	70	56	146	518	670	388	141	80
18	227	123	b66	72	60	55	172	482	635	372	153	76
19	221	111	b62	70	56	58	206	440	718	368	155	78
20	218	118	b62	70	73	58	262	482	860	344	167	80
21	213	128	b66	70	62	50	300	460	910	324	153	86
22	213	111	68	68	63	50	279	396	970	312	153	92
23	193	123	56	69	63	52	254	376	920	320	144	92
24	204	123	59	70	54	52	304	392	890	372	146	86
25	190	118	60	70	b45	53	356	445	890	316	135	86
26	190	118	54	70	b44	61	388	420	850	308	124	84
27	193	114	50	70	b42	65	348	494	910	290	120	76
28	190	107	50	72	b41	70	340	440	890	272	118	88
29	185	103	b53	74	-	72	388	416	890	258	112	80
30	185	109	b57	76	-----	61	344	392	890	251	112	72
31	199	-----	b62	78	-----	56	-----	412	-----	244	110	-----
Total	7,538	4,094	2,090	2,196	1,862	1,765	5,306	14,464	22,222	15,104	5,035	2,579
Mean	243	136	67.4	70.8	66.5	56.9	177	467	741	487	162	86.0
Ac-ft	14,950	8,120	4,150	4,360	3,690	3,500	10,520	28,690	44,080	29,960	9,990	5,120

Calendar year 1961: Max 1,010 Min 30 Mean 233 Ac-ft 168,400

Water year 1961-62: Max 970 Min 41 Mean 231 Ac-ft 167,100

Peak discharge (base, 1,100 cfs)--June 22 (0200) 1,110 cfs (4.76 ft).

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 6-14, Dec. 11-14, 22-28, Jan. 9 to Feb. 1 (stage-discharge relation affected by ice during most of periods).

## PLATTE RIVER BASIN

33

6-7200. Clear Creek at mouth, near Derby, Colo.

Location.--Lat 39°49'42", long 104°57'30", in SW¼SW¼ sec.36, T.2 S., R.68 W., on right bank 160 ft downstream from bridge on highway to Welby, 0.6 mile upstream from mouth and 2½ miles west of Derby.

Drainage area.--575 sq mi.

Records available.--April to November 1914, March 1927 to September 1962. Prior to October 1933 monthly discharge only, published in WSP 1310.

Gage.--Water-stage recorder. Altitude of gage is 5,110 ft (from topographic map). Apr. 1 to Nov. 30, 1914, chain gage at bridge 160 ft upstream at different datum. Feb. 25, 1927, to June 7, 1942, water-stage recorder at several sites within 1,000 ft of present site at various datums. June 8, 1942, to May 30, 1948, water-stage recorder at site 160 ft upstream at datum 4.00 ft higher, May 31, 1948, to Aug. 27, 1956, at datum 2.00 ft higher, and Aug. 28, 1956, to Nov. 14, 1957, at datum 1.00 ft higher. Nov. 15, 1957, to July 15, 1958, water-stage recorder at present site at datum 1.00 ft higher.

Average discharge.--35 years (1927-62), 90.5 cfs (65,520 acre-ft per year).

Extremes.--Maximum discharge during year, 680 cfs June 22 (gage height, 3.78 ft); minimum daily, 7.1 cfs Sept. 15. 1914, 1927-62: Maximum discharge, 3,650 cfs Sept. 3, 1938 (gage height, 4.04 ft, site and datum then in use), from rating curve extended above 1,300 cfs; minimum daily, 0.4 cfs Mar. 11, 1943.

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. Natural flow of stream affected by transmountain diversions (see elsewhere in this report), storage reservoirs, diversions for irrigation of about 75,000 acres above station, and return flow from irrigated areas.

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

(Shifting-control method used Feb. 1, Mar. 1 to May 28, Aug. 6 to Sept. 30)

Oct. 1 to May 28

May 29 to Sept. 30

1.2	24	2.2	220	1.3	5.0	2.0	102
1.5	58	2.6	360	1.5	20	2.5	220
1.8	110			1.6	30	3.0	380
				1.8	60	3.5	560

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	346	224	150	100	122	58	69	108	70	513	36	11
2	332	217	150	100	132	68	72	69	70	548	26	11
3	311	180	144	100	150	64	122	37	139	485	24	14
4	280	217	137	90	150	52	124	28	178	446	30	15
5	262	182	122	80	104	57	129	30	156	387	29	15
6	230	166	137	84	72	69	134	41	146	345	22	13
7	227	198	129	97	86	93	139	75	251	230	18	13
8	234	201	110	89	84	87	185	117	394	212	17	12
9	300	210	106	78	89	82	160	163	195	303	16	11
10	266	201	93	74	120	82	122	234	113	245	17	11
11	241	201	86	76	137	69	82	238	106	225	14	9.9
12	230	201	80	84	124	55	62	244	178	198	16	9.9
13	230	168	74	88	117	62	61	252	352	230	20	7.8
14	224	147	75	82	55	59	71	191	460	156	25	9.2
15	207	160	75	80	53	80	100	100	426	109	18	7.1
16	201	163	90	80	68	93	127	80	390	109	18	7.8
17	188	139	100	78	84	91	102	177	275	78	21	7.8
18	191	150	110	84	71	87	127	191	202	74	21	8.5
19	191	122	b110	88	58	77	142	174	158	111	23	11
20	204	117	b115	90	58	87	124	188	215	168	25	11
21	207	137	b120	84	79	42	139	217	422	128	20	13
22	180	134	b115	80	157	32	185	174	540	111	19	15
23	152	142	b110	82	142	43	108	117	510	120	19	15
24	160	147	b115	88	106	84	100	117	492	202	26	13
25	201	139	120	92	85	40	112	152	496	95	25	15
26	204	139	100	94	78	43	104	155	492	95	25	15
27	217	137	90	96	56	55	104	201	492	100	20	14
28	210	139	95	98	50	59	68	191	471	87	17	14
29	230	142	95	100	-	40	82	72	496	78	16	13
30	185	144	100	105	-----	52	180	34	485	78	14	11
31	234	-----	95	b110	-----	55	-----	30	-----	50	14	-----
Total	7,075	4,964	3,348	2,751	2,687	2,017	3,436	4,197	9,370	6,316	651	354.0
Mean	228	165	108	88.7	96.0	65.1	115	135	312	204	21.0	11.8
Ac-ft	14,030	9,850	6,640	5,460	5,330	4,000	6,820	8,320	18,590	12,530	1,290	702

Calendar year 1961: Max 900 Min 9.5 Mean 144 Ac-ft 103,900  
 Water year 1961-62: Max 548 Min 7.1 Mean 129 Ac-ft 93,560

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 16-18, Dec. 25 to Jan. 4, Jan. 9-30 (stage-discharge relation affected by ice during most of periods), Feb. 25 to Mar. 2.



## PLATTE RIVER BASIN

6-7205. South Platte River at Henderson, Colo.

Location.--Lat 39°55'12", long 104°52'18", in NW¼SE¼ sec.34, T.1 S., R.67 W., on left bank 1,200 ft upstream from bridge on State Highway 22 and 0.3 mile west of Henderson.

Drainage area.--4,713 sq mi.

Records available.--May 1926 to September 1962. Prior to October 1933, monthly discharge only, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 5,005.12 ft above mean sea level, datum of 1929. Prior to Apr. 17, 1956, at site 1,240 ft downstream. May 1, 1926, to Apr. 19, 1942, at datum 3.00 ft higher, Apr. 20, 1942, to Sept. 30, 1953, at datum 1.00 ft higher, and Oct. 1, 1953, to Apr. 16, 1956, at present datum. Apr. 17, 1956, to May 31, 1960, at site 840 ft downstream at present datum.

Average discharge.--36 years, 329 cfs (238,200 acre-ft per year).

Extremes.--Maximum discharge during year, 1,750 cfs June 29 (gage height, 4.14 ft); minimum daily, 53 cfs Sept. 16. 1926-62: Maximum discharge, 14,800 cfs May 9, 1957 (gage height, 11.35 ft), from rating curve extended above 9,500 cfs; minimum daily, 4.4 cfs Apr. 1, 1950.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Natural flow of stream affected by trans-mountain diversions, storage reservoirs, ground-water withdrawals, diversions for irrigation of about 253,000 acres, and return flow from irrigated areas.

Rating table (gage height, in feet, and discharge,  
in cubic feet per second)  
(Shifting-control method used Oct. 1-31, May 7, 8,  
Sept. 3-23, 27-30)

1.3	50	2.5	425
1.6	96	3.0	750
2.0	195	4.0	1,600

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	666	638	584	330	509	a 330	392	715	355	1,020	298	108
2	729	701	597	355	515	a 360	408	485	247	884	180	80
3	652	708	590	* 320	533	a 410	461	584	251	764	219	76
4	624	680	578	330	503	a 380	604	673	284	729	247	88
5	604	680	558	330	455	414	631	785	251	604	255	85
6	539	645	533	316	403	437	659	757	320	491	235	77
7	509	571	485	316	408	479	701	* 792	722	386	177	* 72
8	473	* 604	455	345	420	545	884	916	1,010	527	140	65
9	545	694	414	255	420	527	892	1,030	345	680	* 140	77
10	564	708	345	a 240	443	449	736	908	180	687	140	100
11	584	694	320	a 270	473	360	* 638	956	148	680	123	80
12	597	813	330	298	527	325	545	972	211	* 680	126	65
13	680	828	330	345	652	350	485	980	* 491	792	142	64
14	687	722	414	350	631	376	509	860	503	552	158	62
15	694	652	403	345	* 473	420	558	694	467	509	135	59
16	673	545	425	* 340	527	* 461	694	631	398	527	128	53
17	597	558	420	335	652	449	736	956	320	485	145	58
18	558	539	* 437	a 320	578	431	884	964	267	376	121	66
19	533	497	443	a 310	479	443	924	722	259	340	102	65
20	527	515	473	a 320	461	449	860	584	558	381	112	66
21	527	604	509	a 300	455	414	729	584	964	340	121	70
22	497	604	485	a 305	420	302	743	376	1,060	271	* 116	86
23	479	590	449	a 310	414	177	687	227	972	306	171	80
24	* 437	* 564	403	a 330	355	251	673	* 288	836	552	298	* 90
25	431	584	381	a 350	370	345	673	497	892	437	227	86
26	420	584	392	a 360	376	350	708	491	892	420	174	82
27	443	631	350	a 380	345	* 403	708	455	* 813	* 408	174	78
28	403	631	311	420	a 300	403	638	350	715	381	* 160	76
29	604	590	355	497	-	370	778	128	860	293	130	78
30	545	578	381	485	-----	473	* 1,260	98	1,040	243	100	91
31	624	-----	365	* 533	-----	431	-----	148	-----	235	108	-----
Total	17,445	13,952	13,515	10,640	13,097	12,314	20,798	19,606	16,631	15,980	5,102	2,283
Mean	563	632	436	343	468	397	693	632	554	515	165	76.1
Ac-ft	34,600	37,590	26,810	21,100	25,980	24,420	41,250	38,890	32,990	31,700	10,120	4,530

Calendar year 1961: Max 1,840 Min 47 Mean 417 Ac-ft 302,200  
 Water year 1961-62: Max 1,260 Min 53 Mean 456 Ac-ft 330,000

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

## PLATTE RIVER BASIN

35

6-7225. South St. Vrain Creek near Ward, Colo.

Location.--Lat 40°05'27", long 105°30'50", in NE¼SW¼ sec.36, T.2 N., R.73 W., on left bank at downstream side of bridge, 1.3 miles north of Ward and 3½ miles downstream from Brainard Lake.

Drainage area.--14.4 sq mi.

Records available.--October 1925 to September 1927, October 1928 to September 1931, September 1954 to September 1962. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Altitude of gage is 9,372 ft (from topographic map). May 29, 1926, to Sept. 30, 1927, and May 21, 1929, to Sept. 30, 1931, at site 600 ft downstream at datum 24.37 ft lower.

Average discharge.--13 years, 29.7 cfs (21,500 acre-ft per year).

Extremes.--Maximum discharge during year, 282 cfs July 1 (gage height, 3.83 ft); minimum daily, 2.9 cfs Feb. 25. 1925-27, 1928-31, 1954-62: Maximum discharge, 462 cfs June 29, 1957; maximum gage height, 4.11 ft June 27, 1957; minimum daily discharge determined, 1 cfs Mar. 20, 1930.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. No diversion above station. Slight regulation by several small lakes 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. 19 to Sept. 30)

2.3	2.1	3.1	39
2.4	3.2	3.3	57
2.5	4.7	3.5	96
2.6	7.6	3.7	180
2.7	12	3.9	310
2.9	24		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	25	*14	7.3	5.8	5.2	3.7	3.5	17	45	210	45	28
2	27	12	7.0	5.4	5.4	3.6	3.4	14	49	155	*45	37
3	23	11	6.7	5.0	5.6	3.6	4.0	15	57	135	44	38
4	23	11	*6.2	4.7	6.2	3.5	3.8	18	71	120	43	37
5	22	11	5.6	4.6	5.2	*3.5	3.8	*22	72	113	42	37
6	22	12	5.9	4.6	4.0	3.8	3.8	28	72	110	41	36
7	*22	12	5.9	4.0	3.5	3.8	3.8	29	*78	110	40	*35
8	21	12	5.6	4.9	*3.7	3.8	3.8	34	69	116	38	34
9	22	12	5.4	5.4	3.7	3.7	3.8	41	59	99	37	33
10	22	12	5.0	5.2	4.4	3.8	4.0	45	59	*92	37	31
11	19	12	4.5	5.2	5.0	3.5	*3.9	48	74	85	39	30
12	20	11	4.3	4.8	4.6	3.2	3.5	53	103	94	41	28
13	19	9.0	5.0	4.8	4.0	3.2	3.5	56	120	110	40	28
14	19	8.0	6.0	5.0	3.7	3.2	4.0	49	135	83	38	26
15	19	9.0	6.5	*5.0	3.5	3.4	5.9	45	*130	67	37	25
16	19	9.5	6.0	5.0	3.5	3.5	12	42	110	62	36	21
17	20	9.0	5.6	4.8	3.5	3.5	9.8	38	71	57	34	17
18	20	9.0	5.4	4.8	3.5	3.5	12	36	64	59	33	13
19	19	9.0	5.4	5.0	3.5	3.5	17	34	89	60	30	12
20	20	9.0	6.2	5.2	4.0	3.5	21	37	*130	57	30	11
21	19	10	6.0	5.0	3.4	3.5	22	37	150	56	29	12
22	20	10	5.6	4.5	3.2	3.5	19	36	165	55	28	15
23	19	9.0	6.0	4.7	3.0	3.5	17	32	155	56	25	13
24	27	8.8	5.9	4.7	3.0	3.5	21	34	140	59	25	12
25	22	9.0	5.9	4.7	2.9	3.6	27	37	127	54	23	11
26	17	8.8	5.8	5.0	3.5	3.8	26	39	127	52	22	10
27	14	8.8	5.2	5.0	3.4	4.0	22	43	150	53	20	10
28	13	8.6	5.4	5.0	3.8	3.9	23	43	150	51	19	16
29	17	8.5	5.8	5.0	-	3.8	24	41	145	49	18	16
30	19	8.0	5.8	4.9	-----	3.6	19	38	160	48	19	15
31	13	-----	5.8	4.9	-----	3.5	-----	40	-----	47	19	-----
Total	623	303.0	178.7	152.6	111.9	111.0	350.3	1,121	3,126	2,574	1,017	687
Mean	20.1	10.1	5.76	4.92	4.00	3.58	11.7	36.2	104	83.0	32.8	22.9
Ac-ft	1,240	601	354	303	222	220	695	2,220	6,200	5,110	2,020	1,360

Calendar year 1961: Max 210 Min - Mean 29.2 Ac-ft 21,120  
Water year 1961-62: Max 210 Min 2.9 Mean 28.4 Ac-ft 20,540

Peak discharge (base, 170 cfs)--July 1 (0200) 282 cfs (3.83 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 2-28. No gage-height record Dec. 9 to Apr. 11 (stage-discharge relation affected by ice during most of period).

## PLATTE RIVER BASIN

6-7240. St. Vrain Creek at Lyons, Colo.

Location.--Lat 40°13'05", long 105°15'34", in NW¼NW¼ sec.20, T.3 N., R.70 W., on left bank 75 ft southwest of State Highway 7 and 66 at southeast edge of Lyons, 400 ft upstream from headgate of St. Vrain Supply Canal, and 0.4 mile downstream from confluence of North and South St. Vrain Creeks.

Drainage area.--212 sq mi.

Records available.--August 1887 to September 1891, June 1895 to September 1962. Monthly discharge only for some periods, published in WSP 1310. Published as "near Lyons" 1901, 1903.

Gage.--Water-stage recorder. Altitude of gage is 5,292 ft (from topographic map). Prior to Apr. 6, 1923, staff gages near present site at different datums. Apr. 6, 1923, to Sept. 30, 1956, water-stage recorder at same site at datum 1.00 ft higher.

Average discharge.--71 years, 132 cfs (95,560 acre-ft per year).

Extremes.--Maximum discharge during year, 1,140 cfs June 30 (gage height, 4.51 ft); minimum daily, 7.8 cfs Dec. 8. 1887-91, 1895-1962: Maximum discharge, 10,500 cfs June 22, 1941 (gage height, 8.06 ft, from floodmark), from rating curve extended above 2,100 cfs on basis of slope-area measurement at gage height 7.90 ft; no flow Jan. 19, 20, 1922, Jan. 12, 13, 1950. Outstanding floods occurred in June 1864 and May 1876. Flood in May or June 1894 reached a stage of 9.13 ft, from information by local resident (discharge, about 9,800 cfs). For discussion of these floods, see WSP 997.

Remarks.--Records good except those for period of no gage-height record, which are fair. Discharge measurements generally made twice a month. Diversions above station for irrigation of about 20,000 acres. Flow partly regulated by small reservoirs above station.

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

Oct. 1 to July 2

July 3 to Sept. 30

2.1	6.0	2.8	115	2.4	16	3.2	226
2.2	12	3.2	235	2.5	22	3.5	346
2.3	19	3.6	390	2.6	33	3.8	500
2.4	31	4.0	650	2.7	54		
2.6	67			2.9	117		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	173	72	30	16	19	19	26	134	150	594	148	37
2	162	59	29	15	19	18	23	128	182	507	134	35
3	153	a 57	29	15	23	18	33	123	218	464	131	33
4	139	a 57	24	15	25	16	31	120	274	435	120	33
5	134	a 56	19	14	18	16	31	126	288	405	117	35
6	128	a 56	19	14	16	17	36	145	280	405	110	33
7	123	a 55	17	14	18	18	37	164	333	395	97	32
8	126	55	7.8	11	18	18	36	191	329	400	94	35
9	123	55	13	13	18	17	34	224	277	381	94	37
10	123	53	16	17	23	18	37	266	266	346	81	35
11	110	53	15	16	31	16	36	280	309	322	91	29
12	120	51	16	16	36	11	39	294	368	322	97	24
13	105	44	20	15	36	11	44	302	400	350	94	21
14	100	27	30	14	27	12	53	263	488	302	78	21
15	98	39	31	14	21	13	69	228	494	254	66	21
16	100	42	29	15	24	13	88	224	425	218	60	21
17	102	36	26	15	24	16	76	214	341	207	57	21
18	105	36	23	15	12	16	90	197	302	196	57	20
19	100	36	19	15	15	17	112	179	341	199	63	20
20	95	37	21	15	26	20	126	197	440	196	63	22
21	90	45	23	16	20	18	120	204	507	184	72	26
22	88	41	19	15	15	17	128	191	556	177	69	32
23	76	41	18	15	12	17	110	182	494	196	66	32
24	81	44	18	15	15	17	118	182	458	242	72	29
25	76	41	19	15	15	18	176	197	415	199	60	29
26	76	41	18	15	20	26	188	197	415	192	50	28
27	72	36	17	15	19	27	145	221	476	192	48	25
28	62	33	16	14	21	30	139	204	488	177	46	28
29	69	30	17	15	-	31	170	170	500	163	39	26
30	69	33	17	15	-----	27	153	139	500	148	41	26
31	76	-----	16	18	-----	24	-----	137	-----	166	44	-----
Total	3,261	1,361	631.8	462	586	572	2,504	6,023	11,314	8,934	2,459	846
Mean	105	45.4	20.4	14.9	20.9	18.5	83.5	194	377	288	79.3	28.2
Ac-ft	6,470	2,700	1,250	916	1,160	1,130	4,970	11,950	22,440	17,720	4,880	1,680

Calendar year 1961: Max 1,240 Min 2.9 Mean 145 Ac-ft 105,300  
 Water year 1961-62: Max 594 Min 7.8 Mean 107 Ac-ft 77,270

a No gage-height record.

## PLATTE RIVER BASIN

37

6-7255. Middle Boulder Creek at Nederland, Colo.

Location.--Lat 39°57'42", long 105°30'14", in NE¼SE¼ sec.13, T.1 S., R.73 W., on left bank at Nederland just downstream from North Beaver Creek, 1,000 ft upstream from Barker Reservoir.

Drainage area.--36.2 sq mi.

Records available.--June 1907 to September 1962. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder and compound sharp-crested weir. Datum of gage is 8,186.0 ft above mean sea level (Public Service Co. bench mark). Prior to Mar. 18, 1909, at datum 4.0 ft lower. Mar. 18, 1909, to Apr. 23, 1952, at datum 2.5 ft lower than present datum.

Average discharge.--55 years, 54.2 cfs (39,240 acre-ft per year).

Extremes.--Maximum discharge during year, 470 cfs June 30 (gage height, 3.23 ft); minimum daily, 6.3 cfs Feb. 19.  
1907-62: Maximum discharge, 811 cfs June 2, 1914 (gage height, 5.37 ft, datum then in use), by computation of peak flow over compound weir; minimum daily, 0.8 cfs Jan. 14, 1908.

Remarks.--Records fair except those for periods of ice effect, which are poor. No diversion above station. Flow regulated at times by Jasper Lake (capacity, 326 acre-ft). North Beaver Creek entered Middle Boulder Creek downstream from station June 1 to Dec. 31, 1907, March 1911 to Dec. 31, 1916.

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

0.3	5.5	1.5	91
.5	9.5	2.0	188
.8	18	3.0	420
1.1	34		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	63	30	*13	11	8.3	8.5	10	*74	126	380	77	26
2	59	26	13	12	8.5	*8.7	10	68	150	314	75	24
3	57	20	13	12	8.9	9.3	10	74	168	278	72	24
4	56	18	14	11	8.7	10	10	86	192	259	69	23
5	56	24	15	10	7.9	9.1	10	108	184	246	68	22
6	60	*23	15	10	7.9	9.8	*11	124	182	226	63	*21
7	62	25	14	9.2	7.9	9.5	10	136	194	228	59	21
8	63	26	14	8.6	7.9	9.1	10	156	164	222	54	21
9	64	26	12	8.0	7.9	8.5	11	188	140	220	54	20
10	59	26	11	7.4	9.1	8.3	11	210	150	192	*56	17
11	56	24	12	7.6	10	6.5	11	218	178	*186	60	15
12	52	20	12	8.0	11	8.9	11	230	208	204	60	14
13	*47	17	12	8.2	10	8.3	13	226	*230	192	59	14
14	45	16	13	8.3	10	8.3	19	188	262	166	53	14
15	46	18	13	*8.7	9.3	8.3	28	160	275	140	47	14
16	49	*20	13	8.5	8.6	8.5	35	150	241	128	42	15
17	49	19	13	8.3	8.0	8.5	38	*130	182	122	42	14
18	49	16	13	8.3	7.5	8.7	54	116	174	128	42	*14
19	44	17	13	8.3	6.3	9.1	75	110	222	120	47	15
20	44	16	13	8.3	8.1	8.9	93	120	283	110	49	16
21	42	19	*14	8.2	7.7	8.9	100	112	292	106	41	21
22	42	16	13	8.0	7.1	9.1	91	101	304	103	39	20
23	32	19	13	8.0	8.5	*9.3	89	94	304	106	*41	17
24	38	19	12	8.0	7.9	9.3	106	103	283	118	39	*16
25	33	18	12	8.1	7.9	10	130	118	273	*103	31	15
26	*33	18	12	*7.9	*8.3	10	122	126	273	96	28	15
27	31	18	11	7.9	8.3	10	98	146	292	100	28	15
28	31	17	11	7.9	8.3	12	103	130	285	91	28	20
29	29	15	11	8.3	-	12	105	124	266	88	27	18
30	40	13	11	8.9	-----	10	85	114	290	85	28	18
31	32	-----	11	8.7	-----	10	-----	*124	-----	83	27	-----
Total	1,463	599	392	271.6	235.8	285.4	1,509	4,164	6,767	5,140	1,505	539
Mean	47.2	20.0	12.6	8.76	8.42	92.1	30.3	134	226	166	48.5	18.0
Ac-ft	2,900	1,190	778	539	468	566	2,990	8,260	13,420	10,200	2,990	1,070

Calendar year 1961: Max 333 Min 4.7 Mean 59.8 Ac-ft 43,310  
Water year 1961-62: Max 380 Min 6.3 Mean 62.7 Ac-ft 45,370

Peak discharge (base, 280 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-14	2100	2.67	331	6-30	2400	3.23	470
6-20	2030	2.76	352				

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 4-6, 12-15, 17-20, Nov. 29 to Dec. 3, Dec. 9-13, 17, 18, Dec. 30 to Jan. 17, Jan. 21-25, Feb. 16-22, Feb. 24 to Mar. 1, Mar. 3-5, 11, 12, Apr. 2.



## PLATTE RIVER BASIN

6-7270. Boulder Creek near Orodell, Colo.

Location.--Lat 40°00'23", long 105°19'49", in NE¼SW¼ sec.34, T.1 N., R.71 W., on left bank along State Highway 119, 0.7 mile southwest of old Orodell, 1 mile upstream from Fourmile Creek, and 3 miles southwest of courthouse in Boulder.

Drainage area.--102 sq mi.

Records available.--August to October 1887, April to October 1888, October 1906 to November 1914, March 1916 to September 1962. Monthly discharge only for some periods, published in WSP 1310. Figures of daily discharge for Feb. 3-10, 17-25, 1912, published in WSP 326, have been found to be unreliable and should not be used. Published as North Boulder Creek, Colorado 1887-88 and as "at Orodell" March 1907 to December 1916.

Gage.--Water-stage recorder. Altitude of gage is 5,826 ft (from topographic map). Prior to Sept. 1, 1907, staff gage and Sept. 1, 1907, to May 11, 1917, water-stage recorder, at sites 1 mile downstream, just upstream from Fourmile Creek, at different datums.

Average discharge.--54 years (1906-14, 1916-62), 92.5 cfs (66,970 acre-ft per year).

Extremes.--Maximum discharge during year, 546 cfs July 1 (gage height, 3.42 ft); minimum daily, 10 cfs Oct. 26, Apr. 4, 5. 1887-88, 1906-13, 1916-62: Maximum discharge, 2,500 cfs June 6, 1921 (gage height, 4.31 ft), from rating curve extended above 1,200 cfs; minimum daily, 1 cfs Jan. 29, Feb. 1-3, 16-24, 1933.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Discharge measurements generally made twice a month. Flow regulated by Barker Reservoir (capacity, 11,500 acre-ft). Low flow during nonirrigation season regulated by Orodell powerplant 1,500 ft upstream from station.

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	118	65	54	40	51	36	30	106	114	442	108	36
2	120	61	60	53	53	25	39	136	124	310	106	33
3	118	56	48	49	55	32	43	118	135	189	104	31
4	112	66	49	54	53	24	10	119	143	177	102	28
5	117	49	55	48	65	33	10	137	148	168	89	27
6	118	52	50	53	55	32	13	171	143	195	86	26
7	116	60	50	52	46	31	14	183	165	310	79	22
8	108	58	48	55	54	29	20	180	165	319	73	20
9	109	56	58	45	50	31	39	217	135	315	73	21
10	111	60	41	50	46	25	62	259	122	290	71	21
11	106	58	53	48	54	22	58	278	132	266	70	20
12	111	58	50	48	55	36	58	286	154	259	71	19
13	114	62	49	50	61	24	60	302	174	270	71	16
14	97	58	48	50	55	28	68	290	198	262	70	14
15	89	56	55	45	52	39	72	274	195	234	67	14
16	40	61	54	51	52	53	86	244	168	195	63	16
17	19	59	39	47	56	48	86	211	135	165	58	24
18	20	54	50	49	47	37	92	214	112	162	49	26
19	17	44	50	47	46	59	106	135	122	165	54	27
20	16	56	55	47	48	44	112	140	174	160	60	32
21	15	57	55	50	55	54	110	143	248	160	62	37
22	15	53	52	36	49	48	100	148	315	157	62	44
23	17	58	49	49	52	49	101	140	328	162	53	44
24	14	60	50	49	51	50	100	140	302	177	46	43
25	14	54	44	52	46	40	106	154	286	168	44	44
26	10	58	45	53	49	42	102	160	294	165	37	44
27	32	54	52	53	47	34	90	186	370	160	34	49
28	64	50	48	51	50	46	87	130	406	148	29	51
29	62	55	50	51	-	47	99	124	395	127	29	53
30	74	56	55	50	-----	42	92	112	390	114	29	48
31	59	-----	56	50	-----	48	-----	110	-----	112	39	-----
Total	2,152	1,704	1,572	1,525	1,453	1,188	2,065	5,547	6,292	6,503	1,988	930
Mean	69.4	56.8	50.7	49.2	51.9	38.3	68.8	179	210	210	64.1	31.0
Ac-ft	4,270	3,380	3,120	3,020	2,880	2,360	4,100	11,000	12,480	12,900	3,940	1,840

Calendar year 1961: Max 480 Min 7.0 Mean 93.1 Ac-ft 67,380  
 Water year 1961-62: Max 442 Min 10 Mean 90.2 Ac-ft 65,290

Note.--No gage-height record Dec. 9-24, 27-30, Jan. 8-25, Feb. 24 to Mar. 1 (stage-discharge relation affected by ice during parts of periods) Mar. 4, 5, 24-31.

6-7295. South Boulder Creek near Eldorado Springs, Colo.

Location.--Lat 39°55'52", long 105°17'43", in SE¼ sec.26, T.1 S., R.71 W., on left bank 0.2 mile downstream from South Draw, 1 mile west of Eldorado Springs, 1½ miles downstream from South Boulder diversion canal, 5 miles south of Boulder, and about 6 miles downstream from Gross Reservoir.

Drainage area.--109 sq mi.

Records available.--April 1888 to October 1892, May 1895 to September 1901, August 1904 to September 1962. No winter records for water years 1889-92, 1900. Monthly discharge only for some periods, published in WSP 1310. Prior to January 1911, published as "at" or "near Marshall"; January 1911 to December 1913 as "at Eldorado Springs." Records for periods June 1900 to September 1901, August 1904 to September 1908, October 1909 to September 1911 are not adjusted for diversions by Community ditch and South Boulder and Coal Creek ditch, all other records contain flow in these ditches.

Gage.--Water-stage recorder. Altitude of gage is 6,080 ft (from topographic map). Prior to Sept. 25, 1929, staff gage or water-stage recorder at sites 1 mile downstream at different datums. Sept. 25, 1929, to May 2, 1934, water-stage recorder at site a quarter of a mile downstream at different datum. May 3, 1934, to Sept. 3, 1938, water-stage recorder at site 250 ft upstream at datum 4.00 ft higher than present datum. Sept. 4, 1938, to May 9, 1940, staff gages at site about 300 ft upstream or water-stage recorder at site half a mile downstream at different datums.

Average discharge.--56 years (1895-99, 1908-9, 1911-62), 77.7 cfs (56,250 acre-ft per year), adjusted for storage and diversion.

Extremes.--Maximum discharge during year, 458 cfs May 13 (gage height, 2.95 ft); minimum daily, 8.2 cfs Sept. 30.

1888-92, 1895-1901, 1940-62: Maximum discharge, 7,390 cfs Sept. 2, 1938 (gage height, 9.24 ft, from floodmarks, site and datum then in use), from rating curve extended above 600 cfs on basis of slope-area measurement of peak flow; no flow Oct. 15, 1932.

Remarks.--Records good below 200 cfs and fair above except those for periods of no gage-height record, which are poor. Many small diversions above station for irrigation. Water is imported above Gross Reservoir from Colorado River basin through Moffat water tunnel (see elsewhere in this report). Flow regulated since May 1, 1955, by Gross Reservoir (capacity, 43,060 acre-ft), about 6 miles above station. Contents Sept. 30, 1962, 36,030 acre-ft. Change in contents during water year 1962, -6,930 acre-ft. City of Denver diverts water 1½ miles above station (64,690 acre-ft in water year 1962).

Cooperation.--Contents of Gross Reservoir and diversion by City of Denver furnished by State engineer of Colorado.

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	95	28	(*)			19	20	*218	179	294	40	9.3
2	98	28				19	20	214	183	288	39	9.3
3	98	28		(*)	23	19	21	214	186	300	39	10
4	100	27				19	21	214	183	305	38	10
5	100	27			(*)	19	22	214	186	305	38	13
6	82	*26		18		20	*25	214	186	256	38	*12
7	71	26				20	25	214	186	205	44	12
8	71	26			29	17	26	214	194	198	50	12
9	71	26				25	27	236	210	186	50	13
10	71	25				25	29	261	210	179	*50	13
11	73	26				25	21	278	210	*168	50	*13
12	55	27				25	19	383	210	165	50	13
13	*44	27		14	26	15	18	451	*210	160	49	14
14	44	27				16	26	444	210	140	55	14
15	44	26		(*)		15	21	438	210	140	42	14
16	44	*27	18			15	22	438	210	115	30	14
17	44	30				15	28	419	223	94	30	14
18	43	31		24		15	30	*419	236	78	30	14
19	42	31				15	31	377	261	60	30	14
20	42	30				15	31	347	256	50	29	14
21	42	30	(*)			15	109	294	261	47	29	14
22	43	30			19	15	168	266	236	49	29	14
23	43	30		31		*16	168	214	228	49	*27	14
24	44	30		(*)		16	165	183	228	49	26	14
25	34	30				16	175	183	228	*46	26	14
26	*28	30			(*)	17	198	179	228	46	24	14
27	28	30				18	218	179	*266	44	20	9.6
28	27	31		21		19	241	179	288	44	19	8.6
29	28	32				20	241	179	288	43	18	8.6
30	28	31				20	241	179	294	43	18	8.2
31	28					19		*179		42	12	
Total	1,705	853	558	651	637	564	2,407	8,421	6,684	4,188	1,069	370.6
Mean	55.0	28.4	18	21	23	18.2	80.2	272	223	135	34.5	12.4
Ac-ft	3,380	1,690	1,110	1,290	1,260	1,120	4,770	16,700	13,260	8,310	2,120	735

Adjusted for storage in Gross Reservoir and diversion to Denver

Mean	57.6	33.4	16	14	14	15.6	104	222	244	120	25.7	13.7
Ac-ft	3,540	1,990	960	869	733	962	6,170	13,630	14,530	7,410	1,580	813

Observed

Calendar year 1961: Max	335	Min	-	Mean	68.6	Ac-ft	49,650
Water year 1961-62: Max	451	Min	8.2	Mean	77.0	Ac-ft	55,740

Adjusted

Calendar year 1961: Mean	84.8	Ac-ft	61,410
Water year 1961-62: Mean	73.5	Ac-ft	53,190

\* Discharge measurement made on this day.

Note.--No gage-height record Nov. 2-4, Nov. 24 to Mar. 22 (stage-discharge relation affected by ice during part of periods), May 9, 10, June 14, 15, July 13-18.

## PLATTE RIVER BASIN

6-7303. Coal Creek near Plainview, Colo.

Location.--Lat 39°52'40", long 105°16'36", in SE¼NE¼ sec.13, T.2 S., R.71 W., on left bank 40 ft upstream from culvert on State Highway 72, 1½ miles south of Plainview, 5 miles downstream from Beaver Creek, and 9 miles north of Golden.

Drainage area.--15.1 sq mi.

Records available.--August 1959 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 6,540 ft (from topographic map).

Extremes.--Maximum discharge during year, 34 cfs Apr. 19 (gage height, 1.40 ft); no flow Aug. 5 to Sept. 30.

1959-62: Maximum discharge, 164 cfs May 7, 1960 (gage height, 1.92 ft), from rating curve extended above 81 cfs; no flow for many days in each year.

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

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

0.2	0	0.8	3.7
.3	.1	1.0	7.5
.4	.2	1.2	14
.5	.6	1.3	20
.6	1.3	1.5	42
.7	2.4		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7.8	*3.6	1.8	1.4	2.4	2.1	3.4	1.8	3.2	3.7	0.1	
2	7.3	2.9	1.8	1.4	2.5	1.9	3.4	1.7	3.3	2.4	*.1	
3	6.5	2.9	1.8	1.4	2.5	1.9	3.7	1.6	3.0	1.8	.1	
4	5.7	2.6	*1.8	1.4	2.4	1.7	3.9	*1.5	2.5	1.6	.1	
5	*5.1	2.1	1.7	1.5	2.4	*1.6	4.4	1.4	2.2	1.4	0	
6	4.6	2.2	1.7	1.4	2.4	1.8	5.7	1.4	2.4	1.0	0	
7	4.2	1.8	1.6	1.4	2.4	1.8	8.0	1.4	4.1	.7	0	(*)
8	4.2	1.8	1.6	1.3	*2.2	1.7	8.8	1.4	7.5	.7	0	
9	4.0	1.8	1.5	1.2	2.2	1.7	12	1.3	6.1	.7	0	
10	3.7	1.7	1.4	1.1	2.8	1.5	14	1.2	4.6	*.5	0	
11	3.3	1.7	1.3	1.5	3.2	1.4	*1.4	1.1	3.9	.4	0	
12	3.2	1.6	1.4	1.7	*3.3	1.4	1.3	1.0	3.7	.4	0	
13	2.9	1.5	1.6	1.7	3.3	1.3	1.3	9.4	3.3	.5	0	
14	2.8	1.5	1.8	1.7	2.9	1.3	1.4	8.3	3.0	.4	0	
15	2.5	1.5	1.8	*1.8	2.8	1.3	1.5	7.5	*2.8	.3	0	
16	2.4	1.4	1.9	1.8	2.9	1.4	1.9	7.1	3.7	.3	0	
17	2.2	1.4	2.1	1.8	2.4	1.5	2.1	7.1	3.6	.3	0	
18	2.0	1.5	2.1	1.7	2.4	1.6	2.5	7.5	2.9	.2	0	
19	2.0	1.7	2.0	1.7	2.4	1.6	3.0	5.9	2.6	.2	0	
20	1.9	1.8	2.1	1.6	2.3	1.8	3.3	5.5	2.4	.2	0	
21	1.8	1.8	2.0	1.4	2.3	1.7	3.2	5.1	2.2	.1	0	
22	1.8	1.9	1.9	1.4	2.2	1.7	3.2	4.7	2.1	.1	0	
23	1.7	2.0	2.0	1.5	2.2	1.6	2.6	4.4	1.9	.2	0	
24	1.6	2.0	1.9	1.7	2.2	1.6	2.4	4.4	1.8	1.1	0	
25	1.6	2.0	1.9	1.8	2.1	1.7	2.4	4.2	1.7	.4	0	
26	1.5	1.9	1.5	1.7	2.1	2.2	2.7	4.0	1.7	.3	0	
27	1.5	1.8	2.1	1.6	2.1	2.5	2.4	4.7	1.3	.2	0	
28	1.5	1.9	1.8	1.6	2.1	3.2	2.0	4.6	1.2	.2	0	
29	1.7	2.0	2.0	1.6	-	3.4	1.9	3.7	1.0	.1	0	
30	2.2	1.9	1.7	1.7	-----	3.0	1.9	3.3	3.4	.1	0	
31	3.0	-----	1.5	2.1	-----	2.9	-----	3.2	-----	.1	0	
Total	98.2	58.2	55.1	48.6	69.4	57.8	511.3	272.6	89.1	20.6	0.4	0
Mean	3.17	1.94	1.78	1.57	2.48	1.86	17.0	8.79	2.97	0.66	0.01	0
Ac-ft	195	115	109	96	138	115	1,010	541	177	41	0.8	0

Calendar year 1961: Max 55 Min 0.3 Mean 6.07 Ac-ft 4,390  
 Water year 1961-62: Max 33 Min 0 Mean 3.51 Ac-ft 2,540

Peak discharge (base, 25 cfs)--Apr. 19 (1900) 34 cfs (1.40 ft); Apr. 26 (1930) 32 cfs (1.37 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 14 to Dec. 16, Dec. 22, Jan. 8, Feb. 1-6, Feb. 18-25, Mar. 11-17. No gage-height record Jan. 9-29 (stage-discharge relation affected by ice during most of period).

6-7310. St. Vrain Creek at mouth, near Platteville, Colo.

Location.--Lat 40°15'29", long 104°52'45", in SE¼NW¼ sec.3, T.3 N., R.67 W., on right bank 140 ft downstream from bridge on county road, 1.3 miles upstream from mouth, and 4 miles northwest of Platteville.

Drainage area.--976 sq mi.

Records available.--July 1904 to December 1906, April to December 1915, March 1927 to September 1962. Prior to October 1933, monthly discharge only, published in WSP 1310.

Gage.--Water-stage recorder. Altitude of gage is 4,740 ft (from topographic map). July 1, 1904, to Dec. 31, 1906, and Apr. 1 to Dec. 31, 1915, staff gage at bridge 140 ft upstream at different datums. Feb. 24, 1927, to June 10, 1939, water-stage recorder at bridge 140 ft upstream and June 11, 1939, to Apr. 24, 1960, water-stage recorder at site 180 ft upstream at different datum.

Average discharge.--37 years (1904-6, 1927-62), 196 cfs (141,900 acre-ft per year).

Extremes.--Maximum discharge during year, 754 cfs July 1 (gage height, 3.54 ft); maximum gage height, 3.88 ft Feb. 5 (backwater from ice); minimum daily discharge, 57 cfs May 10.  
1904-6, 1915, 1927-62: Maximum discharge, 11,300 cfs Sept. 3, 1938 (gage height, 8.93 ft, site and datum then in use), from rating curve extended above 4,700 cfs; minimum daily, 12 cfs Apr. 23, 1935.

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 177,000 acres. Flow partly regulated by many small reservoirs above station.

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

(Shifting-control method used Dec. 3-11, 19, 20, Dec. 24 to Jan. 7, Feb. 11 to Mar. 16, June 6 to July 1, July 25-27)

1.4	50	2.5	340
1.6	80	3.0	520
2.0	180	4.0	1,080

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	452	382	294	223	*380	114	189	140	264	543	448	148
2	452	368	290	223	390	183	186	122	297	660	424	143
3	428	347	307	229	b390	210	175	137	307	417	287	143
4	438	327	287	*229	b390	204	172	89	274	337	242	183
5	428	368	*281	198	b350	226	158	80	229	317	226	201
6	431	340	277	207	b330	268	148	74	172	252	166	204
7	417	*324	264	189	b340	258	132	74	210	213	137	*207
8	403	340	236	201	b350	258	127	69	361	274	150	220
9	417	333	229	155	b360	258	127	63	386	317	*164	239
10	428	304	226	120	b380	248	124	*57	310	297	177	239
11	438	294	198	120	400	216	140	58	271	216	166	248
12	431	310	b190	120	378	204	137	63	271	*183	175	245
13	406	324	b200	130	358	183	132	66	*281	210	186	232
14	400	281	200	140	333	186	132	69	372	314	177	226
15	424	274	b205	140	*320	195	137	72	484	327	166	236
16	417	274	b215	*145	304	*201	153	69	452	344	169	210
17	372	287	b220	150	300	210	166	102	484	350	166	198
18	344	281	b220	b140	274	210	150	255	347	364	192	207
19	364	255	*226	b150	245	195	195	271	264	358	216	204
20	354	242	239	b155	261	223	213	195	236	344	239	153
21	344	277	b240	b160	264	210	258	*143	310	327	210	*145
22	350	300	b250	b150	239	223	274	140	392	290	*192	145
23	347	290	b245	150	232	213	271	180	452	330	192	137
24	*327	*304	245	165	195	213	201	204	445	592	229	130
25	324	327	274	185	198	220	153	216	354	492	223	148
26	320	317	268	205	156	223	143	277	*242	428	213	135
27	287	304	210	230	122	229	145	424	143	*434	177	130
28	268	307	210	260	110	*186	112	605	110	470	148	127
29	324	294	236	310	-	189	98	428	110	442	143	135
30	354	297	252	350	-----	201	*137	320	150	410	143	127
31	375	-----	239	380	-----	192	-----	277	-----	364	156	-----
Total	11,864	9,272	7,473	5,909	8,349	6,549	4,885	5,339	8,980	11,216	6,299	5,445
Mean	383	309	241	191	298	211	163	172	299	362	203	182
Ac-ft	23,530	18,390	14,820	11,720	16,560	12,990	9,690	10,590	17,810	22,250	12,490	10,800

Calendar year 1961: Max 2,950 Min 57 Mean 331 Ac-ft 239,800

Water year 1961-62: Max 660 Min 57 Mean 251 Ac-ft 181,600

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 14, Jan. 8-17, Jan. 23 to Feb. 2 (stage-discharge relation affected by ice during most of periods).



## PLATTE RIVER BASIN

6-7330. Big Thompson River at Estes Park, Colo.

Location.--Lat 40°22'42", long 105°30'48", in NW¼ sec.30, T.5 N., R.72 W., on right bank in Estes Park, 600 ft downstream from bridge on State Highway 7 and 66, 900 ft downstream from Black Canyon Creek, and 0.3 mile northwest of Estes powerplant. Station is upstream from Lake Estes.

Drainage area.--137 sq mi.

Records available.--October 1946 to September 1962. Prior to October 1947, published as Thompson River at Estes Park.

Gage.--Water-stage recorder and Parshall flume with overflow weirs. Datum of gage is 7,492.5 ft above mean sea level (levels by Bureau of Reclamation). Prior to May 18, 1949, at site 740 ft downstream at different datum. May 18, 1949, to Mar. 22, 1951, at site 60 ft upstream at datum 1.2 ft higher.

Average discharge.--16 years, 129 cfs (93,030 acre-ft per year), adjusted for inflow from Alva B. Adams tunnel Aug. 10, 1947, to Aug. 2, 1950.

Extremes.--Maximum discharge during year, 811 cfs June 28 (gage height, 5.17 ft); minimum daily, 15 cfs Mar. 12. 1946-62: Maximum discharge, 1,660 cfs June 18, 1949 (gage height, 3.16 ft, site and datum then in use); maximum gage height, 6.87 ft June 30, 1957; minimum discharge not determined.

Remarks.--Records good except those for Nov. 12-24, Feb. 17-19, Mar. 8-15, and those for periods of ice effect, which are fair. Discharge measurements generally made twice a month. Diversion from Colorado River basin to Big Thompson River basin above station through Alva B. Adams tunnel began Aug. 10, 1947, and ended Aug. 2, 1950. Small power development and small diversions for irrigation and municipal use above station.

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

0.4	13	1.6	123	3.0	335
.8	40	2.0	175	4.0	531
1.2	77	2.5	250	5.0	760

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	161	78	42	23	22	19	24	158	247	706	214	75
2	145	67	42	23	22	19	25	143	297	643	202	69
3	136	46	39	22	22	19	27	134	353	592	196	66
4	131	71	34	22	22	19	28	144	431	561	184	63
5	133	61	34	23	22	19	28	157	421	514	184	62
6	131	62	34	23	21	18	30	208	381	516	174	57
7	130	65	31	23	20	17	30	247	410	500	165	57
8	131	63	33	23	20	18	28	297	381	500	158	61
9	127	62	32	22	21	18	29	331	312	475	158	60
10	128	60	30	22	26	18	31	378	321	437	154	51
11	119	58	28	21	33	16	31	398	421	417	164	46
12	117	55	25	21	35	15	31	427	453	465	164	41
13	109	52	26	22	31	16	37	404	539	514	158	39
14	109	42	27	22	25	16	45	344	634	431	145	41
15	110	46	27	21	24	17	60	300	625	353	140	43
16	113	46	27	21	24	18	86	293	535	310	134	43
17	118	44	26	20	24	18	87	268	406	283	130	42
18	119	47	26	20	24	17	110	247	359	274	128	40
19	116	49	26	21	24	18	140	220	449	280	148	41
20	111	49	25	21	22	20	175	244	585	266	135	46
21	104	50	25	21	20	19	184	236	650	263	127	54
22	105	49	25	21	20	18	178	217	682	255	121	65
23	86	53	25	20	19	21	161	202	655	260	121	59
24	92	47	25	20	19	21	187	206	614	346	131	54
25	85	46	24	20	18	22	226	232	603	300	107	53
26	84	46	24	20	18	23	255	235	610	280	96	46
27	85	45	24	21	18	28	217	274	678	286	88	46
28	81	43	24	21	19	28	199	250	685	258	81	46
29	77	40	23	21	-	27	223	240	636	236	79	46
30	84	39	23	22	-----	24	187	217	709	224	80	46
31	84	-----	23	22	-----	24	-----	234	-----	222	80	-----
Total	3,461	1,581	879	665	635	610	3,099	7,885	15,082	11,967	4,346	1,558
Mean	112	52.7	28.4	21.5	22.7	19.7	103	254	503	386	140	51.9
Ac-ft	6,860	3,140	1,740	1,320	1,260	1,210	6,150	15,640	29,910	23,740	8,620	3,090

Calendar year 1961: Max 836 Min 7.4 Mean 139 Ac-ft 100,500  
 Water year 1961-62: Max 709 Min 15 Mean 142 Ac-ft 102,700

Peak discharge (base, 600 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-15	0200	4.88	730	6-28	0230	5.17	811
6-22	0200	5.09	787	7-12	2330	4.33	603

Note.--No gage-height record Dec. 9 to Feb. 6, Feb. 22 to Mar. 7 (stage-discharge relation affected by ice during most of periods).

PLATTE RIVER BASIN

43

6-7355. Big Thompson River near Estes Park, Colo.

Location.--Lat 40°22'35", long 105°29'10", in sec.29, T.5 N., R.72 W., on right bank 100 ft upstream from Dry Creek, 500 ft downstream from Olympus Dam, and 1½ miles east of Estes Park.

Drainage area.--156 sq mi.

Records available.--July 1930 to September 1962. Prior to October 1933 monthly discharge only, published in WSP 1310. Published as Thompson River near Estes Park, 1934-47.

Gage.--Water-stage recorder and Parshall flume. Datum of gage is 7,422.5 ft above mean sea level (levels by Bureau of Reclamation). Prior to Jan. 29, 1934, staff gage on highway bridge 1½ miles downstream at different datum. Jan. 29, 1934, to Mar. 21, 1951, water-stage recorder at site 0.4 mile downstream at datum 10.5 ft lower.

Extremes.--Maximum discharge during year, 776 cfs June 30 (gage height, 5.07 ft); minimum daily, 18 cfs Mar. 17, 18.  
1930-62: Maximum discharge observed, 2,800 cfs June 20, 1933, from rating curve extended above 460 cfs (site and datum then in use); maximum gage height, 5.71 ft June 30, 1957; minimum daily discharge, 4.4 cfs Dec. 12, 1940, but may have been less during periods of no gage-height record.

Remarks.--Records excellent. Low flow regulated by Lake Estes since Nov. 30, 1948. Diversion from Colorado River to Big Thompson River basin above station through Alva B. Adams tunnel began Aug. 10, 1947 (see elsewhere in this report for diversion during water year 1962); this imported water was diverted from Lake Estes through Olympus tunnel and bypassed this station. Since May 17, 1955, part of the natural flow of Big Thompson River (44,540 acre-ft in 1962) has also been diverted through Olympus tunnel and returned to the river below the station at mouth of canyon, near Drake. Small power developments and small diversions for irrigation and municipal use above station.

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

0.4	13	2.0	175
.7	33	3.0	335
1.0	58	5.0	759
1.5	111		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	72	56	44	28	23	22	28	80	111	689	117	81
2	56	47	43	*26	24	22	31	80	148	630	106	73
3	51	57	42	24	24	22	32	80	182	576	117	72
4	48	78	37	24	23	22	34	80	155	548	116	70
5	*61	67	36	24	24	22	34	81	117	500	113	69
6	61	68	37	24	24	22	35	116	100	510	106	*62
7	59	72	35	24	24	22	35	119	104	497	110	62
8	61	70	36	24	24	*22	33	130	111	500	107	65
9	55	*69	37	24	24	22	35	133	107	475	*107	65
10	56	67	36	25	26	22	37	*138	140	437	105	56
11	48	65	35	24	26	23	36	121	169	417	116	52
12	50	62	35	24	34	23	*37	111	*151	*467	117	47
13	57	57	35	24	34	23	41	88	177	518	111	45
14	56	48	*31	24	27	23	51	80	212	433	97	47
15	58	53	28	24	*27	21	67	82	188	353	103	48
16	62	51	29	24	27	19	92	80	115	314	96	49
17	66	47	28	24	28	18	92	81	100	285	91	48
18	67	52	29	22	27	18	117	81	105	273	89	46
19	*63	52	30	21	28	20	101	86	169	177	110	46
20	59	55	30	21	26	20	97	113	230	134	97	47
21	52	56	28	21	24	19	87	104	*197	133	88	58
22	52	59	27	22	22	19	70	86	173	124	84	68
23	60	68	27	22	21	19	54	81	151	130	85	62
24	50	*56	27	22	20	20	77	81	161	216	92	58
25	56	46	27	*22	21	20	98	97	165	169	77	57
26	61	46	27	22	22	19	*97	100	312	*151	77	51
27	61	46	27	22	22	*19	59	140	441	153	76	*50
28	57	45	27	22	21	33	55	105	451	135	85	53
29	54	44	27	22	-	31	84	107	*532	110	86	52
30	61	41	27	22	-----	28	67	101	697	116	*86	52
31	62	-----	27	22	-----	28	-----	*103	-----	123	86	-----
Total	1,792	1,700	991	720	697	683	1,813	3,065	6,171	10,293	3,053	1,711
Mean	57.8	56.7	32.0	23.2	24.9	22.0	60.4	98.9	206	332	98.5	57.0
Ac-ft	3,550	3,370	1,970	1,430	1,380	1,350	3,600	6,080	12,240	20,420	6,060	3,390

Calendar year 1961: Max 292 Min 6.7 Mean 66.6 Ac-ft 48,190  
Water year 1961-62: Max 697 Min 18 Mean 89.6 Ac-ft 64,840

\* Discharge measurement made on this day.

## PLATTE RIVER BASIN

6-7380. Big Thompson River at mouth of canyon, near Drake, Colo.

Location.--Lat 40°25'20", long 105°13'35", in NW¼ sec.10, T.5 N., R.70 W., on right bank at mouth of canyon, 500 ft upstream from Handy Ditch diversion dam and 6 miles east of Drake.

Drainage area.--304 sq mi.

Records available.--August 1887 to September 1892, May 1895 to September 1903, October 1926 to September 1933 (no winter records prior to October 1932, except water years 1927-28), April 1938 to September 1949, March 1951 to September 1962. Monthly discharge only for some periods, published in WSP 1310. Published as Big Thompson Creek at Arkins 1887-92, Big Thompson Creek near Arkins 1901-3, Thompson River at mouth of canyon, near Drake 1927-30, 1938-47.

Gage.--Water-stage recorder. Datum of gage is 5,297.47 ft above mean sea level (Bureau of Reclamation bench mark). Aug. 25, 1887, to Sept. 30, 1892, and Apr. 1, 1899, to Sept. 21, 1903, staff gages at sites within half a mile downstream below Handy Ditch diversion dam, at different datums. May 9, 1895, to Mar. 31, 1899, staff gage at site 1½ miles downstream and 600 ft downstream from Home Supply Ditch diversion dam, at different datum. Oct. 1 to Dec. 31, 1926, staff gage at site 6½ miles upstream at different datum. Jan. 1, 1927, to Sept. 30, 1933, water-stage recorder at site 1 mile upstream at different datum. Apr. 19, 1938, to Sept. 30, 1949, water-stage recorder at site 50 ft downstream at datum 1.45 ft lower.

Extremes.--Maximum discharge during year, 735 cfs July 2 (gage height, 3.56 ft); minimum daily, 12 cfs Nov. 1. 1887-92, 1895-1903, 1926-33, 1938-49, 1951-62: Maximum discharge, 7,600 cfs July 19, 1945 (gage height, 7.55 ft, site and datum then in use), from rating curve extended above 2,200 cfs; minimum daily recorded, 3.2 cfs Nov. 12, 1959.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Diversions above station for irrigation. Diversion from Colorado River to Big Thompson River basin above station through Alva B. Adams tunnel began Aug. 10, 1947 (see elsewhere in this report for diversion for water year 1962); this imported water was diverted through Olympus tunnel and bypassed this station. Part of the natural flow of Big Thompson River has also been diverted through Olympus tunnel since May 17, 1955 (44,540 acre-ft in 1962), and Dille tunnel since Apr. 20, 1959 (16,080 acre-ft in 1962), and returned to the river just below this station.

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

1.0	8.0	1.5	50	2.5	286
1.1	13	1.7	80	3.0	486
1.3	28	2.0	146	3.5	725

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	70	12	58	33	31	39	39	64	101	610	171	103
2	61	18	57	33	34	38	40	70	124	*670	151	95
3	67	35	58	*30	35	34	51	70	131	600	141	91
4	44	101	53	31	37	29	50	69	166	570	126	90
5	*36	86	*42	27	30	30	*53	69	121	521	124	90
6	33	*77	40	30	34	*33	53	82	93	521	112	78
7	30	97	35	26	*35	34	54	91	108	512	106	74
8	29	90	30	29	34	31	51	86	117	512	106	77
9	27	90	21	23	33	31	51	*91	90	499	110	80
10	25	88	26	32	41	33	53	117	93	455	121	*77
11	24	88	30	39	49	29	53	128	*131	438	134	64
12	28	88	36	35	49	24	54	166	134	455	136	60
13	31	70	42	32	44	26	57	171	216	570	138	56
14	31	60	49	30	39	27	67	161	276	473	*117	56
15	30	63	50	28	35	33	84	156	283	392	114	60
16	32	78	42	27	37	28	119	154	208	345	121	60
17	27	72	34	28	37	28	126	154	168	315	117	60
18	*25	69	34	27	33	27	146	138	136	297	114	*57
19	20	77	31	27	33	27	131	124	138	239	128	57
20	17	*64	36	27	42	*31	78	144	*236	184	126	58
21	15	82	40	26	34	29	66	134	276	176	112	69
22	19	72	31	26	36	28	57	101	257	171	106	80
23	19	82	32	28	36	27	*46	91	227	174	106	78
24	29	82	35	26	24	28	53	88	230	257	119	70
25	18	64	34	27	33	29	64	101	236	224	101	69
26	31	64	33	26	31	31	74	106	245	205	95	66
27	23	61	27	27	29	32	60	134	330	213	*95	61
28	17	60	31	28	34	35	53	119	*356	202	97	63
29	14	57	35	*29	-	45	70	97	360	166	103	63
30	16	60	34	28	-----	42	48	90	490	158	103	61
31	24	-----	34	29	-----	39	-----	*91	-----	*168	108	-----
Total	912	2,107	1,170	894	999	977	2,001	3,457	6,077	11,292	3,658	2,123
Mean	29.4	70.2	37.7	28.8	35.7	31.7	66.7	112	203	364	118	70.8
Ac-ft	1,810	4,180	2,320	1,770	1,980	1,940	3,970	6,860	12,050	22,400	7,260	4,210

Calendar year 1961: Max 560 Min 11 Mean 85.8 Ac-ft 62,110  
 Water year 1961-62: Max 670 Min 12 Mean 97.7 Ac-ft 70,750

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 6 to Feb. 14, Feb. 25 to Mar. 16 (no gage-height record Jan. 9-17, Feb. 25 to Mar. 1).

## Reservoirs in South Platte River basin

- 6-6955. Elevenmile Canyon Reservoir near Lake George.--Lat 38°54'19", long 105°28'30", in N½SW¼ sec.20, T.13 S., R.72 W., at north end of dam on South Platte River, 8 miles southwest of Lake George. Records available, October 1932 to September 1962. Prior to September 1938, published in WSP 1310. Staff gage read twice daily. Datum of gage is at mean sea level (datum of Denver Board of Water Commissioners). Maximum contents observed during year, 101,000 acre-ft Apr. 7 (elevation, 8,597.93 ft); minimum observed, 96,700 acre-ft Sept. 26 (elevation, 8,596.68 ft). Maximum contents observed during period 1932-62, 103,400 acre-ft per. 29, 1960 (elevation, 8,598.62 ft); no contents at times in 1935.
- Reservoir is formed by concrete arch dam completed by Denver Board of Water Commissioners in November 1932. Spillway built 5.00 ft higher Aug. 1, 1957. Storage began in October 1932. Capacity, 97,780 acre-ft between elevations 8,488.25 (invert of outlet pipe) and 8,597.00 ft (crest of spillway). Dead storage is negligible. Records given herein represent total contents. Water is for municipal use by city of Denver. Records furnished by Denver Board of Water Commissioners.
- 6-7010. Cheesman Lake near Deckers.--Lat 39°12'26", long 105°16'18", in NW¼SW¼ sec.6, T.10 S., R.70 W., at dam on South Platte River, 4 miles southwest of Deckers. Records available, September 1900 to December 1901, September 1902 to September 1962. Prior to October 1938, published in WSP 1310. Staff gage read twice daily. Datum of gage is 6,622.91 ft above mean sea level (datum of Denver Board of Water Commissioners). Maximum contents observed during year, 79,610 acre-ft Apr. 25 (gage height, 212.62 ft); minimum observed, 50,420 acre-ft Sept. 30 (gage height, 174.67 ft). Maximum contents observed during 1900-1901, 1902-62, 80,820 acre-ft June 23, 1918, and June 7, 1921 (gage height, 214.00 ft); minimum observed since appreciable storage was attained, 3,650 acre-ft Apr. 20, 1933 (gage height, 55.02 ft).
- Reservoir is formed by masonry dam completed about October 1902. Capacity, 79,060 acre-ft at gage height 212 ft (spillway crest) above sill of lowest gate. No dead storage. Records given herein represent total contents. Water is for municipal use by City of Denver. Records furnished by Denver Board of Water Commissioners.
- 6-7375. Horsetooth Reservoir near Fort Collins.--Lat 40°36'00", long 105°10'10", in SW¼ sec.6, T.7 N., R.69 W., on right bank near abutment of Horsetooth Dam on tributaries of Cache la Poudre River, 5 miles west of Fort Collins. Records available, April 1951 to September 1962. Staff gage read at irregular intervals varying from 1 to 10 days. Datum of gage is 5,270.00 ft above mean sea level (levels by Bureau of Reclamation). Gage readings have been reduced to elevations above mean sea level. Maximum contents observed during year, 140,800 acre-ft July 1 (elevation, 5,428.60 ft); minimum contents, 49,790 acre-ft (estimated) Sept. 30 (elevation, 5,367.75 ft). Maximum contents observed during period 1951-62, 141,100 acre-ft June 23, 25, 1961 (elevation, 5,428.75 ft); minimum observed, 3,040 acre-ft Sept. 23, 1954 (elevation 5,302.20 ft); no storage prior to Apr. 18, 1951.
- Reservoir is formed by earth- and rock-fill dike and dams closing openings in a subsequent valley between hogbacks. Dams completed July 21, 1949; storage began Jan. 10, 1951; dead storage pools filled Apr. 18, 1951. Usable capacity, 143,500 acre-ft above elevations 5,320 ft (invert of channel from Spring Canyon Dam), 5,310 ft (invert of channel from Dixon Canyon Dam), 5,270 ft (trashrack sill of outlet at Soldier Canyon Dam), and below maximum water surface elevation 5,430 ft (6 ft below crest of Satanka Dike). Dead storage, 8,270 acre-ft. Reservoir is used for storage of water diverted from Colorado River basin through Alva B. Adams tunnel for supplemental irrigation supply to Cache la Poudre River basin as part of the Colorado-Big Thompson project. Figures given herein represent usable contents. Records furnished by Bureau of Reclamation.
- 6-7425. Carter Lake near Berthoud.--Lat 40°19'30", long 105°12'45", in SE¼ sec.10, T.4 N., R.70 W., in hoist house 293 ft from right abutment of Carter Lake Dam on Dry Creek, 7 miles west of Berthoud, and 8 miles upstream from mouth. Records available, March 1954 to September 1962. Electric tape gage read at irregular intervals varying from 1 to 13 days. Datum of gage is 5,618.00 ft above mean sea level (levels by Bureau of Reclamation). Gage readings have been reduced to elevations above mean sea level. Maximum contents observed during year, 108,900 acre-ft June 27 (elevation, 5,758.94 ft); minimum observed, 31,530 acre-ft Sept. 12, 13 (elevation, 5,678.73 ft). Maximum contents observed during period 1954-62, that of June 7, 1962; minimum observed since appreciable storage was attained, 960 acre-ft Oct. 25, 1954 (elevation, 5,621.40 ft).
- Reservoir is formed by earth- and rock-fill dam and dikes enlarging the natural basin of Carter Lake. Storage began in February 1954 and dead storage pool was filled Mar. 5, 1954. Usable capacity, 113,500 acre-ft between elevations 5,618.00 (trashrack sill at Carter Lake Dam outlet) and 5,763.00 ft (maximum water surface, 6 ft below crest of dam). Dead storage, 3,310 acre-ft. Water diverted from Colorado River basin through Alva B. Adams tunnel is pumped from Flatiron Reservoir into Carter Lake for supplemental irrigation supply to Little Thompson River, St. Vrain Creek, and Boulder Creek basins. Water above elevation 5,620 ft may be released for return to Flatiron Reservoir where pump turbines can operate in reverse to generate power and water can be used for irrigation in Big Thompson or Cache la Poudre River basins. It is part of the Colorado-Big Thompson project. Figures given herein represent usable contents. Records furnished by Bureau of Reclamation.



## PLATTE RIVER BASIN

## Reservoirs in South Platte River basin--Continued

Month-end elevation and contents, water year October 1961 to September 1962

Date	Elevation (feet)†	Contents (acre-feet)	Change in contents (acre-feet)	Gage height (feet)†	Contents (acre-feet)	Change in contents (acre-feet)
Elevenmile Canyon Reservoir				Cheesman Lake		
Sept. 30.....	8,597.08	98,050	-	209.90	77,240	-
Oct. 31.....	8,597.49	99,460	+1,410	212.39	79,410	+2,170
Nov. 30.....	8,597.44	99,290	-170	212.12	79,170	-240
Dec. 31.....	8,597.27	98,710	-580	211.39	78,530	-640
Calendar year 1961...	-	-	+210	-	-	+19,260
Jan. 31.....	8,597.25	98,640	-70	211.42	78,560	+30
Feb. 28.....	8,597.35	98,980	+340	211.38	78,520	-40
Mar. 31.....	8,597.46	99,360	+380	210.78	78,000	-520
Apr. 30.....	8,597.02	97,850	-1,510	211.38	78,520	+520
May 31.....	8,597.02	97,850	0	209.10	76,560	-1,960
June 30.....	8,597.05	97,950	+100	210.50	77,760	+1,200
July 31.....	8,597.07	98,020	+70	204.96	73,060	-4,700
Aug. 31.....	8,596.93	97,540	-480	188.38	60,040	-13,020
Sept. 30.....	8,596.72	96,840	-700	174.67	50,420	-9,620
Water year 1961-62...	-	-	-1,210	-	-	-26,820
Horsetooth Reservoir				Carter Lake		
Sept. 30.....	-	a93,140	-	-	a54,390	-
Oct. 31.....	5,402.25	95,970	+2,830	5,712.36	60,120	+5,730
Nov. 30.....	-	a101,400	+5,430	5,719.15	66,630	+6,510
Dec. 31.....	-	a111,000	+9,600	-	a72,450	+5,820
Calendar year 1961...	-	-	+32,690	-	-	+20,480
Jan. 31.....	5,418.00	121,700	+10,700	5,733.05	80,630	+8,180
Feb. 28.....	5,422.15	129,000	+7,300	5,744.26	92,500	+11,870
Mar. 31.....	-	a135,200	+6,200	-	a102,500	+10,000
Apr. 30.....	5,426.75	137,400	+2,200	5,757.55	107,300	+4,800
May 31.....	5,424.85	133,900	-3,500	5,755.86	105,400	-1,900
June 30.....	5,428.55	140,700	+6,800	5,758.91	108,800	+3,400
July 31.....	-	a107,200	-33,500	5,726.50	73,920	-34,880
Aug. 31.....	5,386.80	73,590	-33,610	5,689.89	40,320	-33,600
Sept. 30.....	-	a49,790	-23,800	5,681.44	33,600	-6,720
Water year 1961-62...	-	-	-43,350	-	-	-20,790

† Elevation or gage height at 1700.

a No elevation record; contents estimated.

6-7440. Big Thompson River at mouth, near La Salle, Colo.

Location.--Lat 40°21'00", long 104°47'04", in SW¼SE¼ sec.33, T.5 N., R.66 W., on left bank just southeast of gage on Evans Town ditch, 0.7 mile upstream from highway bridge, 1.6 miles upstream from mouth, and 4 miles west of La Salle.

Drainage area.--828 sq mi.

Records available.--April 1914 to October 1915, March 1927 to September 1962. Prior to October 1933 monthly discharge only, published in WSP 1310. Published as Thompson River at mouth, near La Salle 1934-47.

Gage.--Water-stage recorder. Altitude of gage is 4,680 ft (from topographic map). Apr. 1, 1914, to Oct. 31, 1915, staff gage and Mar. 1, 1927, to Sept. 30, 1951, water-stage recorder, at bridge 0.7 mile downstream at different datums. Datum lowered 0.50 ft May 21, 1962.

Extremes.--Maximum discharge during year, 592 cfs July 28 (gage height, 3.62 ft); minimum daily, 17 cfs May 7. 1914-15, 1927-62: Maximum discharge, 6,100 cfs Aug. 4, 1951 (gage height, 7.80 ft, site and datum then in use), from rating curve extended above 4,500 cfs; maximum gage height, 8.72 ft May 9, 1957, present datum; no flow at times in 1934-35, 1948.

Remarks.--Records fair except those for periods of no gage-height record, which are poor. Discharge measurements generally made twice a month. Natural flow of stream affected by transmountain diversions, storage reservoirs, power developments, diversions for irrigation of about 95,000 acres above station, and return flow from irrigated areas.

Rating tables (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 1-22, Mar. 27-29, May 7-27,  
June 11-20, July 29 to Aug. 30)

Oct. 1-19		Oct. 20 to May 20		May 21 to Sept. 30	
1.0	113	-0.2	11	0.6	24
1.5	189	.2	52	1.0	61
2.0	287	.7	113	1.5	126
		1.2	185	2.0	213
		1.7	284	3.0	440
				4.0	730

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	184	250	165	121	120	117	140	85	76	137	292	166
2	173	234	165	125	123	129	139	49	76	350	388	145
3	165	218	164	125	126	135	132	36	78	352	243	102
4	155	210	157	123	132	129	134	36	73	370	205	88
5	140	230	151	113	138	127	134	30	62	318	183	88
6	132	212	142	120	125	132	123	20	147	299	161	89
7	125	212	142	109	122	129	118	17	122	297	118	86
8	121	222	129	109	140	129	120	22	108	332	78	82
9	130	216	122	79	165	129	120	20	105	382	61	86
10	141	210	123	89	173	129	125	18	102	340	58	88
11	141	210	120	109	188	121	127	20	90	299	48	90
12	222	212	113	119	175	116	95	22	77	294	43	88
13	258	210	118	119	170	100	87	25	78	408	48	86
14	248	194	144	119	170	109	87	25	81	465	53	77
15	242	182	157	119	157	113	81	27	78	420	115	78
16	240	183	151	120	146	116	88	30	70	395	148	81
17	238	188	143	120	148	113	113	40	89	358	170	82
18	254	180	132	119	136	109	74	49	64	328	166	82
19	268	182	130	119	132	108	58	40	45	313	164	80
20	266	175	129	119	138	109	62	34	58	310	192	86
21	262	178	135	119	142	114	54	60	139	304	170	98
22	254	194	135	119	129	112	49	68	143	304	171	105
23	250	188	131	119	127	109	48	62	123	322	161	90
24	246	199	130	120	108	106	46	49	92	410	177	73
25	242	190	134	120	103	105	45	53	72	408	173	71
26	234	176	134	120	87	112	46	89	60	378	168	66
27	234	176	114	121	95	122	45	157	48	385	150	64
28	234	175	117	121	106	134	44	192	29	502	140	58
29	248	168	134	118	-	142	52	101	27	468	133	56
30	244	168	131	115	-----	148	101	82	45	450	154	59
31	248	-----	129	117	-----	142	-----	78	-----	435	168	-----
Total	6,539	5,942	4,221	3,604	3,821	3,745	2,687	1,636	2,457	11,133	4,699	2,590
Mean	211	198	136	116	136	121	89.6	52.8	81.9	359	152	86.3
Ac-ft	12,970	11,790	8,370	7,150	7,580	7,430	5,330	3,240	4,870	22,080	9,320	5,140

Calendar year 1961: Max 1,780 Min 10 Mean 153 Ac-ft 111,000  
Water year 1961-62: Max 502 Min 17 Mean 145 Ac-ft 105,300

Note.--No gage-height record Jan. 10-29, Feb. 28, Mar. 1, May 4-16.

## PLATTE RIVER BASIN

6-7475. Cache la Poudre River near Rustic, Colo.

Location.--Lat 40°41'45", long 105°41'10", in SE¼ sec.33, T.9 N., R.74 W., on right bank 20 ft downstream from trail bridge, 100 ft downstream from unnamed tributary, 500 ft south of State Highway 14, 5.8 miles west of Rustic, 8½ miles downstream from outlet of Laramie-Poudre tunnel, and 33 miles west of Fort Collins.

Drainage area.--199 sq mi.

Records available.--August 1956 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 7,610 ft (from topographic map).

Average discharge.--6 years, 275 cfs (199,100 acre-ft per year).

Extremes.--Maximum discharge during year, 2,180 cfs June 29 (gage height, 5.88 ft); minimum daily, 20 cfs Feb. 28, Mar. 1. 1956-62: Maximum discharge, 3,610 cfs June 29, 1957 (gage height, 7.12 ft); minimum daily, 11 cfs Feb. 2, 1959.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Natural flow of stream affected by transbasin and transmountain diversions (see elsewhere in this report), storage reservoirs, and a few small diversions for irrigation.

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

1.7	16	2.5	98	4.0	620
1.8	22	2.8	168	4.5	920
2.0	36	3.1	256	5.0	1,280
2.2	54	3.5	390	6.0	2,320

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	118	85	50	60	32	20	30	394	660	1,680	362	271
2	96	76	62	61	32	22	30	376	772	1,370	348	265
3	100	64	64	58	32	24	30	366	850	1,190	* 344	262
4	102	64	66	54	32	24	32	398	850	1,140	366	268
5	107	* 68	* 65	50	32	* 24	32	480	820	1,110	390	253
6	113	62	60	40	32	24	32	585	676	1,030	366	253
7	116	66	54	36	30	24	32	706	660	920	362	* 256
8	* 129	72	50	34	* 30	22	32	808	570	864	352	238
9	133	72	50	32	32	22	34	1,020	502	850	366	193
10	147	72	50	* 30	32	22	34	1,330	565	* 826	366	179
11	124	72	50	35	34	24	* 36	1,560	676	808	369	168
12	127	67	45	35	34	24	37	1,590	712	814	369	176
13	113	62	45	32	34	24	38	1,470	944	808	358	188
14	118	62	45	30	34	24	42	1,250	1,490	700	334	199
15	129	56	50	30	34	24	49	1,100	* 1,400	615	324	190
16	133	56	55	30	34	24	61	976	1,220	540	320	185
17	145	58	55	30	32	24	84	* 892	969	484	320	188
18	150	52	56	30	32	24	113	820	838	555	324	188
19	133	54	56	30	32	26	135	802	1,140	545	310	193
20	131	58	56	32	30	28	168	878	1,450	555	293	202
21	120	58	60	34	30	28	174	808	1,460	570	289	193
22	124	56	62	34	28	28	182	748	* 1,580	545	293	179
23	93	50	62	34	26	28	190	694	1,600	525	286	158
24	124	50	62	30	26	28	235	706	1,490	520	310	145
25	94	50	62	30	24	28	320	748	1,430	498	265	138
26	96	55	58	30	24	30	480	748	1,460	462	244	133
27	107	54	54	30	22	30	484	778	1,680	475	232	129
28	96	54	60	30	20	32	502	600	1,650	457	232	113
29	82	53	64	30	-	34	493	600	1,720	410	244	69
30	105	53	62	32	-----	32	* 434	555	1,850	376	259	56
31	96	-----	59	32	-----	32	-----	620	-----	383	280	-----
Total	3,601	1,831	1,749	1,115	846	804	4,575	25,406	33,684	22,625	9,877	5,628
Mean	116	61.0	56.4	36.0	30.2	25.9	152	820	1,123	730	319	188
Ac-ft	7,140	3,630	3,470	2,210	1,680	1,590	9,070	50,390	66,810	44,880	19,590	11,160

Calendar year 1961: Max 1,890 Min - Mean 235 Ac-ft 170,200  
 Water year 1961-62: Max 1,850 Min 20 Mean 306 Ac-ft 221,600

\* Discharge measurement made on this day.

Note.--No gage-height record Dec. 16-20, 26-28, Jan. 3 to Apr. 11 (stage-discharge relation affected by ice during most of periods). Stage-discharge relation affected by ice Nov. 3-10, 15-25, 27-29, Dec. 3-15, 21.

## PLATTE RIVER BASIN

49

6-7482. Fall Creek near Rustic, Colo.

Location--Lat 40°33'06", long 105°37'35", in NW¼ sec.30, at line of sec.19, T.7 N., R.73 W., on left bank on upstream side of bridge, 1.5 miles upstream from mouth, 11 miles southwest of Rustic, and 29 miles west of Fort Collins.

Drainage area--3.64 sq mi.

Records available--October 1960 to September 1962.

Gage--Water-stage recorder. Altitude of gage is 9,765 ft (from topographic map).

Extremes--Maximum discharge during year, 37 cfs June 29 (gage height, 2.24 ft); minimum daily, 0.5 cfs for many days in March and April. 1960-62: Maximum discharge, 48 cfs June 8, 1961 (gage height, 2.35 ft); minimum daily, 0.3 cfs Mar. 22, 1961.

Remarks--Records good. No diversion above station.

Rating table (gage height, in feet, and discharge,  
in cubic feet per second)  
(Shifting-control method used Apr. 24 to May 18, July 30 to Aug. 6)

0.5	0.4	1.1	5.2
.6	.8	1.6	12
.7	1.4	1.9	20
.8	2.1	2.2	34

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6.9	3.9	2.1	1.1	0.8	0.7	0.5	3.1	11	31	12	4.9
2	6.5	3.8	2.0	1.1	.8	.7	.5	2.5	12	*29	*11	4.5
3	6.3	3.8	1.9	1.1	.8	.7	.5	2.5	15	28	11	4.3
4	6.3	3.7	1.9	1.1	.8	.7	.5	3.5	17	28	11	4.0
5	6.3	3.6	1.9	1.1	.8	.7	.5	5.8	*16	26	11	*3.9
6	*6.3	3.3	1.8	1.1	.8	.6	.5	8.4	17	27	10	3.9
7	6.4	3.1	1.7	1.0	.8	.6	.5	10	16	27	10	4.0
8	6.5	2.9	1.6	1.0	.8	.6	.5	*11	13	26	9.8	4.3
9	6.5	2.8	1.6	1.1	.7	.6	.5	14	12	24	9.7	4.0
10	6.3	2.6	1.5	1.0	.7	.5	.5	16	15	22	9.4	3.5
11	7.0	2.5	1.5	1.0	.8	.6	.5	16	19	21	9.8	3.2
12	5.9	2.4	1.3	1.0	.7	.5	.5	17	22	23	10	3.1
13	5.7	2.4	*1.3	.9	.7	*.6	*.6	14	*26	23	9.8	2.9
14	5.8	2.2	1.3	.9	*.7	.6	.9	11	30	20	9.2	3.0
15	5.7	2.2	1.3	.9	.7	.5	1.3	9.8	*28	17	9.0	2.9
16	5.8	2.2	1.3	.9	.7	.5	1.6	9.2	23	16	8.7	2.8
17	6.0	2.2	1.3	*.9	.7	.5	1.6	8.5	17	15	8.3	2.7
18	5.9	2.2	1.3	.9	.7	.5	2.6	8.3	16	15	8.1	2.7
19	5.6	2.2	1.3	.9	.7	.5	4.0	8.3	20	14	7.8	2.6
20	5.3	2.1	1.3	.9	.7	.5	5.1	10	27	14	7.4	3.3
21	5.1	2.2	1.3	.9	.7	.5	4.0	9.1	29	14	7.6	3.8
22	5.2	*2.2	1.3	.9	.7	.5	3.5	8.5	29	14	7.3	3.8
23	5.2	2.5	1.3	.9	.7	.6	3.4	*7.7	29	14	7.8	3.1
24	5.1	2.4	1.3	.9	.7	.5	5.3	8.1	29	14	7.3	3.0
25	4.5	2.3	1.3	.8	.7	.6	7.2	9.1	29	15	6.2	2.9
26	4.3	2.2	1.3	.8	.7	.6	6.7	9.6	29	15	5.8	2.8
27	4.3	2.2	1.3	.8	.7	.6	4.6	10	30	15	5.6	2.7
28	4.3	2.2	1.2	.8	.7	.6	4.4	8.8	29	14	5.2	2.7
29	4.0	2.2	1.1	.8	-	.5	4.6	8.4	31	13	5.2	2.8
30	4.2	2.1	1.1	.8	-----	.5	3.5	7.8	31	13	5.3	2.7
31	4.0	-----	1.1	.8	-----	.5	-----	9.6	-----	12	5.2	-----
Total	173.2	78.6	44.8	29.1	20.5	17.7	70.9	285.6	667	599	261.5	100.8
Mean	5.59	2.62	1.45	0.94	0.73	0.57	2.36	9.21	22.2	19.3	8.44	3.36
Ac-ft	344	156	89	58	41	35	141	566	1,320	1,190	519	200

Calendar year 1961: Max 36 Min 0.3 Mean 6.89 Ac-ft 4,990  
Water year 1961-62: Max 31 Min 0.5 Mean 6.43 Ac-ft 4,660

Peak discharge (base, 30 cfs)--June 13 (2000) 34 cfs (2.20 ft); June 29 (1800) 37 cfs (2.24 ft).

\* Discharge measurement made on this day.



## PLATTE RIVER BASIN

6-7485.1. Little Beaver Creek near Idylwilde, Colo.

Location.--Lat 40°38'20", long 105°39'40", in NW¼ sec.26, T.8 N., R.74 W., on left bank 4.5 miles south of Idylwilde and 8 miles upstream from mouth.

Drainage area.--0.89 sq mi.

Records available.--October 1960 to September 1962.

Gage.--Water-stage recorder and Parshall flume or V-notch sharp-crested weir. Altitude of gage is 10,000 ft (from topographic map).

Extremes.--Maximum discharge during year, 13 cfs June 26 (gage height, 0.83 ft); minimum daily, 0.08 cfs Apr. 3-13.  
1960-62: Maximum discharge, 14 cfs June 21, 1961 (gage height, 0.91 ft); minimum daily, 0.01 cfs Apr. 25 to May 14, 1961.

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

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)  
(Stage-discharge relation affected by ice Oct. 23)

Oct. 1 to May 8		May 8 to Aug. 1		Aug. 2 to Sept. 30	
0.6	0	0.1	0.39	0.5	0.24
.7	.04	.2	1.3	.6	.50
.8	.11	.3	2.4	.7	.88
.9	.23	.4	3.8	.8	1.40
1.0	.41	.5	5.4		
1.1	.66	.7	9.1		
1.2	.97	.8	11		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.55	0.77	0.46	0.30	0.18	0.15	0.09	0.20	2.5	8.2	1.4	0.44
2	.55	.74	.43	.30	.18	.15	.09	.20	2.6	7.4	*1.1	.44
3	.55	.71	.46	.28	.18	.14	.08	.22	3.5	*7.4	1.0	.41
4	.58	.71	.46	.28	.18	.14	.08	.25	4.2	7.3	1.0	*.41
5	.58	.71	.48	.28	.16	.14	.08	.31	4.4	7.0	.98	.41
6	.58	.71	.48	.28	.16	.14	.08	.37	4.2	6.6	.88	.41
7	.58	.71	.46	.26	.16	.13	.08	.46	4.1	6.0	.84	.41
8	.58	.71	.43	.25	.16	.13	.08	.54	3.8	6.0	.80	.44
9	.60	.71	.41	.25	.16	.13	.08	.71	3.6	5.4	.80	.44
10	.63	.71	.41	.25	.16	.11	.08	1.1	4.7	4.9	.75	.44
11	.63	.68	.41	.25	.15	.11	.08	1.6	5.4	4.5	.75	.41
12	.63	.66	.35	.25	.15	.11	.08	2.0	5.5	4.1	.71	.38
13	.63	.66	.37	.25	.15	.11	.08	2.0	6.8	3.9	.67	.38
14	.66	.66	.37	.23	.15	.11	.09	1.7	7.5	3.6	.64	.38
15	.66	.66	.37	.23	.15	.11	.11	1.6	6.8	3.3	.60	.35
16	.68	.60	.37	.23	.15	.11	.10	1.5	6.0	3.2	.60	.35
17	.68	.58	.37	.23	.15	.11	.10	1.5	5.2	3.1	.60	.35
18	.71	.58	.35	.23	.15	.11	.13	1.7	5.7	2.8	.56	.35
19	.71	.58	.35	.22	.14	.11	.14	1.7	7.2	2.6	.56	.33
20	.71	.58	.35	.22	.14	.11	.14	1.9	8.9	2.5	.53	.38
21	.71	.55	.35	.22	.14	.11	.13	1.9	8.7	2.3	.53	.38
22	.71	.52	.35	.22	.14	.10	.13	1.8	8.7	2.2	.53	.39
23	.66	.52	.35	.22	.14	.10	.13	1.8	8.5	2.2	.60	.32
24	.74	.52	.35	.22	.14	.10	.16	1.9	8.5	2.0	.56	.29
25	.71	.52	.35	.22	.14	.10	.19	2.2	8.7	1.9	.53	.31
26	.71	.52	.31	.22	.14	.10	.19	2.0	*9.7	1.8	.50	.30
27	.74	.50	.30	.20	.14	.10	.16	2.2	9.7	1.6	.47	.30
28	.74	.50	.30	.20	.15	.10	.18	2.2	8.2	1.6	.47	.30
29	.74	.48	.30	.19	-	.10	.19	2.2	8.2	1.5	.44	.31
30	.77	.48	.30	.19	-----	.10	.19	2.4	8.4	1.3	.44	.31
31	.77	-----	.30	.18	-----	.10	-----	2.3	-----	1.3	.47	-----
Total	20.48	18.54	11.70	7.35	4.29	3.57	3.52	44.46	189.9	119.5	21.31	11.12
Mean	0.661	0.618	0.377	0.237	0.153	0.115	0.117	1.43	6.33	3.85	0.687	0.371
Ac-ft	41	37	23	15	8.5	7.1	7.0	88	377	237	42	22

Calendar year 1961: Max 11 Min 0.01 Mean 1.18 Ac-ft 854

Water year 1961-62: Max 9.7 Min 0.08 Mean 1.25 Ac-ft 905

Peak discharge (base, 10 cfs).--June 20 (1730) 11 cfs (0.78 ft); June 26 (2300) 13 cfs (0.83 ft).

\* Discharge measurement made on this day.

Note.--No gage-height record June 28 to July 3, Aug. 1, Sept. 22-30.

## PLATTE RIVER BASIN

51

6-7485.3. Little Beaver Creek near Rustic, Colo.

Location.--Lat 40°37'23", long 105°33'52", in N½ sec.34, T.8 N., R.73 W., on left bank 2.6 miles upstream from mouth and 5.5 miles south of Rustic.

Drainage area.--11.4 sq mi.

Records available.--October 1960 to September 1962.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 8,350 ft (from topographic map).

Extremes.--Maximum discharge during year, 47 cfs June 20 (gage height, 1.23 ft); minimum daily, 1.6 cfs Feb. 18.  
1961-62: Maximum discharge, 92 cfs June 9, 1961 (gage height, 1.55 ft); minimum daily, 1.0 cfs Mar. 3-12, 1961.

Remarks.--Records excellent except those for periods of no gage-height record, which are fair. No diversion above station.

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

0.3	1.4	0.7	10
.4	2.9	.9	21
.5	4.8	1.1	37
.6	7.0	1.3	58

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.2	4.0	3.3	2.8	2.3	1.8	2.0	9.1	24	33	6.3	3.1
2	4.8	3.3	3.3	2.8	2.3	1.8	2.0	9.4	24	*30	6.1	2.8
3	4.8	4.0	3.3	2.6	2.4	1.8	1.8	9.7	26	30	6.1	2.8
4	4.6	4.2	3.3	2.4	2.4	1.8	1.8	11	29	27	5.9	2.8
5	4.6	3.8	3.1	2.4	2.3	1.8	1.8	14	*29	25	5.5	2.8
6	*4.8	4.4	3.1	2.4	2.3	2.0	2.0	16	27	23	5.2	*2.6
7	4.8	4.4	3.1	2.4	2.3	2.0	2.0	18	29	22	5.0	2.4
8	4.8	4.4	3.1	2.4	2.2	2.0	2.0	20	27	22	4.8	2.8
9	4.8	4.4	3.1	2.4	2.2	2.0	2.0	22	27	20	4.8	3.1
10	4.8	4.4	3.1	2.4	2.2	2.0	2.0	24	28	18	4.6	2.9
11	4.8	4.4	3.1	2.3	2.3	2.0	2.0	27	29	17	4.4	2.6
12	4.6	4.2	3.1	2.3	2.3	2.0	2.0	30	31	18	4.3	2.6
13	4.6	4.0	3.5	2.4	1.8	1.8	2.4	30	34	17	4.0	2.4
14	4.4	3.8	3.5	2.4	1.7	1.8	2.6	*27	39	16	3.8	2.3
15	4.4	3.8	3.5	2.3	1.7	2.0	3.2	27	*38	14	3.5	2.3
16	4.4	3.8	3.5	2.3	1.8	2.0	3.6	26	36	13	3.3	2.3
17	4.6	3.8	3.3	2.3	1.7	2.0	4.0	25	32	12	3.3	2.2
18	4.8	3.8	3.3	2.3	1.6	2.0	5.0	25	32	10	3.3	2.2
19	4.6	3.8	3.3	2.3	1.7	2.0	6.0	24	35	9.4	3.3	2.2
20	4.6	3.7	3.3	2.3	1.7	2.0	9.2	24	40	8.8	3.1	2.6
21	4.4	3.7	3.3	2.3	1.7	1.8	7.8	22	41	8.5	2.9	2.9
22	4.4	3.7	3.3	2.3	1.7	1.8	6.6	22	41	7.9	3.1	3.1
23	3.8	3.7	3.3	2.4	1.7	1.8	8.2	20	40	7.9	3.5	2.4
24	4.2	3.7	3.3	2.4	1.7	1.8	9.4	21	38	8.8	4.2	2.3
25	3.8	3.7	3.1	2.4	1.7	2.0	11	22	37	8.5	3.1	2.3
26	4.0	3.7	3.1	2.4	1.7	2.3	8.6	21	36	7.6	2.8	2.4
27	4.2	3.7	2.9	2.4	1.8	2.3	9.4	22	35	7.3	2.8	2.4
28	4.2	3.5	2.9	2.4	1.8	2.6	10	22	34	7.3	2.6	2.3
29	3.3	3.3	2.9	2.3	-	2.3	11	21	33	6.3	2.8	2.3
30	4.4	3.3	2.8	2.3	-----	2.2	*10	21	35	6.1	2.9	2.4
31	4.4	-----	2.8	2.3	-----	2.2	-----	22	-----	6.3	3.5	-----
Total	138.9	116.4	98.9	74.1	55.0	61.7	151.4	654.2	986	467.7	124.8	76.6
Mean	4.48	3.88	3.19	2.39	1.96	1.99	5.05	21.1	32.9	15.1	4.03	2.55
Ac-ft	276	231	196	147	109	122	300	1,300	1,960	928	248	152

Calendar year 1961: Max 79 Min 1.0 Mean 9.69 Ac-ft 7,020  
Water year 1961-62: Max 41 Min 1.6 Mean 8.23 Ac-ft 5,970

Peak discharge (base, 40 cfs).--June 20 (2100) 47 cfs (1.23 ft); June 29 (2130) 43 cfs (1.18 ft).

\* Discharge measurement made on this day.

Note.--No gage-height record Apr. 10-30.

## PLATTE RIVER BASIN

6-7486. South Fork Cache la Poudre River near Rustic, Colo.

Location.--Lat 40°38'30", long 105°29'30", in SW¼ sec.20, T.8 N., R.72 W., on left bank 5.7 miles upstream from mouth, 6 miles south-east of Rustic, and 22 miles west of Fort Collins.

Drainage area.--90.3 sq mi.

Records available.--August 1956 to September 1962.

Gage.--Water-stage recorder. Datum of gage is 7,596.86 ft above mean sea level (Bureau of Reclamation bench mark).

Average discharge.--6 years, 68.8 cfs (49,810 acre-ft per year).

Extremes.--Maximum discharge during year, 380 cfs June 30 (gage height, 3.39 ft); minimum daily, 8.6 cfs Feb. 26-28.  
1956-62: Maximum discharge, 1,120 cfs June 29, 1957 (gage height, 4.70 ft); minimum not determined.

Remarks.--Records good except those for periods of no gage-height record, which are poor. No diversion above station. Slight regulation by small reservoirs and lakes.

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

1.6	7.0	2.3	60
1.7	10	2.7	123
1.8	13	3.1	230
1.9	19	3.5	405
2.1	35		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	66	37	24	17	17	9.5	10	61	165	314	77	28
2	72	31	24	17	17	11	12	63	170	*292	59	25
3	65	30	23	18	17	10	13	63	185	274	*57	25
4	64	25	23	17	17	11	13	68	212	240	55	22
5	62	*18	*21	16	14	11	12	78	209	230	57	22
6	62	17	19	17	14	12	12	92	*197	227	56	*22
7	62	18	18	15	15	12	12	105	206	218	54	21
8	*60	19	17	14	15	12	12	118	197	197	52	23
9	61	20	14	13	15	12	12	134	176	194	52	25
10	59	20	13	12	17	11	*13	152	182	191	52	24
11	59	20	13	13	17	10	13	162	212	185	57	22
12	54	17	14	14	16	9.8	13	179	224	209	52	21
13	42	16	16	13	*16	9.2	16	170	244	215	52	21
14	41	16	17	13	15	*9.2	20	152	274	188	50	21
15	41	16	17	15	15	9.4	25	144	*278	170	47	22
16	41	15	16	14	15	10	29	157	278	140	47	22
17	41	14	15	14	13	11	26	160	251	102	45	21
18	41	14	15	*14	12	12	33	167	234	99	43	20
19	40	15	17	14	11	12	40	160	244	99	43	20
20	40	15	18	14	11	12	47	173	292	102	42	24
21	39	16	18	13	11	12	45	176	310	100	42	30
22	39	18	17	13	11	12	43	167	*310	99	43	29
23	35	21	18	14	9.8	12	41	162	306	105	41	25
24	39	21	19	15	9.5	12	52	165	301	112	47	23
25	37	22	18	15	9.0	13	64	173	319	121	41	24
26	39	21	17	15	8.6	14	74	170	306	107	35	24
27	39	20	16	15	8.6	14	67	188	310	105	30	22
28	37	21	16	16	8.6	14	67	176	310	100	28	22
29	35	21	18	16	-	11	74	154	306	88	26	23
30	48	23	18	17	-----	11	*67	142	332	86	28	23
31	*42	-----	18	17	-----	11	-----	157	-----	84	30	-----
Total	1,502	597	547	460	375.1	352.1	977	4,388	7,540	4,993	1,440	696
Mean	48.5	19.9	17.6	14.8	13.4	11.4	32.6	142	251	161	46.5	23.2
Ac-ft	2,980	1,180	1,080	912	744	698	1,940	8,700	14,960	9,900	2,860	1,380

Calendar year 1961: Max 500 Min - Mean 77.4 Ac-ft 56,040  
Water year 1961-62: Max 332 Min 8.6 Mean 65.4 Ac-ft 47,330

Peak discharge (base, 250 cfs).--June 14 (2350) 306 cfs (3.24 ft); June 30 (0015) 380 cfs (3.39 ft).

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 1-8, Nov. 4 to Apr. 10 (stage-discharge relation affected by ice during most of period).

Transbasin diversions from North Platte River basin to  
Cache la Poudre River basin in Colorado

The following seven diversions, which are equipped with water-stage recorders, divert water from tributaries of the North Platte River to the Cache la Poudre River or its tributaries. Records furnished by State engineer.

6-7455. Cameron Pass ditch diverts water from tributaries of Michigan River in sec.10, T.6 N., R.76 W., to Joe Wright Creek (tributary to Cache la Poudre River) in sec.2, T.6 N., R.76 W.

6-7460. Michigan ditch diverts water from Michigan River and many small tributaries in sec.12, T.6 N., R.76 W., to Joe Wright Creek (tributary to Cache la Poudre River) in sec.2, T.6 N., R.76 W.

6-7465. Skyline ditch diverts water from West Branch Laramie River (tributary to Laramie River), headgate in sec.14, T.8 N., R.76 W., to Chambers Lake (tributary to Cache la Poudre River) in sec.31, T.8 N., R.75 W.

6-7470. Laramie-Poudre tunnel diverts water from Laramie River in sec.7, T.8 N., R.75 W., and Rawah Creek (tributary to Laramie river) in sec.14, T.9 N., R.76 W., to Cache la Poudre River in sec.9, T.8 N., R.75 W.

6-7472. Bob Creek ditch diverts water from Nunn Creek (tributary to Laramie River) in sec.9, T.9 N., R.75 W., to Roaring Creek (tributary to Cache la Poudre River) in sec.11, T.9 N., R.75 W.

6-7500. Columbine ditch diverts water from Nunn Creek (tributary to Laramie River) in sec.3, T.9 N., R.75 W., to North Fork Cache la Poudre River (tributary to Cache la Poudre River) in sec.25, T.10 N., R.75 W.

6-7505. Wilson supply ditch diverts water from Sand Creek in sec.22, T.11 N., R.75 W., and at times includes water diverted from tributaries of Deadman Creek in sec.9, T.10 N., R.75 W. Diversion is from the Laramie River basin to Sheep Creek (tributary to North Fork Cache la Poudre River) in sec.13, T.11 N., R.75 W., in the Cache la Poudre River basin. Records herein represent total flow diverted from the Laramie River basin by Wilson supply ditch.

Diversions, in acre-feet, water year October 1961 to September 1962

Month	Cameron Pass ditch	Michigan ditch	Skyline ditch	Laramie- Poudre tunnel	Bob Creek ditch	Columbine ditch	Wilson supply ditch	Total
October.....	0	0	0	0	0	0	0	0
November.....	0	0	0	0	0	0	0	0
December.....	0	0	0	0	0	0	0	0
January.....	0	0	0	0	0	0	0	0
February.....	0	0	0	0	0	0	0	0
March.....	0	0	0	0	0	0	0	0
April.....	0	0	0	0	0	0	0	0
May.....	0	0	0	4,610	0	0	3,180	7,790
June.....	0	0	0	2,390	0	0	1,600	3,990
July.....	0	0	0	3,390	0	0	147	3,540
August.....	0	0	0	3,400	0	0	0	3,400
September.....	0	0	0	163	0	0	0	163
Water year 1961-62.....	0	0	0	13,950	0	0	4,930	18,880



## PLATTE RIVER BASIN

6-7515. North Fork Cache la Poudre River near Livermore, Colo.

Location.--Lat 40°42'15", long 105°14'10", in sec.33, T.9 N., R.70 W., on right bank a quarter of a mile upstream from mouth, a quarter of a mile downstream from Milton Seaman Reservoir, and 6 miles southeast of Livermore.

Drainage area.--568 sq mi.

Records available.--May 1929 to September 1931 (published as "at Livermore"), May 1947 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 5,380 ft (from topographic map). May 24, 1929, to Sept. 30, 1931, chain gage on highway bridge at Livermore 9 miles upstream at datum 5,715.03 ft above mean sea level, datum of 1929.

Average discharge.--17 years, 47.5 cfs (34,390 acre-ft per year).

Extremes.--Maximum discharge during year, 383 cfs May 12 (gage height, 4.91 ft); no flow July 1-7, 14-16, 22-24.

1929-31, 1947-62: Maximum discharge, 6,800 cfs May 31, 1930 (gage height, 9.82 ft, from floodmarks, site and datum then in use), from rating curve extended above 390 cfs on basis of slope-area measurement of peak flow; no flow for many days in 1961-62.

Maximum flood known, 20,000 cfs (estimated) May 20, 1904.

Remarks.--Records good. Natural flow of stream affected by transbasin diversions (see elsewhere in this report), storage reservoirs, and diversions for irrigation.

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

2.5	0	3.3	22
2.6	.7	3.6	51
2.7	1.5	3.9	90
2.8	2.5	4.3	180
2.9	4.8	4.7	320
3.1	11	5.2	580

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	158	12	18	52	49	38	62	320	172	0	25	2.1
2	160	12	18	52	49	29	66	272	204	0	25	2.0
3	82	12	18	52	49	29	66	195	264	0	*25	2.0
4	61	13	*18	52	48	30	66	178	225	0	25	2.1
5	87	*13	18	52	48	*30	66	180	*210	0	25	3.9
6	140	13	18	52	48	30	63	183	248	0	21	4.8
7	*162	13	18	52	48	30	62	219	284	*0	5.5	*4.6
8	186	13	18	51	*48	31	66	264	312	18	3.2	4.6
9	234	13	18	51	48	31	76	304	338	31	4.3	6.7
10	244	13	17	*51	48	31	*75	316	272	49	11	7.7
11	149	13	17	51	48	31	75	338	234	59	11	7.4
12	94	14	17	50	48	31	75	370	180	63	11	7.4
13	106	14	17	50	48	31	76	370	160	34	11	7.4
14	145	14	17	50	48	31	76	370	160	0	11	7.4
15	128	14	17	50	79	32	94	365	160	0	9.5	7.4
16	83	14	21	50	96	32	105	320	162	0	4.9	7.4
17	76	14	26	50	96	33	33	324	162	16	3.2	7.7
18	76	14	26	50	94	33	186	324	162	33	3.2	7.7
19	76	14	21	50	92	33	198	329	150	34	3.2	7.7
20	78	14	18	50	90	34	195	284	122	34	3.0	7.7
21	78	14	18	50	90	34	195	264	132	11	5.4	7.7
22	78	14	18	50	88	37	158	219	145	0	6.7	7.7
23	78	14	21	50	87	39	135	140	165	0	7.0	7.4
24	78	14	34	49	85	40	132	135	162	0	7.0	7.4
25	78	14	42	49	83	40	158	155	140	6.2	6.7	7.7
26	78	14	44	49	80	45	192	170	116	10	6.7	8.0
27	78	15	49	49	80	51	264	172	73	11	6.7	14
28	76	17	52	49	66	51	292	180	64	11	6.7	21
29	47	18	52	49	-	51	329	231	45	11	3.8	43
30	12	18	52	49	-----	54	*342	240	14	21	2.2	53
31	12	-----	52	49	-----	56	-----	180	-----	25	2.1	-----
Total	3,218	418	810	1,560	1,881	1,128	3,978	7,911	5,237	477.2	302.0	292.6
Mean	104	13.9	26.1	50.3	67.2	36.4	133	255	175	15.4	9.74	9.75
Ac-ft	6,380	829	1,610	3,090	3,730	2,240	7,890	15,690	10,390	947	599	580

Calendar year 1961: Max 1,450 Min 0 Mean 130 Ac-ft 94,190

Water year 1961-62: Max 370 Min 0 Mean 74.6 Ac-ft 53,980

\* Discharge measurement or observation of no flow made on this day.

6-7520. Cache la Poudre River at mouth of canyon, near Fort Collins, Colo.

Location--Lat 40°39'55", long 105°13'10", in sec.15, T.8 N., R.70 W., on left bank at mouth of canyon, three-quarters of a mile upstream from Lewstone Creek and 8½ miles northwest of Fort Collins.

Drainage area--1,055 sq mi.

Records available--June to August 1881, May to July 1883, October 1883 to September 1962. Monthly discharge only for some periods, published in WSP 1310. Records for Mar. 23 to Apr. 30 and July 4 to Aug. 20, 1883, published in WSP 9, have been found to be unreliable and should not be used. Prior to 1902, published as Cache la Poudre Creek or River at or near Fort Collins.

Gage--Water-stage recorder. Altitude of gage is 5,240 ft (from topographic map).

Average discharge--79 years (1883-1962), 399 cfs (288,900 acre-ft per year).

Extremes--Maximum discharge during year, 2,440 cfs June 30 (gage height, 4.73 ft); minimum daily, 14 cfs Aug. 29.

1881, 1883-1962: Maximum discharge not determined, occurred May 20, 1904; maximum discharge determined, 21,000 cfs June 9, 1891 (from reports of State engineer of Colorado), caused by failure of Chambers Lake Dam; minimum daily discharge, 1.6 cfs Nov. 20, 28, 1948, caused by diversion of Poudre Valley Canal half a mile upstream.

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. Natural flow of stream affected by transbasin and transmountain diversions (see elsewhere in this report), diversions for irrigation (75,460 acre-ft in water year 1962), and diversions for municipal use (8,800 acre-ft in water year 1962).

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

1.2	12	2.6	430
1.4	30	3.0	690
1.6	54	3.5	1,080
1.8	98	4.0	1,550
2.2	222	5.0	2,740

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	316	147	104	33	96	b80	115	809	550	1,870	332	64
2	321	138	96	32	97	b81	118	725	662	1,540	311	38
3	268	98	104	30	98	83	120	613	838	1,300	306	37
4	231	104	118	29	97	86	120	620	854	1,190	282	44
5	259	101	106	28	94	87	129	697	958	1,230	343	40
6	306	109	101	28	91	86	123	795	1,100	1,180	311	26
7	332	120	106	27	90	86	123	982	1,140	1,070	278	19
8	348	123	53	27	92	84	129	1,200	1,110	1,030	245	21
9	412	129	45	26	90	82	132	1,370	974	1,010	240	47
10	442	126	40	26	93	80	129	1,720	918	966	282	43
11	338	129	38	25	112	79	129	2,030	1,060	910	287	26
12	273	126	37	26	118	78	132	2,170	1,040	894	278	22
13	268	112	36	27	112	78	132	2,000	1,190	950	263	21
14	292	88	36	34	96	77	138	1,770	1,760	697	259	34
15	292	93	35	45	109	75	156	1,540	1,740	592	215	35
16	250	106	35	70	138	80	188	1,410	1,570	502	191	33
17	250	106	35	90	138	86	123	1,310	1,300	406	156	41
18	250	93	35	90	123	80	302	1,220	1,100	442	166	40
19	250	112	36	90	118	80	359	1,220	1,300	436	144	39
20	245	104	36	90	118	88	394	1,210	1,740	454	138	40
21	240	132	36	88	106	80	418	1,200	1,860	466	96	53
22	227	115	37	87	103	80	394	1,070	2,090	442	112	44
23	215	106	37	84	102	80	376	926	2,110	424	86	28
24	212	120	37	82	100	86	412	902	2,030	418	118	25
25	212	118	36	80	b94	86	490	990	1,950	406	88	31
26	205	118	36	81	b90	98	718	982	1,850	365	41	40
27	212	109	35	82	b83	112	854	1,010	2,100	382	28	34
28	212	104	35	85	b80	120	886	662	1,930	406	17	44
29	195	98	34	88	-	123	934	571	1,870	400	14	48
30	129	112	34	92	-----	118	886	514	2,110	400	17	62
31	169	-----	33	94	-----	115	-----	514	-----	400	58	-----
Total	3,171	3,396	1,622	1,816	2,878	2,734	9,659	34,752	42,804	23,178	5,702	1,119
Mean	264	113	52.3	58.6	103	88.2	322	1,121	1,427	748	184	37.3
Ac-ft	16,210	6,740	3,220	3,600	5,710	5,420	19,160	68,930	84,900	45,970	11,310	2,220

Calendar year 1961: Max 2,800 Min 13 Mean 401 Ac-ft 290,200

Water year 1961-62: Max 2,170 Min 14 Mean 378 Ac-ft 273,400

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 9 to Feb. 8, Feb. 21-24, Mar. 3-16 (stage-discharge relation affected by ice during part of periods).

## PLATTE RIVER BASIN

6-7525. Cache la Poudre River near Greeley, Colo.

Location.--Lat 40°25'04", long 104°38'22", in NW¼ sec.11, T.5 N., R.65 W., on right bank 25 ft downstream from highway bridge, 3 miles east of courthouse in Greeley, and 3 miles upstream from mouth.

Drainage area.--1,877 sq mi.

Records available.--March to October 1903, August to November 1904, January 1914 to December 1919, June 1924 to September 1962. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Altitude of gage is 4,610 ft (from topographic map). Prior to Apr. 4, 1916, staff gage and Apr. 4, 1916, to Dec. 17, 1919, water-stage recorder, at sites within 2 miles downstream at different datums. May 27, 1924, to Dec. 13, 1933, at present site at datum 0.51 ft higher.

Average discharge.--43 years (1914-19, 1924-62), 96.5 cfs (69,860 acre-ft per year).

Extremes.--Maximum discharge during year, 1,550 cfs July 2 (gage height, 6.65 ft); minimum daily, 12 cfs May 10.

1903-4, 1914-19, 1924-62: Maximum daily discharge, 4,220 cfs June 24, 26, 1917; minimum daily, 0.8 cfs Oct. 3, 1946.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Discharge measurements generally made twice a month. Natural flow of stream affected by transmountain and transbasin diversions, storage reservoirs, power developments, diversion for municipal supply, diversions above station for irrigation of about 250,000 acres, and return flow from irrigated areas.

Rating tables (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Nov. 6-27)

Oct. 1 to June 12

June 13 to Sept. 30

2.4	12	3.5	167	2.9	30	4.0	240
2.5	17	4.0	278	3.1	46	5.0	570
2.7	33	5.0	570	3.4	88	6.0	1,050
3.0	75	6.0	1,050	3.7	155	7.0	1,900

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	353	310	327	179	260	200	260	24	110	1,040	158	86
2	414	350	302	171	280	230	260	15	108	1,420	204	80
3	414	348	290	169	290	248	262	23	106	1,130	106	68
4	397	348	290	169	290	244	260	21	97	905	62	65
5	375	350	288	161	280	241	264	25	80	767	54	74
6	394	369	273	167	260	248	262	23	401	574	42	69
7	440	337	271	157	270	248	266	18	521	408	37	59
8	467	364	262	163	280	241	260	16	630	450	40	54
9	487	377	230	130	290	248	262	16	740	300	36	62
10	518	386	200	120	300	248	269	12	830	108	39	57
11	563	383	198	125	310	239	262	13	820	66	31	51
12	510	405	160	150	320	237	262	18	870	54	32	48
13	461	408	165	170	305	237	255	25	630	78	32	48
14	455	394	170	190	290	232	237	26	672	348	32	47
15	431	372	170	190	280	232	230	28	870	246	32	47
16	405	372	170	210	260	234	250	28	630	175	32	47
17	369	366	175	200	240	237	297	75	484	123	34	47
18	348	366	180	190	230	244	187	149	306	88	36	47
19	264	361	183	185	235	244	237	171	111	71	38	47
20	227	366	187	185	240	246	307	126	75	75	44	56
21	209	369	189	190	235	246	260	108	118	82	39	61
22	185	383	185	190	230	246	269	97	195	101	50	57
23	179	394	179	185	215	244	214	101	397	69	72	71
24	189	372	173	180	205	241	167	99	542	95	99	80
25	179	377	169	180	195	237	72	97	394	85	82	71
26	183	372	171	185	180	248	24	124	170	86	75	71
27	183	372	152	170	175	250	32	225	62	77	75	66
28	200	364	163	175	180	253	28	244	51	85	57	75
29	223	356	183	195	-	260	58	177	273	93	47	80
30	223	348	191	220	-----	269	61	139	354	83	83	78
31	200	-----	181	250	-----	257	-----	114	-----	101	95	-----
Total	10,445	11,039	6,434	5,501	7,125	7,529	6,334	2,377	11,647	9,383	1,895	1,869
Mean	337	368	208	177	254	243	211	76.7	388	303	61.1	62.3
Ac-ft	20,720	21,900	12,760	10,910	14,130	14,930	12,560	4,710	23,100	18,610	3,760	3,710

Calendar year 1961: Max 2,790 Min 5.8 Mean 282 Ac-ft 204,200  
Water year 1961-62: Max 1,420 Min 12 Mean 224 Ac-ft 161,800

Note.--No gage-height record Dec. 12-18, Jan. 9 to Mar. 2, Sept. 15-20.

## PLATTE RIVER BASIN

57

6-7540. South Platte River near Kersey, Colo.

Location.--Lat 40°24'44", long 104°33'46", NW¼SW¼ sec.9, T.5 N., R.64 W., on downstream side of bridge on State Highway 37, 1.9 miles north of railroad in Kersey, and 2½ miles downstream from Cache la Poudre River.

Drainage area.--9,598 sq mi.

Records available.--May 1901 to December 1903, March 1905 to September 1962. Monthly discharge only for some periods, published in WSP 1310. Published as "at Kersey" 1901-3.

Gage.--Water-stage recorder since July 8, 1919. Datum of gage is 4,575.77 ft above mean sea level, datum of 1929. Prior to July 8, 1919, staff or chain gages at former bridge 150 ft downstream at different datum. July 8, 1919, to Sept. 7, 1921, at site 450 ft downstream from present site at different datum. Sept. 8, 1921, to Sept. 12, 1923, at site 750 ft downstream from present site at different datum. Sept. 13, 1923, to July 2, 1935, at site 200 ft downstream from present site at present datum.

Average discharge.--59 years, 736 cfs (532,800 acre-ft per year).

Extremes.--Maximum discharge during year, 3,400 cfs July 2 (gage height, 5.63 ft); minimum daily, 161 cfs May 11.

1901-3, 1905-62: Maximum daily discharge, 31,000 cfs June 7, 1921, from rating curve extended above 17,000 cfs by logarithmic plotting; minimum daily, 28 cfs Apr. 30, 1955.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Natural flow of stream affected by trans-mountain and transbasin diversions, storage reservoirs, power developments, ground-water withdrawals and diversions for irrigation of about 888,000 acres, and return flow from irrigated areas.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Jan. 26 to Feb. 3,  
July 12-23, Aug. 2-6)

2.5	158	4.0	1,090
3.0	360	5.0	2,440
3.5	690	6.0	4,400

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,520	2,220	1,890	1,160	1,360	1,170	1,240	880	683	2,360	1,380	426
2	2,390	2,310	1,830	1,110	1,420	1,300	1,190	536	792	3,170	2,100	432
3	2,440	2,300	1,860	1,100	1,550	1,400	1,180	294	848	2,680	*1,620	372
4	2,280	2,260	1,830	1,070	1,690	1,370	1,220	214	*725	2,040	1,100	320
5	2,160	2,240	1,800	1,040	1,580	*1,170	1,360	190	578	*1,840	872	426
6	2,080	2,240	*1,720	1,040	1,520	1,240	1,410	234	912	1,410	606	450
7	2,060	2,140	1,690	1,000	1,410	1,300	1,450	230	1,280	992	384	426
8	2,020	2,130	1,610	1,050	1,460	1,340	1,470	*202	1,610	968	250	390
9	2,070	*2,240	1,480	1,000	1,660	1,430	1,650	180	2,100	816	222	384
10	2,310	2,310	1,250	840	1,690	1,400	1,660	*174	1,960	627	214	396
11	2,360	2,260	1,130	820	1,770	1,300	1,540	161	1,680	550	198	*420
12	2,360	2,280	1,000	880	1,720	1,170	*1,370	164	1,470	444	187	432
13	*2,360	2,440	1,020	940	1,730	1,090	1,230	184	1,190	494	180	432
14	2,340	2,410	1,120	1,010	1,840	1,100	1,140	210	1,220	928	180	408
15	2,360	2,190	1,220	1,060	1,700	1,130	1,130	210	1,620	784	190	378
16	2,310	2,120	1,260	1,060	*1,500	1,190	1,180	194	1,400	784	*234	360
17	2,200	2,010	1,280	1,040	1,580	1,210	1,410	250	1,360	697	254	340
18	*2,130	2,000	1,300	1,000	1,680	1,230	1,260	739	968	634	258	315
19	1,940	1,950	1,350	960	1,500	1,220	1,350	1,040	494	*592	266	302
20	1,860	1,860	1,380	1,000	1,520	1,200	1,410	864	396	606	282	315
21	1,800	1,890	1,380	980	1,380	1,210	1,260	725	*402	585	278	325
22	1,730	2,060	1,320	940	1,360	1,170	1,170	792	641	564	286	366
23	1,650	2,100	1,340	920	1,300	1,080	1,040	792	1,040	515	320	396
24	1,610	2,100	1,260	920	1,200	976	800	676	1,380	864	402	402
25	1,510	2,140	1,220	950	1,170	968	564	*592	968	1,200	468	378
26	1,590	2,070	1,230	1,000	1,100	1,100	*414	904	662	968	522	378
27	1,560	2,010	1,150	1,050	1,080	*1,100	408	1,370	402	928	462	366
28	1,550	2,020	*1,140	1,100	1,060	1,140	390	1,880	286	1,220	*335	*372
29	1,700	2,010	1,180	1,150	-	1,150	420	1,370	907	1,280	302	*372
30	1,960	1,960	1,190	1,180	-----	1,190	578	968	1,070	1,190	420	360
31	1,960	-----	1,210	*1,220	-----	1,210	-----	*760	-----	1,070	420	-----
Total	63,170	64,270	42,640	31,590	41,530	37,254	33,894	17,979	31,044	33,800	15,192	11,439
Mean	2,038	2,142	1,375	1,019	1,483	1,202	1,130	580	1,035	1,090	490	381
Ac-ft	125,300	127,500	84,580	62,660	82,370	73,890	67,230	35,660	61,570	67,040	30,130	22,690
Calendar year 1961:	Max 10,100	Min 84	Mean 1,401	Ac-ft 1,014,000								
Water year 1961-62:	Max 3,170	Min 161	Mean 1,161	Ac-ft 840,600								

\* Discharge measurement made on this day.

Note.--No gage-height record Dec. 9-20, Jan. 9-30 (stage-discharge relation affected by ice during part of period), Feb. 19 to Mar. 4.



## PLATTE RIVER BASIN

6-7576. Kiowa Creek at K-79 Reservoir, near Eastonville, Colo.

Location.--Lat 39°04'00", long 104°34'55", in SE¼NW¼ sec.29, T.11 S., R.64 W., in reservoir area, 140 ft upstream and 250 ft from left end of earth-fill dam on Kiowa Creek and 1.2 miles west of Eastonville.

Drainage area.--3.20 sq mi.

Records available.--August 1955 to September 1962 (no winter records).

Gage.--Water-stage recorder and concrete drop-inlet control structure. Datum of gage is 7,287.14 ft above mean sea level (Soil Conservation Service bench mark).

Extremes.--Maximum outflow during year, 6.7 cfs Oct. 3 (gage height, 4.95 ft), caused by release from storage; no flow for many days. Maximum inflow recorded, 12 cfs (average for 5-minute interval) July 26, computed from outflow and change in reservoir contents; no rainfall on reservoir surface during time of peak inflow.

1955-62: Maximum outflow, 1,480 cfs July 30, 1957 (gage height, 22.79 ft), from rating curve extended above 68 cfs on basis of slope-area measurement of peak flow in spillway and theoretical flow in outlet tube; no flow for many days in each year. Maximum inflow, 5,250 cfs (average for 5-minute interval) July 30, 1957, computed from outflow and change in reservoir contents; no rainfall on reservoir surface during time of peak inflow.

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

Records of daily discharge are outflow from reservoir, determined from stage-discharge relation for outlet structure. Reservoir is formed by earth dam, 755 ft long, with grass sodded emergency spillway section at gage height 20.1 ft; dam completed in June 1955. Outlet is a 3-foot square uncontrolled drop-inlet structure covered with an anti-vortex baffle, with two 12-inch square uncontrolled portholes on upstream face and two on right face. Crest of drop inlet is at gage-height 10.84 ft; inverts of portholes on upstream face are at gage heights 2.90 and 6.87 ft and inverts of portholes on right face are at 4.87 and 8.85 ft. Drop inlet structure connects to a 24-inch diameter outlet pipe at base of dam. Reservoir capacity based on 1959 survey, 125 acre-ft at spillway crest, 23.1 acre-ft at crest of drop inlet, and 12.6, 4.75, 0.83, and 0.00 acre-ft at inverts of portholes. No dead storage. Dam constructed by U. S. Soil Conservation Service as part of the Kiowa Creek Watershed Protection Project.

Cooperation.--Reservoir capacity table furnished by U. S. Soil Conservation Service.

Discharge, in cubic feet per second, water year October 1961 to September 1962												
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.07								0		0.05	0.02
2		(*)							0		.01	
3	*.7						(*)0.2	0.05	0		.05	
4									0		.06	
5									*0		.02	
6									0		.01	
7								(*)	0		0	
8									*0		0	
9											0	
10										0.02	0	
11	.07								.02		0	
12											0	
13											0	
14											0	
15								.03	0		0	.01
16									0		0	
17	(*)						.1	(*)			.01	
18												
19									.01			
20									(*)		.01	
21									0			
22	.06								0			
23									0	.01		
24											0	
25									.04			
26								.06		.07		
27									*0	.02		
28								0	0			
29								0	0			
30										*.08	*.3	
31											.2	
Total	2.66	-	-	-	-	-	3.5	1.03	0.32	0.71	0.76	1.07
Mean	0.086	-	-	-	-	-	0.12	0.03	0.011	0.023	0.025	0.010
(+)	-	-	-	-	-	-	-	0.22	-	1.02	0.91	0.87
(++)	0.10	-	-	-	-	-	0.20	0.85	1.77	2.01	-	-

\* Discharge measurement or observation of no flow made on this day.

(+) Contents, in acre-feet, at end of month, in reservoir.

(++) Precipitation, in inches, during month, at rain gage at reservoir.

Note.--No gage-height record Oct. 4-31, Apr. 1 to May 28, June 29 to July 23, Aug. 21-29.

## PLATTE RIVER BASIN

59

6-7580. Kiowa Creek at Elbert, Colo.

Location.--Lat 39°12'35", long 104°32'00", in SE 1/4 sec.3, T.10 S., R.64 W., on right bank a quarter of a mile southeast of Elbert and half a mile upstream from West Kiowa Creek.

Drainage area.--28.6 sq mi.

Records available.--May 1955 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 6,740 ft (from topographic map).

Average discharge.--7 years, 0.20 cfs (145 acre-ft per year).

Extremes.--Maximum discharge recorded during year, 0.3 cfs Nov. 21 (gage height, 3.10 ft); no flow for most of year.

1955-62: Maximum discharge, 305 cfs Aug. 27, 1955 (gage height, 4.40 ft), from rating curve extended above 61 cfs; no flow most of each year.

Maximum flood known occurred May 30-31, 1935; discharge at site about 1 mile downstream, 43,500 cfs, by slope-area measurement of peak flow. Most of the water is believed to have passed this station. For discussion of this flood, see WSP 997.

Remarks.--Records poor. Floodflows decreased by a series of about 24 retarding dams on Kiowa Creek and tributaries above station.

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	Q	Q	Q		(*)			(*)				
2	0	*0	0				0.1					
3	*0	0	0	(*)								
4	0	0	0									
5	0	0	*.1			(*)	*.1		(*)	(*)		
6	0	0	.1				.1					
7	0	0	.1				.1					
8	0	0					.1					
9	.1	0					.1					
10	.1	0					Q				(*)	
11	0	0					0					
12	0	0					0					
13	0	.1					.1					
14	0	0					.1					
15	0	0					.1					
16	0	0		0		0.1	0					
17	0	0					0	(*)				
18	0	0					0					
19	0	.1	0				0					
20	0	.2					*0					
21	0	.1				(*)	0		(*)			
22	0	0					0					
23	0	0					0			(*)		
24	0	0					0					
25	0	0					0					
26	0	0					0					
27	0	0					0		(*)			
28	0	0					.1					
29	.1	0					.1					
30	0	0					.1			(*)		
31	0	-----			-----		-----		-----			-----
Total	0.3	0.5	0.3	0	0	3.1	1.5	0	0	0	0	0
Mean	0.01	0.02	0.01	0	0	0.1	0.05	0	0	0	0	0
Ac-ft	0.6	1.0	0.6	0	0	6.1	3.0	0	0	0	0	0

Calendar year 1961: Max 2.3 Min 0 Mean 0.01 Ac-ft 9.6

Water year 1961-62: Max 0.2 Min 0 Mean 0.02 Ac-ft 11

\* Discharge measurement made on this day.

Note.--No gage-height record Dec. 8 to Apr. 4 (stage-discharge relation affected by ice during part of period).

## PLATTE RIVER BASIN

6-7582. Kiowa Creek at Kiowa, Colo.

Location.--Lat 39°20', long 104°29', in SW¼ sec.20, T.8 S., R.63 W., on left bank 0.7 mile upstream from bridge on State Highway 86 and 0.7 mile south of Kiowa.

Drainage area.--111 sq mi.

Records available.--October 1955 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 6,350 ft (estimated from nearby bench mark).

Average discharge.--7 years, 3.62 cfs (2,620 acre-ft).

Extremes.--Maximum discharge recorded during year, 20 cfs Mar. 11 (gage height, 3.98 ft); no flow for many days.

1955-62: Maximum discharge, 5,980 cfs July 20, 1957 (gage height, 6.62 ft, from floodmark), from rating curve extended above 2,200 cfs by logarithmic plotting; no flow for many days in each year.

Maximum flood known occurred May 30-31, 1935; discharge at Elbert about 9½ miles upstream, 43,500 cfs, and at site about 12 miles downstream 110,000 cfs, by slope-area measurement of peak flow. For discussion of this flood see WSP 997.

Remarks.--Records poor. Little or no diversion above station. Floodflow regulated to some extent by a series of about 64 retarding dams on Kiowa Creek and tributaries above station.

Discharge, in cubic feet per second, water year October 1961 to September 1962												
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.3	5.6	4.8		(*)	3.5	4.8	*3.8	0.4			
2	2.5	*4.8	4.5			4.5	4.8	3.4	.4			
3	*2.1	5.2	4.1	(*)		5	3.0	3.0	.1		(*)	
4	1.6	6.3	4.1			4.5	3.4	2.7	0			
5	1.9	6.6	*5.6			*4	*3.4	2.7	*0	(*)		
6	2.1	6.6	6.3			5.5	3.4	2.5	.3			
7	2.1	8.5	5.9			7	3.4	2.3	.6			
8	2.1	9.0	4.5			*7.5	3.2	2.1	1.2			(*)
9	3.0	6.6			(*)	6.6	3.2	2.1	.8			
10	3.0	8.0				7.5	3.2	1.9	.5		(*)	
11	3.2	7.5				7	3.4	1.9	.2			
12	3.4	9.0				6.5	3.4	.7	.1			
13	3.8	10				6	3.0	.5	0			(*)
14	4.1	5.9				7	2.3	.5	0			
15	4.5	3.8		2.5	5	9	2.3	.3	0			(*)
16	4.8	3.5				*11	2.3	.5	0			
17	*4.8	3.0				11	2.3	*.1	0			
18	5.2	2.7				10	1.9	.7	0			
19	5.2	2.5				9.0	1.9	.1	0			
20	5.2	2.5	3			8.0	*2.3	0	0			
21	5.9	2.8				9.5	2.1	0	*0		(*)	
22	5.2	3.2				9.5	2.3	0	0			
23	4.8	3.5				8.5	2.1	0	0	(*)		
24	5.6	4.0				9.0	2.3	0	0			
25	5.2	5.5				9.5	2.1	0	0			
26	5.9	4.8				9.0	2.3	0	0			
27	5.6	3.8				9.0	2.1	1	0			
28	5.2	5.6				8.0	2.5	.2	0			
29	6.3	4.8				8.5	3.2	.1	0			
30	6.3	5.6				8.0	3.2	0	0	(*)		
31	6.6	-----				5.6	-----	0	-----		(*)	-----
Total	129.5	161.2	108.8	77.5	140	234.2	85.1	32.2	4.6	0	0	0
Mean	4.18	5.37	3.51	2.5	5	7.55	2.84	1.04	0.15	0	0	0
Ac-ft	257	320	216	154	278	465	169	64	9.1	0	0	0

Calendar year 1961: Max 101 Min 0 Mean 3.75 Ac-ft 2,710

Water year 1961-62: Max 11 Min 0 Mean 2.67 Ac-ft 1,930

\* Discharge measurement or observation of no flow made on this day.

Note.--No gage-height record Nov. 16-25, Dec. 9 to Mar. 8, Mar. 11-16 (stage-discharge relation affected by ice during most of periods).

## PLATTE RIVER BASIN

61

6-7583. Kiowa Creek at Bennett, Colo.

Location.--Lat 39°44'54", long 104°24'46", in NW¼ sec.35, T.3 S., R.63 W., on left bank about a quarter of a mile downstream from U. S. Highway 36, 40, and 287 relocated, and 1 mile east of Bennett.

Drainage area.--236 sq mi.

Records available.--March 1960 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 5,430 ft (from topographic map). Prior to Oct. 1, 1960, at datum 0.15 ft higher.

Extremes.--Maximum discharge during year, not determined; no flow for most of time.

1960-62: Maximum discharge, 1,770 cfs July 11, 1961 (gage height not determined), by critical-depth measurement of peak flow; no flow for many days in each year.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor. Discharge measurements or observation of no flow generally made two or more times a month. Little or no diversion above station. Floodflow regulated to some extent by a series of retarding dams on Kiowa Creek and tributaries above station.

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0	6.2	4	5	2.5	2	7.4	0	0			
2	0	4.2	3.5	5	6.5	5	11	.2	0			
3	0	1.6	3.5	4.5	5	8	8.1	1.9	0			
4	0	2.9	3	3.5	6	12	6.8	0	0			
5	0	6.8	2.5	3	8	25	7.4	.7	0			
6	0	5.5	0	3.5	11	45	11	0	0			
7	0	3.6	0	2.5	18	38	8.8	0	.8			
8	0	8.1	0	1.3	40	25	10	0	4.0			
9	0	6.2	0	0	31	19	10	0	3.0			
10	0	12	0	0	50	20	6.2	0	.9			
11	0	5.2	0	1	55	12	5.5	0	0			
12	0	6.7	0	1.7	32	8	4.8	0	0			
13	0	20	0	1	25	5	4.8	0	0			
14	0	1.5	0	0	18	5.5	4.1	0	0			
15	0	.4	0	0	12	6.0	4.1	0	0			
16	0	0	0	0	7	6.5	3.0	0	0			
17	0	0	0	0	3	6.5	3.4	.3	0			
18	0	0	0	0	4	6.0	3.0	.4	0			
19	0	0	0	0	4	6.0	1.4	0	0			
20	0	0	.5	0	5	5.5	.2	0	0			
21	0	0	3.5	0	5	3.5	0	0	0			
22	0	0	2.5	0	6	4.5	0	0	0			
23	0	8.2	3	.5	4	8.8	0	0	0			
24	0	11	5	1.4	2	6.8	0	0	0			
25	0	14	9	1.5	1	5.2	0	0	0			
26	0	7.8	2	1.6	.4	6.8	0	0	0			
27	0	5	.5	1.6	0	5.5	0	0	0			
28	0	3	.5	1.7	.2	4.4	0	0	0			
29	0	3.5	.9	1.8	-	3.8	.3	0	0			
30	3.6	4.5	1.5	1.9	-----	6.8	.2	0	0			
31	7.4	-----	3	2.0	-----	10	-----	0	-----			-----
Total	11.0	147.9	48.4	46.0	361.6	332.1	121.5	3.5	8.7	0	0	0
Mean	0.35	4.93	1.56	1.48	12.9	10.7	4.05	0.11	0.29	0	0	0
Ac-ft	22	293	96	91	717	659	241	6.9	17	0	0	0

Calendar year 1961: Max 216 Min 0 Mean 4.29 Ac-ft 3,110  
 Water year 1961-62: Max 55 Min 0 Mean 2.96 Ac-ft 2,140

Note.--No gage-height record Nov. 27 to Jan. 29, Feb. 15 to Mar. 4 (stage-discharge relation affected by ice during most of periods), Mar. 5-22. Stage-discharge relation affected by ice Jan. 30 to Feb. 11.



## PLATTE RIVER BASIN

6-7585. South Platte River near Weldona, Colo.

Location.--Lat 40°19'20", long 103°55'15", in SW¼SW¼ sec.7, T.4 N., R.58 W., on left bank 400 ft downstream from bridge on State Highway 144, 2.8 miles southeast of Weldona, and 4.2 miles upstream from Bijou Creek.

Drainage area.--13,245 sq mi.

Records available.--October 1952 to September 1962.

Gage.--Water-stage recorder. Datum of gage is 4,307.80 ft above mean sea level, datum of 1929.

Average discharge.--10 years, 464 cfs (335,900 acre-ft per year).

Extremes.--Maximum discharge during year, 1,980 cfs Oct. 17 (gage height, 5.39 ft); maximum gage height, 5.59 ft Feb. 6 (backwater from ice); minimum daily discharge, 71 cfs May 5.

1952-62: Maximum discharge, 14,200 cfs May 11, 1957 (gage height, 9.92 ft); minimum daily, 43 cfs Dec. 9, 1952.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Natural flow of stream affected by transmountain and transbasin diversions, storage reservoirs, power developments, ground-water withdrawals and diversions for irrigation, and return flow from irrigated areas.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Dec. 20-26, Mar. 2-13, June 21, 22)

Oct. 1 to Nov. 23

Nov. 24 to Sept. 30

4.0	640	5.0	1,510	2.7	65	3.5	410
4.5	1,020	6.0	2,660	2.8	85	4.0	720
				3.1	195	5.0	1,600

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.730	1.790	886	894	b1.310	1.270	977	306	270	910	977	356
2	1.870	1.870	854	806	b1.390	1.310	977	362	250	1.360	1.060	486
3	1.930	1.940	910	748	b1.470	1.360	968	235	225	1.360	*1.300	368
4	1.920	1.950	870	707	b1.520	1.290	968	100	*205	1.370	995	368
5	1.780	1.780	862	688	b1.580	*1.150	959	71	186	*578	755	334
6	1.700	1.800	*846	668	b1.620	1.160	1.000	73	164	380	542	476
7	1.650	1.750	830	674	1.430	1.200	1.050	77	260	398	344	482
8	1.730	1.700	806	688	1.170	1.260	1.060	106	886	356	265	440
9	1.790	*1.700	769	620	1.190	1.210	1.060	143	1.210	440	290	422
10	1.810	1.690	720	610	1.320	1.190	1.070	*140	1.470	328	265	404
11	1.800	1.720	680	620	1.370	1.190	1.070	150	1.360	210	270	*322
12	1.750	1.730	640	680	1.400	1.150	*1.100	168	1.220	159	245	317
13	*1.750	1.730	640	730	1.360	1.080	1.110	190	1.200	177	290	322
14	1.830	1.680	680	780	1.300	995	1.080	230	1.060	275	270	322
15	1.850	1.600	730	830	1.290	968	1.010	270	1.060	548	245	295
16	1.860	1.300	780	880	*1.190	968	870	306	1.240	428	*260	275
17	1.940	1.170	820	880	1.130	977	830	317	1.170	334	205	265
18	1.910	1.100	880	840	1.160	986	878	494	995	270	172	215
19	1.830	1.080	*930	820	1.160	1.030	783	530	560	*195	220	245
20	1.690	1.060	1.010	810	1.120	1.050	663	530	240	136	260	306
21	1.630	1.000	1.040	800	1.060	1.010	636	*494	*109	143	300	328
22	1.590	988	1.100	800	986	1.010	748	470	118	240	295	374
23	1.550	1.050	1.080	800	968	995	694	452	275	446	306	392
24	*1.500	*1.040	1.030	820	977	977	560	404	440	548	350	392
25	1.450	1.030	1.030	830	1.010	926	398	362	270	668	398	398
26	1.420	1.040	1.010	890	995	918	*317	356	150	838	428	410
27	1.450	1.020	980	920	1.130	*995	312	368	109	748	506	404
28	1.450	1.000	930	1.000	1.260	1.030	290	548	150	814	*506	642
29	1.500	986	b900	1.080	-	1.070	260	610	177	1.030	312	*674
30	1.600	977	b900	1.120	-----	1.060	255	422	530	1.070	225	648
31	1.760	-----	b950	b1.220	-----	1.050	-----	306	-----	1.010	312	-----
Total	53,020	42,271	27,093	25,253	34,866	33,835	23,953	9,590	17,559	17,767	13,168	11,682
Mean	1,710	1,409	874	815	1,245	1,091	798	309	585	573	425	389
Ac-ft	105,200	83,840	53,740	50,090	69,160	67,110	47,510	19,020	34,830	35,240	26,120	23,170

Calendar year 1961: Max 7,230 Min 48 Mean 899 Ac-ft 650,700

Water year 1961-62: Max 1,950 Min 71 Mean 849 Ac-ft 615,000

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 11-19, 27, 28, Jan. 9-30 (stage-discharge relation affected by ice during part of periods), Apr. 27 to May 10.

## PLATTE RIVER BASIN

63

6-7600. South Platte River at Balzac, Colo.

Location.--Lat 40°24'24", long 103°27'58", in NE¼ sec.13, T.5 N., R.55 W., on right bank just upstream from highway bridge at Balzac siding, 2.8 miles northeast of Union.

Drainage area.--16,852 sq mi.

Records available.--October 1916 to September 1962. Prior to October 1933 monthly discharge only, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 4,091.06 ft above mean sea level, datum of 1929. Prior to Oct. 18, 1935, chain gage or water-stage recorder at various sites near present site at different datums. Oct. 18 to Dec. 16, 1935, staff gage and Dec. 17, 1935, to Aug. 20, 1947, water-stage recorder, at site 250 ft upstream at present datum. Since Oct. 1, 1936, supplementary water-stage recorder on secondary channel 600 ft to the left at datum 1.69 ft lower.

Average discharge.--46 years, 367 cfs (265,700 acre-ft per year).

Extremes.--Maximum discharge during year, 1,790 cfs Feb. 3 (gage height, 6.01 ft); minimum daily, 30 cfs June 4, 5.  
1916-62: Maximum discharge not determined, occurred May 31, 1935 (gage height, 11.43 ft); maximum daily discharge determined, 31,200 cfs June 11, 1921; minimum daily 1.3 cfs Jan. 25, 1947.

Remarks.--Records fair except those for periods of no gage-height record, which are poor. Natural flow of stream affected by trans-mountain and transbasin diversions, storage reservoirs, power developments, ground-water withdrawals, diversions above station for irrigation of about 1,065,000 acres, and return flow from irrigated areas.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Nov. 20 to Dec. 11, Mar. 7-16, Apr. 6-19, Apr. 25 to May 5, June 20-23, July 29 to Aug. 4, Aug. 25 to Sept. 30)

2.5	25	4.0	530
2.6	37	5.0	1,100
2.8	75	6.0	1,780
3.4	240		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	890	1.430	605	1.210	1.440	930	902	264	272	519	992	315
2	932	1.480	675	1.140	*1.540	940	836	330	62	632	1.040	390
3	1.030	1.550	920	1.070	1.590	1.000	842	435	40	600	*1.050	400
4	1.100	1.550	1.010	1.020	1.650	1.000	824	365	*30	575	1.110	370
5	1.020	1.500	1.060	1.000	1.730	1.020	782	280	30	*204	830	370
6	926	1.380	*1.070	962	1.690	1.000	680	234	36	52	550	360
7	830	1.400	1.060	944	1.690	*974	716	222	40	159	300	435
8	1.050	1.340	1.050	962	1.530	980	746	201	304	142	192	410
9	1.380	1.320	986	500	1.410	986	698	204	580	195	195	400
10	1.400	*1.350	944	980	1.440	962	734	195	848	305	192	425
11	1.430	1.360	884	1.080	1.520	938	794	174	932	240	180	405
12	1.360	1.370	974	1.030	1.550	866	*896	165	830	204	180	*335
13	1.350	1.360	860	1.040	1.410	854	992	189	806	159	171	315
14	*1.400	1.390	830	1.060	1.140	782	842	204	800	515	168	305
15	1.430	1.360	926	1.080	*1.080	710	710	198	670	445	153	272
16	1.470	1.220	1.130	1.060	1.030	692	585	234	698	440	*122	248
17	1.490	980	1.290	1.060	950	944	380	380	884	256	128	240
18	1.510	884	1.330	1.050	920	1.150	360	440	1.200	174	132	216
19	1.460	812	*1.340	1.070	944	1.130	325	390	1.020	132	165	186
20	1.380	776	1.320	1.070	938	1.170	207	272	660	*105	195	183
21	1.290	752	1.240	1.040	896	1.060	1.040	216	*445	88	210	213
22	1.260	*710	1.310	1.010	884	914	550	*159	167	78	207	268
23	1.230	704	1.350	1.020	848	920	620	82	48	88	183	300
24	*1.230	740	1.340	1.100	794	884	525	39	207	335	210	340
25	1.170	728	1.340	1.120	872	860	390	44	256	415	240	395
26	1.120	722	1.380	1.150	1.050	806	*260	60	162	575	305	420
27	1.120	716	1.370	1.180	1.070	*794	268	47	150	660	390	440
28	1.120	686	1.320	1.210	960	770	256	54	78	704	*430	365
29	1.150	660	1.280	1.250	-	824	201	60	73	800	365	335
30	1.200	660	1.360	1.300	-----	854	204	32	159	980	260	320
31	1.280	-----	1.270	1.370	-----	884	-----	47	-----	1.020	252	-----
Total	38,008	32,890	34,824	33,138	34,566	28,598	18,165	6,216	12,487	11,796	11,097	9,976
Mean	1,226	1,096	1,123	1,069	1,234	923	606	201	416	381	358	333
Ac-ft	75,390	65,240	69,070	65,730	68,560	56,720	36,030	12,330	24,770	23,400	22,010	19,790

Calendar year 1961: Max 7,520 Min 12 Mean 705 Ac-ft 510,400  
Water year 1961-62: Max 1,730 Min 30 Mean 745 Ac-ft 539,000

\* Discharge measurement made on this day.

Note.--No gage-height record Jan. 9 to Feb. 1 (stage-discharge relation affected by ice during part of period), Feb. 28 to Mar. 6.

## PLATTE RIVER BASIN

6-7640. South Platte River at Julesburg, Colo.

Location.--Lat 40°58'46", long 102°15'15", in NE¼ sec.33, T.12 N., R.44 W., on left bank 215 ft downstream from bridge on U. S. Highway 385, 0.9 mile southeast of Julesburg, 3 miles upstream from Colorado-Nebraska State line, and 8 miles downstream from Lodgepole Creek.

Drainage area.--23,138 sq mi.

Records available.--April 1902 to September 1962. Monthly discharge only for some periods, published in WSP 1310. Published as "near Julesburg" 1903-8, 1915-16 and as "at Ovid" 1922-24.

Gage.--Water-stage recorder. Datum of gage is 3,446.76 ft above mean sea level, datum of 1929. Apr. 1, 1902, to May 10, 1922, staff or chain gages, and Oct. 1, 1924, to Sept. 30, 1956, water-stage recorder on channel 1,600 ft to right at several sites within 1,800 ft of present site at various datums. May 11, 1922, to Sept. 30, 1924, water-stage recorder and supplemental chain gages at site about 8½ miles upstream at Ovid at different datum. Oct. 1, 1956, to Dec. 10, 1958, water-stage recorder at site 135 ft downstream at present datum (used as an auxiliary gage Oct. 1, 1941, to Sept. 30, 1956). Since Oct. 1, 1956, supplemental water-stage recorder on channel 1,600 ft to right at site 85 ft downstream.

Average discharge.--60 years, 464 cfs (335,900 acre-ft per year).

Extremes.--Maximum discharge during year, 2,490 cfs Mar. 7; minimum daily, 28 cfs May 9, 10, 12, 13.

1902-62: Maximum discharge, 31,300 cfs June 2, 1935, from rating curve extended above 16,000 cfs; no flow Aug. 18-20, 1902, July 25 to Aug. 7, 1903.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Discharge measurements generally made two or more times each month. Natural flow of stream affected by transmountain diversions, storage reservoirs, power developments, ground-water withdrawals, diversions for irrigation of about 1,220,000 acres above station, and return flow from irrigated areas.

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	850	1.440	997	1.480	1.550	950	955	43	856	243	983	47
2	807	1.520	976	1.520	1.610	1.030	950	40	862	371	1.330	47
3	793	1.580	950	1.500	1.810	1.160	973	38	821	403	1.270	49
4	856	1.630	958	1.380	2.040	1.320	966	35	729	506	1.230	54
5	937	1.650	1.070	1.290	2.050	1.650	935	32	657	544	1.190	55
6	985	1.690	1.180	1.220	2.000	1.940	924	32	647	569	1.140	60
7	1.000	1.710	1.300	1.180	1.990	2.230	894	32	698	487	909	55
8	979	1.640	1.240	1.100	2.040	2.210	840	31	928	371	667	55
9	950	1.660	1.230	910	1.950	1.630	825	28	1.300	270	420	68
10	1.020	1.620	1.200	870	1.780	1.450	818	28	1.110	187	278	89
11	1.120	1.610	1.140	940	1.690	1.370	800	29	1.070	128	168	88
12	1.190	1.600	1.120	1.120	1.700	1.250	788	28	1.120	116	111	88
13	1.240	1.600	1.050	1.210	1.700	1.200	778	28	1.130	77	81	85
14	1.250	1.620	1.080	1.230	1.730	1.160	794	29	1.070	74	66	79
15	1.300	1.650	1.200	1.200	1.620	1.130	825	29	1.040	77	57	90
16	1.380	1.650	1.320	1.200	1.450	1.060	804	49	1.010	71	55	90
17	1.420	1.640	1.440	1.210	1.370	1.030	744	120	1.020	135	56	102
18	1.440	1.520	1.520	1.220	1.270	1.000	682	123	966	641	54	107
19	1.470	1.370	1.550	1.250	1.220	1.110	568	164	951	670	52	102
20	1.510	1.240	1.500	1.230	1.190	1.210	411	211	1.020	537	56	93
21	1.520	1.200	1.450	1.180	1.170	1.270	265	241	1.020	426	54	99
22	1.490	1.160	1.500	1.140	1.160	1.320	203	260	865	328	49	105
23	1.480	1.120	1.520	1.180	1.150	1.250	159	237	689	208	44	96
24	1.440	1.100	1.530	1.240	1.090	1.140	122	218	512	151	41	81
25	1.400	1.070	1.540	1.280	1.000	1.100	105	195	369	94	39	81
26	1.400	1.060	1.490	1.290	1.010	1.040	93	159	307	80	41	90
27	1.430	1.050	1.350	1.300	900	979	91	479	240	71	40	103
28	1.380	1.040	1.270	1.320	800	966	68	953	193	66	38	162
29	1.390	1.030	1.290	1.380	-	981	56	1.160	165	64	42	223
30	1.410	1.010	1.320	1.420	-----	972	47	1.230	181	88	46	232
31	1.400	-----	1.440	1.480	-----	941	-----	739	-----	352	46	-----
Total	38,237	42,480	39,721	38,470	42,040	39,049	17,483	7,020	23,546	8,405	10,653	2,775
Mean	1,233	1,416	1,281	1,241	1,501	1,260	583	226	785	271	344	92.5
Ac-ft	75,840	84,260	78,790	76,300	83,390	77,450	34,680	13,920	46,700	16,670	21,130	5,500

Calendar year 1961: Max 6,750 Min 33 Mean 751 Ac-ft 543,400

Water year 1961-62: Max 2,230 Min 28 Mean 849 Ac-ft 614,600

Note.--No gage-height record Dec. 12 to Feb. 1, Feb. 24 to Mar. 6 (stage-discharge relation affected by ice during parts of periods).

6-8250. South Fork Republican River near Idalia, Colo.

Location.--Lat 39°37'00", long 102°14'30", in SE¼SW¼ sec.13, T.5 S., R.44 W., on left bank 0.7 mile east of State Highway 51, 1½ miles upstream from Landsman Creek, 4 miles upstream from Bonny Dam, and 6½ miles southeast of Idalia.

Drainage area.--1,300 sq mi, approximately.

Records available.--May 1950 to September 1962.

Gage.--Water-stage recorder. Prior to Aug. 10, 1951, at site 4 miles upstream at different datum. Aug. 10, 1951, to Sept. 30, 1955, at site 2½ miles upstream at different datum.

Average discharge.--12 years, 34.2 cfs (24,760 acre-ft per year).

Extremes.--Maximum discharge during year, 9,610 cfs June 25 (gage height, 10.21 ft in gage well, 10.7 ft from floodmark outside gage well), from rating curve extended above 46 cfs on basis of slope-area measurement at gage height of 8.40 ft and contracted-opening measurement of peak flow; minimum daily, 0.1 cfs Aug. 16-18.

1950-62: Maximum discharge, 14,300 cfs May 16, 1957 (gage height, 9.64 ft); no flow at times in 1952-54, 1959-61.

Maximum flood known since at least 1865, 103,000 cfs May 31, 1935, by slope-area measurement three-quarters of a mile upstream.

Remarks.--Records poor. Discharge measurements generally made two or more times a month. Diversions above station for irrigation.

Cooperation.--Twenty-seven discharge measurements furnished by Bureau of Reclamation.

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	25	31	35	37	48	25	34	23	31	39	40	15
2	26	29	34	37	47	30	34	22	31	34	26	15
3	28	29	34	32	46	35	28	22	29	35	27	15
4	29	31	35	31	44	31	28	22	25	37	16	15
5	27	33	37	31	41	33	31	21	26	33	4.8	14
6	27	33	35	30	40	35	40	22	28	32	7.4	13
7	26	36	33	34	47	39	32	21	142	30	3.2	12
8	25	36	31	32	46	38	31	20	79	28	3.6	12
9	29	36	29	26	44	37	31	19	23	29	3.6	13
10	35	35	23	23	44	38	32	17	20	25	4.4	15
11	33	34	24	24	45	33	31	18	19	19	2.0	14
12	31	40	26	24	45	32	31	19	20	13	.6	8.8
13	29	39	28	24	45	31	31	18	23	16	1.4	12
14	29	36	31	25	44	30	31	19	20	17	.5	15
15	32	40	35	25	38	32	32	15	20	7.4	.2	17
16	30	39	33	25	36	33	32	37	21	9.5	.1	19
17	29	39	35	25	39	35	31	42	19	16	.1	19
18	31	41	36	26	38	36	30	38	19	16	.1	17
19	31	38	35	26	38	36	30	28	19	11	3.6	18
20	30	37	34	26	46	47	30	25	24	5.2	15	17
21	31	37	39	26	44	41	26	25	18	.8	5.2	19
22	30	35	36	26	40	39	26	24	15	.2	6.0	19
23	33	36	34	27	40	36	28	24	17	.2	4.0	20
24	30	37	37	30	35	37	26	24	28	27	6.0	21
25	31	38	39	34	30	36	26	21	706	8.1	7.4	21
26	30	35	38	40	27	34	26	23	101	1.7	6.7	20
27	30	34	36	45	25	33	27	25	27	2.0	6.0	21
28	31	34	34	50	23	34	24	24	21	8.1	7.4	22
29	31	35	36	52	-	34	22	24	24	91	9.5	20
30	31	36	40	52	-----	34	25	20	29	32	11	21
31	30	-----	39	52	-----	34	-----	23	-----	64	15	-----
Total	920	1,069	1,051	997	1,125	1,078	886	725	1,624	687.2	243.8	499.8
Mean	29.7	35.6	33.9	32.2	40.2	34.8	29.5	23.4	54.1	22.2	7.86	16.7
Ac-ft	1,820	2,120	2,080	1,980	2,230	2,140	1,760	1,440	3,220	1,360	484	991

Calendar year 1961: Max 326 Min 0 Mean 26.7 Ac-ft 19,330

Water year 1961-62: Max 706 Min 0.1 Mean 29.9 Ac-ft 21,620

Peak discharge (base, 1,000 cfs)--June 7 (1930) 1,820 cfs (7.74 ft); June 25 (2000) 9,610 cfs (10.21 ft).

Note.--Stage-discharge relation affected by ice Dec. 9 to Feb. 4 (no gage-height record Jan. 10-29), Feb. 6, 18, 19, Feb. 22 to Mar. 6, Mar. 12-14.



6-8255. Landsman Creek near Hale, Colo.

Location--Lat 39°34'40", long 102°14'50", in SW¼ sec.36, T.5 S., R.44 W., on right bank 300 ft downstream from bridge on State Highway 51, 3 miles upstream from mouth, 5 miles southwest of Bonny Dam, and 7 miles southwest of Hale.

Drainage area--450 sq mi, approximately.

Records available--May 1950 to September 1962.

Gage--Water-stage recorder and Parshall flume. Altitude of gage is 3,720 ft (from topographic map). Prior to Oct. 21, 1950, and June 6 to Aug. 10, 1951, at datum 0.68 ft lower. Oct. 21, 1950, to June 5, 1951, at datum 0.79 ft higher.

Average discharge--12 years, 4.91 cfs (3,550 acre-ft per year).

Extremes--Maximum discharge during year, 2,590 cfs June 24 (gage height, 8.01 ft), from rating curve extended above 13 cfs on basis of slope-area measurement of peak flow; minimum daily, 0.2 cfs Aug. 17-22, Sept. 19-24.

1950-62: Maximum discharge, 4,570 cfs July 24, 1957 (gage height, 8.84 ft), from rating curve extended above 940 cfs on basis of slope-area measurement at gage height 7.69 ft; no flow Aug. 20-28, 1955.

Maximum stage known, about 10 ft, May 30, 31, 1935, present datum, from information by local resident.

Remarks--Records poor. Discharge measurements generally made two or more times a month. Small diversions above station for irrigation.

Cooperation--Twenty-four discharge measurements furnished by Bureau of Reclamation.

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.5	0.9	1.0	1.4	2.6	1.0	1.3	1.2	1.5	2.4	7.0	0.4
2	.5	.9	1.0	1.6	2.7	1.6	1.3	1.2	1.7	2.1	3.2	.3
3	.5	.8	1.0	1.6	2.6	1.8	1.3	1.2	1.7	1.8	1.8	.3
4	.5	.9	1.0	1.6	2.3	1.6	1.4	1.1	.8	1.5	1.2	.3
5	.5	.8	1.0	1.4	1.9	1.6	1.7	1.0	.5	1.3	.9	.3
6	.5	.9	1.0	1.4	2.0	1.7	3.1	.9	.6	1.1	.6	.3
7	.5	1.0	1.3	1.3	2.0	1.6	2.2	.9	29	1.0	.6	.4
8	.6	1.0	1.4	1.3	2.0	1.6	2.0	1.0	62	.9	.5	.4
9	.7	1.0	1.0	1.3	2.0	1.5	1.9	.8	5.2	.8	.4	.4
10	.8	1.0	1.0	1.1	2.0	1.6	1.9	.7	2.4	.8	.4	.4
11	.6	1.0	1.0	.8	1.9	1.3	1.9	.6	1.6	.7	.4	.4
12	.6	1.3	1.0	.8	1.8	1.3	1.8	.6	1.2	.6	.4	.4
13	.6	1.2	1.0	.7	1.6	1.6	1.8	.5	1.5	56	.4	.4
14	.6	1.0	1.0	.8	1.6	1.7	1.0	.4	1.0	26	.4	.4
15	.6	1.2	1.1	1.0	1.6	1.4	1.0	.5	.8	1.3	.4	.4
16	.6	.9	1.0	1.0	1.6	1.4	1.0	3.7	.7	.8	.3	213
17	.6	1.0	1.1	1.0	1.5	1.5	1.1	5.1	.6	.6	.2	2.2
18	.6	1.0	1.1	1.0	1.3	1.6	1.2	5.4	.7	.6	.2	.4
19	.7	1.0	.9	.9	2.0	1.5	1.1	3.5	.6	.4	.2	.2
20	.8	1.0	1.0	.9	1.9	2.5	1.3	2.8	1.6	.4	.2	.2
21	.8	1.2	1.3	.9	1.6	2.0	1.2	2.3	.8	.4	.2	.2
22	.8	1.0	1.6	.9	1.9	1.6	1.1	2.1	.6	.4	.2	c.2
23	.8	1.0	1.5	.7	1.6	1.6	1.2	2.2	.5	.5	20	c.2
24	.8	1.0	1.6	.7	1.3	1.3	1.1	2.0	643	.7	381	c.2
25	.8	1.0	1.8	.9	1.4	1.3	1.1	1.9	106	.4	2.0	c.4
26	.8	1.0	1.6	1.5	1.3	1.3	1.0	1.9	102	.4	.6	c.5
27	.8	.9	1.3	1.9	1.2	1.3	1.1	2.0	5.1	.5	.3	c.7
28	.8	1.0	.8	2.3	1.0	1.3	1.1	2.0	3.6	400	.3	c.6
29	.8	1.0	1.0	2.4	-	1.3	.9	2.0	2.8	18	.3	c.5
30	.9	1.0	1.4	2.5	-----	1.4	1.1	1.6	2.4	1.3	.3	c.5
31	.9	-----	1.6	2.8	-----	1.3	-----	1.2	-----	237	.4	-----
Total	20.9	29.9	36.4	40.4	50.2	47.1	42.2	54.3	982.5	760.7	488.3	225.5
Mean	0.67	1.00	1.17	1.30	1.79	1.52	1.41	1.75	32.8	24.3	15.8	7.52
Ac-ft	41	59	72	80	100	93	84	108	1,950	1,510	969	447

Calendar year 1961: Max 76 Min 0.3 Mean 1.45 Ac-ft 1,050

Water year 1961-62: Max 643 Min 0.2 Mean 7.61 Ac-ft 5,510

Peak discharge (base, 350 cfs)

c Backwater from beaver dam.

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-7	2000	4.38	364	7-28	0930	6.83	1,580
6-24	0145	8.01	2,590	7-31	1950	7.79	2,370
6-25	2300	5.01	574	8-24	0020	7.33	1,960
7-13	2110	4.97	560	9-16	0450	5.53	795

## KANSAS RIVER BASIN

67

6-8260. Bonny Reservoir near Hale, Colo.

Location--Lat 39°38'00", long 102°10'40", in SE¼SE¼ sec.9, T.5 S., R.43 W., in stair well to outlet conduit of Bonny Dam on South Fork Republican River, 2 miles west of Hale and 3 miles downstream from Landsman Creek.

Records available--October 1950 to September 1962.

Gage--Mercury manometer gage. Datum of gage is at mean sea level (levels by Bureau of Reclamation).

Extremes--Maximum contents observed during year, 40,890 acre-ft Mar. 6 (elevation, 3,671.78 ft); minimum observed, 33,800 acre-ft Oct. 1-3 (elevation, 3,668.07 ft).

1950-62: Maximum contents observed, 55,030 acre-ft May 17, 1957 (elevation, 3,678.10 ft); minimum observed since appreciable contents was attained, 22,520 acre-ft Oct. 6-14, 1952 (elevation, 3,661.20 ft).

Remarks--Reservoir is formed by earth-fill dam. Storage began July 6, 1950; dam completed May 4, 1951. Capacity of reservoir, 170,200 acre-ft below elevation 3,710 ft (crest of spillway), of which 128,800 acre-ft is for flood control and 39,900 acre-ft for irrigation. Dead storage, 1,420 acre-ft below elevation 3,635.50 ft (sill of trashrack at outlet conduit). Figures given herein represent total contents.

Cooperation--Records furnished by Bureau of Reclamation.

Capacity table (elevation, in feet, and total contents, in acre-ft)  
(Furnished by Bureau of Reclamation)

3,665.0	28,460
3,670.0	37,390
3,675.0	47,760

Contents, in acre-feet, between 0500 and 0700, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	33,800	34,280	35,960	37,480	39,150	40,540	37,260	37,280	37,390	38,930	37,140	36,060
2	33,800	34,350	36,000	37,560	39,210	40,580	37,310	37,280	37,410	38,820	37,260	36,040
3	33,800	34,350	36,060	37,620	39,350	40,670	37,310	37,280	37,430	38,660	37,260	36,080
4	33,810	34,370	36,080	37,690	39,410	40,730	37,310	37,280	37,470	38,430	37,260	35,980
5	33,830	34,410	36,140	37,750	39,470	40,790	37,300	37,310	37,470	38,230	37,220	35,870
6	33,850	34,410	36,160	37,790	39,510	40,890	37,330	37,310	37,430	38,020	37,140	35,850
7	33,870	34,470	36,170	37,850	39,590	40,830	37,390	37,310	37,430	37,830	37,080	35,850
8	33,850	34,520	36,210	37,920	39,680	40,710	37,390	37,280	38,430	37,600	37,000	35,850
9	33,830	34,600	36,230	37,940	39,740	40,520	37,390	37,280	38,600	37,350	36,980	35,710
10	33,920	34,630	36,250	37,960	39,880	40,400	37,390	37,280	38,700	37,330	36,870	35,690
11	33,920	34,690	36,290	37,960	39,920	40,160	37,390	37,260	38,740	37,330	36,820	35,730
12	33,960	34,760	36,310	38,060	40,000	40,060	37,390	37,180	38,740	37,260	36,740	35,690
13	33,980	34,780	36,330	38,070	40,040	39,860	37,390	37,180	38,600	37,200	36,690	35,690
14	33,990	34,780	36,380	38,090	40,080	39,730	37,430	37,080	38,430	37,160	36,690	35,650
15	34,010	34,870	36,480	38,130	40,100	39,610	37,430	36,960	38,190	37,120	36,670	35,610
16	34,050	34,930	36,550	38,170	40,140	39,450	37,410	36,930	37,940	37,040	36,610	35,610
17	34,070	35,020	36,590	38,230	40,160	39,330	37,390	37,310	37,790	36,950	36,540	35,690
18	34,080	35,090	36,630	38,250	40,200	39,210	37,390	37,520	37,620	36,910	36,520	35,670
19	34,030	35,190	36,670	38,290	40,240	39,070	37,390	37,640	37,410	36,870	36,480	35,630
20	34,050	35,240	36,740	38,330	40,320	38,950	37,370	37,730	37,480	36,820	36,420	35,580
21	34,100	35,320	36,820	38,350	40,340	38,870	37,370	37,750	37,470	36,760	36,400	35,500
22	34,170	35,340	36,860	38,390	40,380	38,760	37,300	37,660	37,390	36,670	36,360	35,460
23	34,080	35,430	36,910	38,480	40,420	38,660	37,300	37,540	37,330	36,570	36,290	35,460
24	34,080	35,540	36,950	38,520	40,440	38,410	37,310	37,500	37,370	36,570	36,290	35,460
25	34,100	35,600	37,040	38,580	40,460	38,290	37,350	37,430	37,940	36,610	36,420	35,460
26	34,100	35,690	37,100	38,660	40,480	38,190	37,370	37,390	39,410	36,540	36,400	35,450
27	34,120	35,730	37,200	38,740	40,480	38,070	37,370	37,390	39,490	36,500	36,380	35,410
28	34,170	35,760	37,220	38,840	40,520	37,940	37,330	37,390	39,330	36,460	36,340	35,370
29	34,170	35,780	37,280	38,870		37,690	37,330	37,410	39,190	36,690	36,250	35,360
30	34,170	35,870	37,370	38,910		37,520	37,300	37,390	39,010	36,860	36,170	35,300
31	34,230		37,450	39,030		37,370		37,390		36,820	36,100	
(+)	3,668.31	3,669.20	3,670.03	3,670.85	3,671.60	3,669.99	3,669.95	3,670.00	3,670.84	3,669.70	3,669.32	3,668.89
(#)	+410	+1,640	+1,580	+1,580	+1,490	-3,150	-70	+90	+1,620	-2,190	-720	-800

Calendar year 1961..... # +1,010

Water year 1961-62..... # +1,480

+ Elevation, in feet, at end of month.

# Change in contents, in acre-feet.

## KANSAS RIVER BASIN

6-8265. South Fork Republican River near Hale, Colo.

Location.--Lat 39°37'25", long 102°09'45", in SW¼NE¼ sec.15, T.5 S., R.43 W., on right bank half a mile downstream from Bonny Dam and 1 mile west of Hale.

Records available.--October 1946 to September 1948, May 1951 to September 1962.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 3,610 ft (from topographic map). Oct. 1, 1946, to Sept. 30, 1948, at site 4 miles downstream at different datum.

Average discharge.--11 years (1951-62), 25.9 cfs (18,750 acre-ft per year).

Extremes.--Maximum discharge during year, 126 cfs June 25 (gage height, 4.65 ft); minimum daily, 5.5 cfs Aug. 15.

1946-48, 1951-62: Maximum discharge, 3,790 cfs May 28, 1947; maximum gage height, 4.87 ft Apr. 28, 1947, site and datum then in use; no flow Aug. 11-13, 1947.

Greatest flood known occurred May 13, 1935, stage and discharge not determined. A discharge of 103,000 cfs was determined at a site near Newton, 5½ miles upstream, with a drainage area of approximately 1,270 sq mi.

Remarks.--Records good. Discharge measurements generally made twice a month. Flow regulated by Bonny Reservoir since July 6, 1950 (see preceding page). Many diversions above station for irrigation. Water diverted by Hale ditch from Bonny Reservoir bypasses station (3,320 acre-ft diverted in 1962).

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

3.9	3.2	4.3	35
4.0	6.5	4.5	80
4.1	12	4.6	112
4.2	21	4.7	158

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6.5	6.5	6.2	6.5	7.0	6.5	4.3	7.0	7.6	112	7.0	62
2	6.2	7.0	6.2	6.5	7.0	6.5	3.1	7.0	7.6	109	7.0	58
3	6.2	6.5	6.2	6.5	7.0	7.0	3.1	7.0	7.6	109	7.0	58
4	6.2	6.5	6.2	7.0	7.0	6.5	3.1	7.0	9.8	109	7.0	58
5	6.2	6.5	6.2	7.0	7.0	6.5	3.1	7.0	11	109	7.0	62
6	6.2	6.5	6.2	7.0	7.0	3.2	3.4	7.0	11	109	6.5	62
7	6.2	6.5	5.8	7.0	6.5	10.6	3.4	7.0	15	109	6.2	62
8	6.5	6.5	5.8	7.0	6.5	10.2	3.4	7.0	15	109	6.2	62
9	6.5	6.5	5.8	6.9	6.5	9.6	3.4	7.0	11	35	6.2	62
10	6.5	6.5	5.8	6.8	6.5	9.6	3.4	7.0	11	7.0	6.2	58
11	6.5	6.5	6.2	6.6	6.5	9.6	3.4	7.0	11	6.2	5.8	58
12	6.2	7.0	6.2	6.5	6.5	9.6	3.4	7.0	5.9	5.8	5.8	58
13	6.2	7.0	6.2	6.5	7.0	9.6	3.4	7.0	10.2	6.2	6.2	58
14	6.2	6.5	6.2	6.5	7.0	9.6	3.7	7.0	10.2	6.5	6.2	62
15	6.2	7.0	6.2	6.5	7.0	9.6	3.7	7.0	10.6	6.5	5.5	62
16	6.2	6.5	6.2	6.5	7.0	10.2	3.7	9.2	10.6	6.5	5.8	58
17	6.2	6.5	6.2	6.5	7.0	10.6	3.7	8.2	10.9	6.5	6.2	58
18	6.2	6.5	6.2	6.5	7.0	10.6	3.7	8.7	10.9	6.2	5.8	58
19	6.2	6.5	6.2	6.5	6.5	10.6	3.7	7.0	4.3	6.2	5.8	7.7
20	6.5	6.5	6.5	7.0	7.0	10.6	3.5	1.8	3.1	6.2	5.8	6.5
21	6.5	6.5	6.5	6.5	6.5	10.6	3.1	3.4	3.7	6.2	5.8	6.5
22	6.5	6.5	6.5	6.5	7.0	10.6	2.4	3.7	3.7	6.2	6.5	62
23	6.5	6.5	6.5	7.0	6.5	10.2	1.1	3.7	3.1	7.0	6.5	62
24	6.5	6.5	6.5	7.0	6.5	10.2	6.5	3.7	2.7	7.0	6.2	62
25	6.5	6.2	6.5	7.0	6.5	10.2	6.5	2.9	7.2	6.5	5.8	6.5
26	6.5	6.2	6.5	7.0	6.5	10.2	7.0	1.6	11.7	7.0	6.2	6.5
27	6.5	6.2	6.5	7.0	6.2	10.6	7.0	1.6	11.2	7.0	5.8	62
28	6.5	6.2	6.5	7.0	6.5	10.2	7.0	1.4	11.2	6.5	5.8	6.5
29	6.5	6.2	6.5	7.0	-	10.6	7.0	8.2	11.2	8.2	5.8	62
30	6.5	6.2	6.5	7.0	-----	10.6	7.0	7.0	11.2	6.5	5.8	6.5
31	6.5	-----	6.5	7.0	-----	6.8	-----	7.0	-----	7.6	5.8	-----
Total	197.3	195.2	194.2	209.8	188.7	257.9.0	810.0	398.3	1,653.6	1,055.5	191.2	185.3
Mean	6.36	6.51	6.26	6.77	6.74	83.2	27.0	12.8	55.1	34.0	6.17	6.18
Ac-ft	391	387	385	416	374	5,120	1,610	790	3,280	2,090	379	368

Calendar year 1961: Max 109 Min 5.8 Mean 20.9 Ac-ft 15,140  
 Water year 1961-62: Max 117 Min 5.5 Mean 21.5 Ac-ft 15,590

ARKANSAS RIVER BASIN

69

7-820. Lake Fork above Sugar Loaf Reservoir, Colo.

Location--Lat 39°16'11", long 106°23'40", in NW¼ sec.13, T.9 S., R.81 W., on left bank 1,000 ft upstream from water line of Sugar Loaf Reservoir at elevation 9,780 ft and 5.7 miles west of Leadville.

Drainage area--18 sq mi.

Records available--May 1946 to September 1962. Monthly discharge only for some periods, published in WSP 1241 and 1311.

Gage--Water-stage recorder. Altitude of gage is 9,800 ft (from topographic map).

Average discharge--16 years, 42.0 cfs (30,410 acre-ft per year).

Extremes--Maximum discharge during year, 445 cfs June 14 (gage height, 4.16 ft); minimum not determined.

1946-62: Maximum discharge, 610 cfs June 28, 1957 (gage height, 5.22 ft), from rating curve extended above 320 cfs; minimum daily recorded, 1.0 cfs Sept. 10-15, 1959.

Remarks--Records good except those for periods of ice effect or no gage-height record, which are poor. No diversions above station. Transmountain diversions from Colorado River basin to Busk Creek above station through Busk-Ivanhoe tunnel (see elsewhere in this report).

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

0.6	5.0	2.0	110
.7	7.5	3.0	250
1.0	21	4.0	416
1.3	39		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	37								144	274	53	14
2	35								168	276	47	13
3	*31								199	254	38	13
4	31								236	236	55	12
5	31								264	217	50	12
6	31							100				
7	30							(*)	277	202	45	12
8	30								277	198	*41	9.5
9	34								246	*192	38	13
10	31								217	180	38	12
11	34								248	167	38	11
12	32								240	307	156	35
13	31								295	334	160	32
14	30								295	371	152	28
15	31								230	*398	105	26
16	31								172	380	86	25
17	31	13	4.5	3.5	5	4	18					
18	31								153	327	82	24
19	30								139	256	*87	24
20	*28								132	230	87	24
21	27								135	262	91	24
22	26								160	312	86	24
23	24								169	341	78	22
24	b22								142	349	78	22
25	b23								123	318	79	21
26	b20								135	318	109	20
27	b18								161	298	90	17
28	18								178	290	78	16
29	19								193	307	73	15
30	18								158	298	68	*14
31	17								136	301	63	12
									125	282	59	12
									*136		58	8.7
Total	842	390	139.5	108.5	140	124	540	4,607	8,555	4,121	888.7	288.2
Mean	27.2	13	4.5	3.5	5	4	18	149	285	133	28.7	9.61
Ac-ft	1,670	774	277	215	278	246	1,070	9,140	16,970	8,170	1,760	572

Calendar year 1961: Max 270 Min - Mean 39.6 Ac-ft 28,700  
Water year 1961-62: Max 398 Min - Mean 56.8 Ac-ft 41,140

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Oct. 28 to May 11 (stage-discharge relation affected by ice during most of period), Aug. 26, 27.



## ARKANSAS RIVER BASIN

7-830. Halfmoon Creek near Malta, Colo.

Location.--Lat 39°11'10", long 106°22'55", in NW¼ sec.18, T.10 S., R.80 W., on right bank 118 ft upstream from culvert, 2 miles upstream from mouth and 3½ miles southwest of Malta.

Drainage area.--23 sq mi.

Records available.--July 1946 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 9.740 ft (from topographic map). Prior to Dec. 1, 1960, at site 185 ft downstream; at datum 3.18 ft lower prior to May 13, 1948, and 3.00 ft lower thereafter.

Average discharge.--16 years, 29.8 cfs (21,570 acre-ft per year).

Extremes.--Maximum discharge during year, 327 cfs June 30 (gage height, 3.97 ft), from rating curve extended above 140 cfs; minimum not determined.

1946-62: Maximum discharge, 450 cfs June 30, 1957 (gage height, 3.48 ft, site and datum then in use); minimum not determined.

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

Rating tables, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used May 7-12, June 10-12)

Oct. 1 to June 9

June 10 to Sept. 30

2.4	10	3.3	89	2.3	7.5	2.9	67
2.6	20	3.6	140	2.4	13	3.3	129
2.9	45			2.6	29	3.7	225

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	31	18						29	51	204	50	16
2	28	19						33	57	190	49	16
3	*27			(*)				37	69	170	48	16
4	26							41	79	158	50	15
5	26		(*)					45	*83	147	45	14
6	26	20	10				5.5					
7	26	(*)			(*)			50	95	147	41	14
8	25							55	96	147	*38	16
9	28							*60	83	154	37	16
10	26							67	82	143	34	14
								76	103	*133	34	14
11	26						7	82	127	124	37	*12
12	26						8	99	147	124	36	12
13	26						9	88	161	116	34	11
14	26						10	75	168	100	32	11
15	26						11	62	158	91	29	11
16	26			5								
17	26				5		12	54	138	86	28	11
18	25						13	50	113	85	27	11
19	24						15	47	118	86	29	10
20	24						16	47	154	84	31	11
		15	5				18	54	180	85	32	12
21	24											
22	24					(*)	16	57	185	82	30	13
23	22						15	*52	175	80	29	12
24	22						17	48	165	79	27	11
25	21						20	51	188	*84	26	11
							23	58	188	74	24	11
26	21											
27	21						26	62	178	70	21	10
28	20						28	65	192	66	20	11
29	18						27	56	195	61	20	12
30	19						27	52	178	60	19	11
31	25						26	49	213	57	19	97
								51		53	18	
Total	761	497	205	155	140	155	399.0	1752	4,119	3,340	994	374.7
Mean	24.5	16.6	6.6	5	5	5	13.3	56.5	137	108	32.1	12.5
Ac-ft	1,510	986	407	307	278	307	791	3,480	8,170	6,620	1,970	743

Calendar year 1961: Max 138 Min - Mean 27.5 Ac-ft 19,900  
Water year 1961-62: Max 213 Min - Mean 35.3 Ac-ft 25,570

Peak discharge (base, 150 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-12	2100	3.66	178	6-30	2030	3.97	327
6-20	2300	3.71	228				

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 3-17.  
No gage-height record Nov. 18 to May 6 (stage-discharge relation affected by ice during most of period).

7-845. Lake Creek above Twin Lakes Reservoir, Colo.

Location.--Lat 39°03'45", long 106°24'20", in sec.26, T.11 S., R.81 W., on left bank 1.5 miles upstream from high-water line of Twin Lakes Reservoir and 2 miles southwest of village of Twin Lakes.

Drainage area.--75 sq mi.

Records available.--April 1946 to September 1958, October 1959 to September 1962. Monthly discharge only for some periods, published in WSP 1241 and 1311.

Gage.--Water-stage recorder. Altitude of gage is 9,300 ft (from topographic map). Prior to May 20, 1950, at site 190 ft downstream at different datum. May 20, 1950, to Apr. 7, 1953, at site 10 ft upstream at present datum.

Average discharge.--15 years, 161 cfs (116,600 acre-ft per year).

Extremes.--Maximum discharge during year, 1,660 cfs June 26 (gage height, 4.89 ft); minimum not determined.

1946-58, 1959-62: Maximum discharge, 3,150 cfs June 10, 1952 (gage height, 5.74 ft), from rating curve extended above 1,400 cfs; minimum not determined.

Remarks.--Records fair except those for period of no gage-height record, which are poor. No diversion above station. Records include inflow from Roaring Fork in Colorado River basin through Twin Lakes tunnel (see elsewhere in this report).

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used June 20 to July 16, Aug. 1 to Sept. 4)

1.4	70	3.0	500
1.7	118	4.0	1,040
2.0	175	5.0	1,950
2.5	310		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	292							163	338	1,170	277	90
2	235							161	396	1,160	286	88
3	*200							165	488	1,150	286	92
4	178							190	615	1,020	295	90
5	198							228	728	980	274	86
6	238							295	758	*956	253	86
7	230							*396	788	896	238	88
8	228							436	716	896	*230	102
9	228							516	728	884	225	97
10	218							645	878	806	225	90
11	218						60	728	1,040	758	222	85
12	210							842	1,150	734	210	80
13	171							794	1,260	698	215	*76
14	165							655	*1,240	556	200	76
15	195							492	1,160	484	185	76
16	200	90	60	35	35	40		412	1,000	512	180	72
17	195							373	830	516	167	76
18	*192							352	830	516	161	74
19	182							342	1,020	*504	180	70
20	180							384	1,160	480	195	82
21	169						150	400	1,270	480	173	104
22	173						144	370	1,170	468	169	113
23	155						171	342	1,130	436	159	102
24	155						*182	356	1,180	460	151	*96
25	144						205	404	1,220	408	136	94
26	142						240	432	1,260	392	127	88
27	144						222	468	1,270	384	120	88
28	138						230	428	1,240	370	*118	96
29	122						212	396	1,140	359	113	97
30	120						173	352	1,240	338	109	90
31	120							*345		320	92	
Total	5,735	2,700	1,860	1,085	980	1,240	3,129	12,862	29,243	20,091	5,971	2,644
Mean	185	90	60	35	35	40	104	415	975	648	193	88.1
Ac-ft	11,380	5,360	3,690	2,150	1,940	2,460	6,210	25,510	58,000	39,850	11,840	5,240

Calendar year 1961: Max 1,050 Min - Mean 173 Ac-ft 125,000  
Water year 1961-62: Max 1,270 Min - Mean 240 Ac-ft 173,600

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 29 to Apr. 21 (stage-discharge relation affected by ice during most of period).

## ARKANSAS RIVER BASIN

7-860. Arkansas River at Granite, Colo.

Location.--Lat 39°02'38", long 106°15'55", in SW¼ sec.31, T.11 S., R.79 W., on right bank at Granite, 100 ft east of U. S. Highway 24, 100 ft downstream from county bridge, and 200 ft upstream from Cache Creek.

Drainage area.--427 sq mi.

Records available.--April to October 1895, May to December 1897, August to September 1898, March to October 1899, April to May 1901 (gage heights and discharge measurements only in 1895, 1899, and 1901), April 1910 to September 1962. Monthly discharge only for some periods, published in WSP 1311.

Gage.--Water-stage recorder. Datum of gage is 8,914.86 ft above mean sea level, datum of 1929. Prior to Apr. 6, 1910, staff gages near present site at different datums. Apr. 6, 1910, to Oct. 25, 1917, water-stage recorder or staff gage at site 832 ft upstream at different datum. Oct. 26, 1917, to Oct. 26, 1960, water-stage recorder at site 168 ft downstream at present datum.

Average discharge.--52 years (1910-62), 353 cfs (255,600 acre-ft per year).

Extremes.--Maximum discharge during year, 2,180 cfs July 1 (gage height, 4.66 ft); minimum not determined. 1895, 1897-99, 1910-62: Maximum discharge, 5,360 cfs June 28, 1957 (gage height, 7.20 ft); minimum not determined.

Remarks.--Records good above 400 cfs and fair below except those for periods of no gage-height record, which are poor. Diversions above station for irrigation of about 5,150 acres. Sugar Loaf and Twin Lakes Reservoirs are on tributaries above station (combined capacity, 70,680 acre-ft). Transmountain diversions from Colorado River basin to Arkansas River basin enter above this station (see elsewhere in this report).

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used May 17-26)

2.1	142	3.5	840
2.5	262	4.0	1,310
3.0	480	4.6	2,090

Discharge, in cubic feet per second, water year October 1961 to September 1962												
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	405	189					115	552	759	2,090	702	304
2	344	180					120	492	777	2,060	460	277
3	*340	147					130	504	894	2,020	415	242
4	348	168					140	582	1,110	2,000	450	228
5	410	152					170	702	1,390	1,940	425	219
6	390	152					200	768	1,410	*1,810	385	210
7	320	158			(*)		440	*867	1,360	1,710	894	587
8	316	155				(*)	580	1,010	1,340	1,740	903	642
9	380	*158					570	1,170	1,400	1,720	912	649
10	390	160					*594	1,310	1,310	1,620	975	621
11	348	160					600	1,500	1,470	1,470	1,100	582
12	324	163					614	1,680	1,700	1,460	1,090	552
13	348	150					686	1,800	1,940	1,240	1,110	*546
14	328	135					742	1,660	*2,030	1,060	1,090	600
15	324	135					813	1,180	1,420	948	1,070	558
16	300	135	92	88	94	105	858	1,000	1,100	768	1,060	558
17	304	140					867	930	1,230	*786	1,060	552
18	*336	130					885	635	1,220	813	1,070	540
19	380	110					948	710	1,390	1,100	1,080	546
20	312	100					1,050	686	1,840	1,190	1,100	522
21	270	100					1,060	849	2,020	1,110	1,100	225
22	304					(*)	1,010	*768	2,000	1,100	1,080	228
23	308						948	710	1,830	1,060	1,050	222
24	277						*1,040	678	1,740	1,150	1,020	*204
25	245						894	742	1,630	1,160	984	210
26	252						822	804	1,630	1,130	966	252
27	259						786	957	1,740	1,110	516	222
28	262						831	912	1,750	957	*336	204
29	262						822	858	1,740	876	332	204
30	270						663	822	1,940	840	308	186
31	245							*813		777	300	
Total	9,901	3,977	2,852	2,728	2,632	3,255	19,998	28,651	45,110	40,815	25,343	11,692
Mean	319	133	92	88	94	105	667	924	1,504	1,317	818	390
Ac-ft	19,640	7,890	5,660	5,410	5,200	6,460	39,670	56,830	89,470	80,960	50,270	23,190

Calendar year 1961: Max 1,450 Min 62 Mean 332 Ac-ft 240,000  
Water year 1961-62: Max 2,090 Min - Mean 540 Ac-ft 390,600

\* Discharge measurement made on this day.

Note.--No gage-height record Nov. 14 to Apr. 9 (stage-discharge relation affected by ice during most of period).

7-865. Clear Creek above Clear Creek Reservoir, Colo.

Location--Lat 39°01'05", long 106°16'55", in S½ sec.12, T.12 S., R.80 W., on left bank 0.5 mile upstream from water line (elevation 8,878 ft) of Clear Creek Reservoir and 2 miles southwest of Granite.

Drainage area--59 sq mi.

Records available--May 1946 to September 1962. Monthly discharge only for some periods, published in WSP 1241 and 1311.

Gage--Water-stage recorder. Datum of gage is 8,889 ft above mean sea level (river-profile survey). Prior to Apr. 21, 1954, at site 200 ft downstream at datum 2.19 ft lower.

Average discharge--16 years, 72.4 cfs (52,420 acre-ft per year).

Extremes--Maximum discharge during year, 533 cfs June 21 (gage height, 2.87 ft), from rating curve extended above 350 cfs; minimum not determined.

1946-62: Maximum daily discharge, 1,300 cfs June 29, 1957; maximum gage height recorded, 4.34 ft June 16, 1952 (site and datum then in use); minimum discharge not determined.

Remarks--Records good except those for periods of no gage-height record, which are poor. Diversions for irrigation of about 250 acres above station.

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

0.6	20	2.0	234
.9	44	3.0	585
1.4	102		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	76							100	118	437	105	41
2	72							105	153	400	101	39
3	*72							115	211	386	105	36
4	71							125	224	372	120	32
5	73							140	231	338	105	32
6	75							160	254	*330	94	30
7	76							*180	265	305	88	33
8	78							195	234	317	*84	35
9	85							210	245	308	80	29
10	76							240	311	290	80	30
11	72							*251	358	273	82	29
12	73							245	369	287	78	28
13	73							231	418	287	85	26
14	73							213	*445	251	79	28
15	74							179	394	221	72	29
16	73	32	25	22	25	28	65	156	320	206	70	28
17	73							145	265	*194	68	27
18	*73							132	279	194	70	26
19	72							126	376	191	72	23
20	73							140	429	182	72	25
21	71							147	449	174	67	33
22	76							132	429	167	68	39
23	68							120	397	162	64	34
24	66						(*)	132	394	165	61	*30
25	63							151	404	147	56	29
26	62							153	418	147	51	27
27	63							177	453	140	48	28
28	65							151	453	130	*45	33
29	67							134	433	124	44	33
30	63							120	449	116	44	33
31	60							*124		113	42	
Total	2,207	960	775	682	700	868	1,950	4,929	10,178	7,354	2,300	925
Mean	71.2	32	25	22	25	28	65	159	339	237	74.2	30.8
Ac-ft	4,380	1,900	1,540	1,350	1,390	1,720	3,870	9,780	20,190	14,590	4,560	1,830

Calendar year 1961: Max 445 Min - Mean 66.0 Ac-ft 47,750  
 Water year 1961-62: Max 453 Min - Mean 92.7 Ac-ft 67,100

Peak discharge (base, 400 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-14	0100	2.81	509	6-27	0100	2.86	529
6-21	0100	2.87	533				

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 29 to May 10 (stage-discharge relation affected by ice during most of period).



## ARKANSAS RIVER BASIN

7-890. Cottonwood Creek below Hot Springs, near Buena Vista, Colo.

Location.--Lat 38°48'46", long 106°13'18", in SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec.21, T.14 S., R.79 W., on left bank a quarter of a mile downstream from Cottonwood Hot Springs, 1 mile downstream from confluence of Middle Cottonwood and South Cottonwood Creeks, 3 miles upstream from North Cottonwood Creek, and 5 $\frac{1}{2}$  miles southwest of Buena Vista.

Drainage area.--65 sq mi.

Records available.--October 1910 to September 1923, August 1949 to September 1962. Monthly discharge only for some periods, published in WSP 1311.

Gage.--Water-stage recorder. Datum of gage is 8,532 ft (river-profile survey). Prior to Oct. 1, 1923, staff gage near present site at different datum.

Average discharge.--26 years, 59.5 cfs (43,080 acre-ft per year).

Extremes.--Maximum discharge during year, 400 cfs June 13 (gage height, 2.92 ft); minimum, 17 cfs Apr. 1 (gage height, 1.14 ft).  
1910-23, 1949-62: Maximum discharge, 1,180 cfs July 1, 1957 (gage height, 4.52 ft, from floodmarks), from rating curve extended above 690 cfs; minimum observed, 10 cfs Mar. 20-23, 25, Apr. 9, 19, 1914.

Remarks.--Records good. Several small diversions above station for irrigation.

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	61	51	35	26	24	24	19	46	110	336	102	55
2	56	48	33	27	24	23	19	45	128	318	96	54
3	*56	45	33	*27	24	23	19	46	180	283	96	52
4	59	47	33	27	24	24	19	52	228	266	102	50
5	58	46	*32	26	24	22	19	62	*228	243	90	48
6	54	44	34	26	*24	*22	20	78	258	228	85	47
7	51	*46	34	26	25	22	21	92	250	210	*81	49
8	56	46	33	26	24	22	23	102	210	213	81	52
9	64	46	33	26	24	22	23	117	210	192	79	52
10	59	46	32	24	24	22	23	142	250	*182	78	50
11	61	45	32	26	25	21	*21	*154	271	177	74	*49
12	61	44	31	26	24	20	21	174	266	169	72	47
13	59	41	31	26	24	19	22	174	336	166	74	46
14	61	40	30	26	25	19	24	138	358	161	72	45
15	61	42	30	25	26	19	26	115	332	154	71	44
16	63	41	29	25	26	19	29	110	300	156	69	44
17	63	41	30	26	25	19	32	102	235	148	69	42
18	61	40	30	26	24	19	36	100	*228	146	71	42
19	59	39	29	26	24	19	41	90	254	142	74	42
20	58	39	29	27	26	19	54	106	300	138	72	42
21	58	39	29	27	24	19	61	115	340	132	71	45
22	58	37	29	27	24	19	52	*102	345	128	69	45
23	54	37	29	26	25	19	49	94	332	130	67	41
24	52	37	28	26	25	19	*58	106	309	*158	64	39
25	48	37	28	26	24	19	69	125	292	138	64	40
26	49	37	28	26	23	19	74	127	283	134	61	40
27	51	36	26	26	23	19	62	140	292	125	58	40
28	49	36	26	25	23	19	62	123	309	117	56	40
29	46	35	26	25	-	19	71	111	314	110	54	39
30	46	35	26	25	-----	19	55	104	322	108	54	37
31	52	-----	26	24	-----	19	-----	111	-----	106	54	-----
Total	1,744	1,243	934	803	681	628	1,124	3,303	8,070	5,414	2,280	1,358
Mean	56.3	41.4	30.1	25.9	24.3	20.3	37.5	107	269	175	73.5	45.3
Ac-ft	3,460	2,470	1,850	1,590	1,350	1,250	2,230	6,550	16,010	10,740	4,520	2,690

Calendar year 1961: Max 235 Min 16 Mean 51.0 Ac-ft 36,900  
Water year 1961-62: Max 358 Min 19 Mean 75.6 Ac-ft 54,710

Peak discharge (base, 300 cfs)

\* Discharge measurement made on this day.

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-13	2230	2.92	400	7- 1	0600	2.79	340
6-22	0930	2.85	368				

## ARKANSAS RIVER BASIN

75

7-915. Arkansas River at Salida, Colo.

Location--Lat 38°32'45", long 106°00'36", in NE¼ sec.31, T.50 N., R.9 E., on right bank at Salida, 450 ft upstream from bridge (relocated) on State Highway 291 and 2.7 miles upstream from South Arkansas River.

Drainage area--1,218 sq mi.

Records available--April to October 1895, May to December 1897, August 1898 to September 1899, April to October 1900, April 1901 to October 1903, October 1909 to September 1962. Monthly discharge only for some periods, published in WSP 1311.

Gage--Water-stage recorder. Datum of gage is 7,050.45 ft above mean sea level, datum of 1929. Apr. 11, 1895, to Nov. 18, 1903, staff gage and Nov. 3, 1909, to Dec. 2, 1936, water-stage recorder at site 1½ miles downstream at different datum. Dec. 3, 1936, to Dec. 5, 1957, water-stage recorder at same site at datum 1.00 ft higher.

Average discharge--56 years (1898-99, 1901-3, 1909-62), 624 cfs (451,800 acre-ft per year).

Extremes--Maximum discharge during year, 3,540 cfs July 1 (gage height, 4.07 ft); minimum daily, 250 cfs Feb. 28. 1895-1903, 1909-62: Maximum discharge, 9,220 cfs June 29, 1957 (gage height, 7.82 ft, present datum); minimum observed, 100 cfs Oct. 4, 6, 7, 1898.

Remarks--Records good except those for periods of no gage-height record, which are poor. Natural flow of stream affected by transmountain diversions (see elsewhere in this report), storage reservoirs (combined capacity, 81,890 acre-ft) diversions for irrigation of about 16,000 acres above station, and return flow from irrigated areas.

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 May 13)

0.2	175	2.0	1,240
.5	265	3.0	2,120
1.0	530	4.0	3,430

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	730	611	382	296	320	262	258	912	1,130	3,400	960	566
2	653	560	382	301	320	274	258	828	1,120	3,290	840	560
3	*639	508	382	292	320	274	265	758	1,370	3,090	740	548
4	604	514	376	292	305	262	278	835	1,660	3,020	680	519
5	667	514	354	301	300	265	288	975	1,930	2,810	660	519
6	695	475	332	301	290	265	288	1,080	2,130	*2,610	660	502
7	632	480	338	306	*285	265	554	1,280	2,130	2,540	1,000	590
8	597	475	321	306	285	*262	653	1,440	1,980	2,530	*1,060	674
9	737	*486	310	292	280	270	646	1,830	1,950	2,470	1,060	863
10	828	492	301	270	290	262	*674	2,010	1,960	2,340	1,090	835
11	758	492	310	280	300	270	695	*2,240	2,250	2,210	1,220	779
12	688	502	292	290	300	265	688	2,390	2,470	2,090	1,250	730
13	695	480	274	300	300	262	723	2,420	2,750	2,030	1,260	*730
14	702	431	296	290	290	265	800	2,270	*3,200	1,700	1,240	737
15	709	431	288	280	290	258	849	1,830	2,780	1,580	1,200	730
16	695	458	296	290	290	262	947	1,390	1,850	1,370	1,180	730
17	660	464	292	*300	285	265	968	1,280	1,880	1,220	1,170	730
18	*667	453	296	300	280	262	989	1,130	1,820	1,220	1,220	730
19	709	414	296	310	270	262	1,020	1,010	1,990	*1,380	1,290	709
20	709	398	296	310	270	265	1,190	1,020	2,660	1,620	1,380	737
21	611	426	316	320	280	262	1,320	1,150	3,270	1,540	1,420	578
22	618	409	301	300	290	*258	1,310	*1,120	3,260	1,500	1,410	492
23	653	398	306	290	290	258	1,180	1,030	3,080	1,460	1,400	480
24	646	409	310	290	300	258	*1,270	961	2,850	1,520	*1,310	*480
25	632	398	316	300	290	258	1,190	996	2,710	1,550	1,290	458
26	625	409	306	300	280	265	1,150	1,040	*2,680	1,510	1,240	475
27	646	414	301	300	265	270	1,080	1,380	2,760	1,500	1,070	497
28	660	398	*283	310	250	283	1,120	1,460	2,850	1,300	*681	480
29	681	382	306	310	-	278	1,170	1,260	2,870	1,180	653	470
30	667	*376	316	315	-----	270	1,050	1,170	3,050	1,100	632	453
31	702	-----	332	315	-----	258	-----	*1,140	-----	1,020	572	-----
Total	20,915	13,657	9,807	9,257	8,115	8,215	24,871	41,635	70,390	59,700	32,838	18,381
Mean	675	455	316	299	290	265	829	1,343	2,346	1,926	1,059	613
Ac-ft	41,480	27,090	19,450	18,360	16,100	16,290	49,330	82,580	139,600	118,400	65,130	36,460

Calendar year 1961: Max 2,400 Min 183 Mean 601 Ac-ft 435,100

Water year 1961-62: Max 3,400 Min 250 Mean 871 Ac-ft 630,300

\* Discharge measurement made on this day.

Note.--No gage-height record Jan. 10 to Mar. 7 (stage-discharge relation affected by ice during part of period), July 25 to Aug. 7.

## ARKANSAS RIVER BASIN

7-937. Arkansas River near Wellsville, Colo.

Location.--Lat 38°30'10", long 105°56'21", in NE¼ sec.14, T.49 N., R.9 E., on right bank 50 ft upstream from Chaffee-Fremont County line, 2 miles northwest of Wellsville, 2.8 miles downstream from South Arkansas River, and 3.5 miles southeast of Salida.

Drainage area.--1,485 sq mi.

Records available.--April 1961 to September 1962.

Gage.--Water-stage recorder. Datum of gage is 6,896.73 ft above mean sea level (State Highway Department bench mark).

Extremes.--Maximum discharge during year, 3,620 cfs June 14 (gage height, 6.71 ft); minimum daily, 265 cfs Feb. 28.

1960-62: Maximum discharge, that of June 14, 1962; minimum daily during period April 1961 to September 1962, 190 cfs Apr. 12, 1961.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Natural flow of stream affected by transmountain diversions, storage reservoirs, power developments, diversions for irrigation of about 24,000 acres, and return flow from irrigated areas.

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

(Shifting-control method used Apr. 7-25, May 20-22)

3.0	250	5.0	1,340
3.5	420	6.0	2,450
4.0	630	6.8	3,780

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	758	585	400	348	310	289	271	912	1,160	3,450	1,010	484
2	670	549	405	352	310	307	274	794	1,150	3,340	776	476
3	635	496	410	*345	317	298	286	692	1,400	3,140	665	468
4	*603	512	415	348	320	280	289	734	1,690	3,060	710	448
5	655	504	424	345	317	286	304	870	*2,010	2,920	758	444
6	675	484	*404	362	304	286	301	989	2,210	2,680	675	432
7	626	504	400	380	*307	*292	498	1,210	2,250	2,580	*814	468
8	603	*496	392	384	314	286	710	1,380	2,050	2,600	*1,090	807
9	776	516	392	362	320	301	704	1,830	2,020	2,510	1,030	782
10	807	524	352	310	338	292	716	2,150	2,020	*2,380	1,060	764
11	740	520	359	300	362	286	*722	*2,410	2,310	2,240	1,190	*710
12	675	536	342	310	370	286	716	2,570	2,680	2,120	1,220	675
13	675	512	320	320	370	289	740	2,630	3,000	2,060	1,220	670
14	665	456	380	310	334	289	828	2,480	3,520	1,720	1,210	670
15	665	460	380	300	310	286	933	1,980	3,180	1,570	1,190	675
16	650	480	388	310	314	289	1,060	1,580	2,000	1,350	1,170	670
17	626	510	370	320	331	295	1,090	1,440	1,980	1,190	1,150	670
18	626	500	380	315	310	286	1,140	1,290	*1,900	1,170	1,190	670
19	660	480	370	325	304	286	1,170	1,120	2,110	1,300	1,280	645
20	640	440	380	345	*310	295	1,350	1,130	2,820	1,610	1,320	670
21	576	460	392	350	310	286	1,480	*1,250	3,500	1,530	1,370	536
22	580	440	373	345	304	280	1,460	1,250	3,400	1,480	1,340	448
23	612	430	370	*328	310	280	1,300	1,140	3,210	1,450	1,300	440
24	*626	440	376	334	320	274	*1,380	1,030	3,000	*1,520	1,200	*436
25	585	430	380	338	320	274	1,300	1,050	*2,840	1,560	1,170	412
26	576	440	380	338	304	283	1,240	1,120	2,760	1,490	1,130	420
27	590	460	356	334	289	289	1,150	1,400	2,860	1,440	1,010	448
28	590	435	338	328	265	301	1,170	1,540	2,940	1,360	594	432
29	616	420	370	320	-	304	1,210	1,310	2,950	1,190	567	420
30	603	390	370	310	-----	298	1,090	1,200	3,040	1,160	549	400
31	650	-----	362	307	-----	283	-----	1,160	-----	1,090	504	-----
Total	20,034	14,409	11,730	10,323	8,894	8,956	26,882	43,641	73,960	60,260	31,462	16,690
Mean	646	480	378	333	318	289	896	1,408	2,465	1,944	1,015	556
Ac-ft	39,740	28,580	23,270	20,480	17,640	17,760	53,320	86,560	146,700	119,500	62,400	33,100

Calendar year 1961: Max - Min - Mean - Ac-ft -  
 Water year 1961-62: Max 3,520 Min 265 Mean 897 Ac-ft 649,000

\* Discharge measurement made on this day.

Note.--No gage-height record Nov. 14 to Dec. 4, Jan. 10-21 (stage-discharge relation affected by ice during part of period).

7-950. Grape Creek near Westcliffe, Colo.

Note.--Records for the 1962 water year not available in time for inclusion in this report. They will be published in a subsequent annual report.



## ARKANSAS RIVER BASIN

7-960. Arkansas River at Canon City, Colo.

Location.--Lat 38°26'02", long 105°15'24", in SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec.31 (revised), T.18 S., R.70 W., on right bank 800 ft upstream from Sand Creek, 0.7 mile downstream from Grape Creek, and 0.7 mile upstream from First Street Bridge in Canon City.

Drainage area.--3,117 sq mi.

Records available.--January 1888 to September 1962. Monthly discharge only for some periods, published in WSP 1311. Published as "near Canyon" 1900-1906.

Gage.--Water-stage recorder. Datum of gage is 5,343.62 ft above mean sea level, datum of 1929, supplementary adjustment of 1960. Prior to Mar. 27, 1922, staff gage, chain gage, or water-stage recorder at sites about a quarter of a mile upstream at various datums. Mar. 27, 1922, to Sept. 30, 1957, water-stage recorder at present site at datum 1.00 ft higher.

Average discharge.--74 years, 722 cfs (522,700 acre-ft per year).

Extremes.--Maximum discharge during year, 4,040 cfs June 15 (gage height, 4.75 ft); minimum daily, 305 cfs Apr. 1. 1888-1962: Maximum discharge, -19,000 cfs Aug. 2, 1921 (gage height, 10.7 ft, site and datum then in use, from floodmark), from rating curve extended above 5,000 cfs; minimum daily, 69 cfs May 13, 1959.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Discharge measurements generally made twice a month. Natural flow of stream affected by transmountain diversions, storage reservoirs, power developments, diversions for irrigation of about 53,000 acres, and return flow from irrigated areas.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Apr. 8-13, May 21 to June 21, July 2-6, Sept. 30)

Oct. 1 to Apr. 7

Apr. 8 to Sept. 30

0.7 290  
1.0 395  
1.5 630  
2.0 970

1.1 330 3.0 1,520  
1.5 475 4.0 2,380  
2.0 770 5.0 4,020

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	769	811	602	471	465	325	305	1,110	1,240	3,500	1,110	423
2	762	703	602	466	460	350	308	952	1,200	3,590	952	399
3	654	619	580	476	435	b 353	314	735	1,330	3,350	714	381
4	654	580	560	498	410	b 360	334	618	1,690	3,200	686	364
5	648	636	555	453	391	379	355	707	1,940	3,010	749	354
6	710	560	516	462	371	395	327	854	2,140	2,720	707	345
7	703	555	494	516	371	403	334	1,050	2,400	2,670	630	339
8	614	570	512	b 460	387	375	712	1,330	2,280	2,640	1,060	615
9	716	597	530	b 400	415	391	721	1,620	2,080	2,560	1,050	693
10	962	608	466	b 371	462	387	721	1,960	2,060	2,490	1,080	714
11	832	614	462	b 373	575	363	756	2,280	2,130	2,310	1,140	693
12	755	636	427	b 382	690	367	714	2,510	2,760	2,140	1,250	624
13	716	648	403	b 390	660	391	679	2,700	3,000	2,160	1,290	600
14	748	555	435	b 390	535	355	742	2,610	3,680	1,870	1,260	588
15	742	555	480	b 390	484	383	931	2,200	3,890	1,690	1,220	637
16	729	586	489	b 368	462	371	1,140	1,580	2,330	1,500	1,200	612
17	678	580	498	355	462	379	1,140	1,380	2,100	1,330	1,170	637
18	660	570	489	352	427	375	1,190	1,240	1,960	1,240	1,180	637
19	678	525	498	360	383	371	1,210	1,090	1,960	1,250	1,290	612
20	710	525	512	372	399	379	1,350	1,010	2,500	1,580	1,300	630
21	672	545	558	382	375	375	1,460	1,060	3,460	1,610	1,400	624
22	608	560	555	371	348	363	1,490	1,220	3,600	1,550	1,380	419
23	648	560	516	359	355	359	1,440	1,180	3,460	1,500	1,370	403
24	642	550	516	364	344	341	1,400	1,070	3,160	1,560	1,270	384
25	624	545	516	395	391	311	1,470	994	2,980	1,600	1,210	381
26	608	555	520	420	379	311	1,370	1,060	2,870	1,570	1,170	364
27	642	580	512	420	330	330	1,330	1,210	2,950	1,520	1,140	370
28	654	545	476	424	b 322	359	1,300	1,550	3,060	1,470	721	364
29	776	545	516	440	-	387	1,260	1,380	3,060	1,300	506	348
30	769	575	516	455	-----	387	1,290	1,270	3,030	1,260	484	339
31	783	-----	484	462	-----	327	-----	1,210	-----	1,220	455	-----
Total	21,866	17,593	15,795	12,797	12,088	11,302	28,093	42,740	76,300	62,960	32,144	14,893
Mean	705	586	510	413	432	365	936	1,379	2,543	2,031	1,037	496
Ac-ft	43,370	34,900	31,330	25,380	23,980	22,420	55,720	84,770	151,300	124,900	63,760	29,540

Calendar year 1961: Max 2,530 Min 170 Mean 699 Ac-ft 506,300  
Water year 1961-62: Max 3,890 Min 305 Mean 955 Ac-ft 691,400

b Stage-discharge relation affected by ice.

Note.--No gage-height record Jan. 17 to Feb. 4, Mar. 1, 2 (stage-discharge relation affected by ice during most of periods).

## ARKANSAS RIVER BASIN

79

7-995. Arkansas River near Pueblo, Colo.

Location.--Lat 38°16'00", long 104°39'00", in sec.34, T.20 S., R.65 W., on right bank at intake of south-side waterworks, 1 mile upstream from Dry Creek and 2½ miles west of city hall in Pueblo.

Drainage area.--4,686 sq mi.

Records available.--May to June 1885, January 1886 to December 1887, May to August 1889, September 1894 to September 1962. Monthly discharge only for some periods, published in WSP 1311. Published as "at Rock Canyon" 1889 and as "at Pueblo" 1885-87, 1894-1924.

Gage.--Water-stage recorder and concrete control on river; water-stage recorder and Parshall flume at north-side waterworks intake. Datum of river gage is 4,689.82 ft above mean sea level, datum of 1929. May 16, 1885, to Sept. 12, 1886, staff gage at site 2½ miles downstream; June 1, 1887, to Aug. 31, 1889, staff gage at site 6½ miles upstream; and Sept. 19, 1894, to May 25, 1925, staff gage, chain gage, or water-stage recorder about 2½ miles downstream at various sites and datums.

Average discharge.--69 years (1886-87, 1894-1962), 717 cfs (519,100 acre-ft per year).

Extremes.--Maximum discharge during year, 3,540 cfs July 8; minimum daily, 173 cfs Sept. 7.

1885-87, 1889, 1894-1962: Maximum discharge, 103,000 cfs June 3, 1921 (gage height, 24.66 ft, site and datum then in use), from rating curve extended above 6,800 cfs on basis of float measurement at gage height 11.2 ft and slope-area measurement of peak flow; minimum daily, 18 cfs (including 13 cfs diverted into intake of north-side waterworks) Apr. 7, 1935.

Remarks.--Records good except those for periods of ice effect, which are fair. Discharge measurements generally made twice a month during winter and once a week during summer. Records include water diverted above station into intake of north-side waterworks for municipal supply of Pueblo but not water diverted by southside waterworks. Natural flow of stream affected by transmountain diversions, storage reservoirs, power developments, diversions above station for irrigation of about 88,000 acres, and return flow from irrigated areas.

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	662	865	685	503	580	351	293	1380	1070	2720	933	283
2	661	765	718	503	590	361	279	1160	1120	3040	900	241
3	578	722	718	512	590	369	272	923	1150	2930	778	229
4	537	678	707	522	578	361	271	768	1400	2860	598	214
5	518	655	650	551	569	383	286	834	1570	2800	648	214
6	527	644	560	571	497	370	285	912	1800	2540	658	254
7	527	634	577	575	488	386	271	945	2190	2340	527	173
8	464	722	608	577	506	352	447	1120	2150	2560	686	202
9	421	678	600	516	497	321	658	1330	1990	2290	941	584
10	682	689	581	452	524	344	629	1680	1920	2130	918	604
11	704	700	529	392	579	328	744	1900	1920	2040	896	613
12	577	710	509	432	660	278	777	2050	2280	1900	1090	556
13	491	721	500	442	702	292	800	2180	2470	1900	1120	502
14	557	613	510	432	600	307	800	2210	2870	1630	1060	501
15	587	507	540	442	458	306	878	2080	3220	1400	995	501
16	638	607	531	404	417	320	988	1480	2620	1190	984	501
17	715	633	573	394	392	321	1110	1190	1880	1030	984	501
18	737	633	593	393	416	321	1170	1000	1820	1140	973	509
19	708	603	573	394	376	344	1210	937	1710	1120	1030	509
20	768	561	631	401	352	368	1190	827	1910	1420	1100	545
21	777	571	600	443	360	344	1350	805	2600	1690	1240	581
22	689	601	630	412	352	307	1520	1000	2930	1540	1300	458
23	700	571	591	411	359	286	1430	939	2910	1460	1310	308
24	700	571	573	442	368	272	1250	740	2720	1380	1280	293
25	689	581	592	461	368	258	1330	644	2590	1340	1180	286
26	645	571	573	461	361	231	1290	718	2490	1340	1080	258
27	667	611	544	461	352	218	1230	939	2470	1300	1030	251
28	700	611	543	481	343	231	1140	1180	2490	1290	826	278
29	755	611	523	511	-	252	1180	1090	2490	1260	444	270
30	821	652	563	550	-----	307	1380	1040	2460	1490	348	229
31	766	-----	503	570	-----	314	-----	1060	-----	1090	318	-----
Total	19,968	19,291	18,128	14,611	13,234	9,803	26,458	37,081	65,210	56,160	28,175	11,448
Mean	644	643	585	471	473	316	882	1,196	2,174	1,812	909	382
Ac-ft	39,610	38,260	35,960	28,980	26,250	19,440	52,480	73,550	129,300	111,400	55,880	22,710

Calendar year 1961: Max 2,420 Min 47 Mean 675 Ac-ft 489,000

Water year 1961-62: Max 3,220 Min 173 Mean 876 Ac-ft 633,800

Note.--Stage-discharge relation affected by ice Dec. 11 to Jan. 7, Jan. 9 to Feb. 4, Feb. 25 to Mar. 2.

## ARKANSAS RIVER BASIN

7-1037. Fountain Creek near Colorado Springs, Colo.

Location.--Lat 38°51'17", long 104°52'39", in SE¼SW¼ sec.3, T.14 S., R.67 W., on left bank 200 ft upstream from diversion to city of Colorado Springs, half a mile east of bridge on U. S. Highway 24 near west city limits of Colorado Springs, and 1 mile downstream from Sutherland Creek.

Drainage area.--102 sq mi.

Records available.--April 1958 to September 1962.

Gage.--Water-stage recorder and Parshall flume with overflow weirs. Altitude of gage is 6,110 ft (from topographic map).

Extremes.--Maximum discharge during year, 366 cfs Sept. 19 (gage height, 3.76 ft), from rating curve extended above 50 cfs as explained below; minimum daily, 4.6 cfs Sept. 12, 18.

1958-62: Maximum discharge, 955 cfs July 11, 1961 (gage height, 4.27 ft in gage well), from rating curve extended above 50 cfs on basis of slope-area measurement at gage height 3.87 ft; minimum daily, 2.9 cfs Nov. 29, 1960.

Remarks.--Records fair except those prior to Nov. 4 and those for period of indefinite stage-discharge relation or periods computed from twice-daily staff-gage readings, which are poor. Natural flow of stream affected by storage reservoirs, power developments, diversions for irrigation and municipal use, and at times, transbasin diversion from Beaver Creek drainage and transmountain diversions from Colorado River basin.

Rating table, except period of indefinite stage-discharge relation  
(gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 1-25, Feb. 5-10,  
July 7-12, Aug. 23-30)

0.5	4.0	2.0	35
.6	5.4	2.3	44
.8	8.5	2.5	60
1.0	12	3.0	145

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	31	e11	9.3	9.6	10	6.9	8.1	17	16	10	6.3	8.1
2	*34		9.1	*9.3	9.6	9.6	8.0	17	13	9.5	6.4	6.1
3	37		9.1	9.8	9.8	8.5	8.0	15	31	7.8	6.9	4.8
4	31		*9.1	10	9.3	7.8	8.1	13	*15	6.1	6.9	5.0
5	29	12	8.8	9.8	*8.3	*8.1	8.3	13	10	6.6	7.3	7.0
6	28	*11	7.5	10	7.3	8.8	8.5	13	11	6.4	*6.3	6.3
7	19	12	7.8	10	8.1	8.5	8.6	*14	13	6.9	5.8	6.3
8	28	12	6.6	9.6	8.1	8.1	9.0	14	15	6.1	5.4	6.3
9	36	12	7.5	8.3	8.0	7.6	8.8	15	12	*6.9	6.1	6.7
10	29	12	5.5	9.0	8.5	7.3	*9.1	15	9.6	5.4	6.1	*6.4
11	26	12	7.5	10	9.0	7.3	8.8	17	9.0	6.0	6.1	5.1
12	22	13	8.8	10	9.3	7.3	9.1	16	9.8	19	5.8	4.6
13	24	12	9.8	11	9.6	7.5	11	16	9.6	15	6.4	4.8
14	17	10	9.3	9.3	8.6	8.5	12	17	8.1	9.6	6.3	5.5
15	17	12	9.5	9.8	8.5	8.3	14	16	7.3	7.6	6.0	5.5
16	17	9.6	9.3	9.6	8.3	8.1	16	16	8.8	8.5	6.4	5.5
17	21	8.8	8.3	9.8	8.5	8.5	14	17	8.1	8.6	6.3	4.8
18	21	9.1	8.5	9.5	7.2	9.0	13	17	8.5	8.8	5.7	4.6
19	21	8.3	7.6	9.6	7.6	8.8	14	15	9.6	9.6	7.5	7.3
20	21	9.5	9.0	9.6	8.0	8.5	14	13	9.6	8.0	9.6	3.1
21	20	10	8.6	10	7.3	7.8	13	11	4.1	8.1	10	19
22	19	9.0	6.3	10	7.5	7.8	14	11	23	7.3	10	14
23	16	9.3	8.0	9.8	6.4	8.1	13	13	15	16	*9.3	11
24	19	10	8.3	11	5.8	8.0	12	13	11	12	9.1	9.1
25	17	10	8.6	10	7.2	8.1	15	13	8.6	7.0	8.5	8.1
26	9.5	9.3	11	10	5.1	8.5	19	14	8.6	6.1	8.0	8.1
27	e10	9.5	9.6	9.8	5.5	8.1	21	14	8.6	7.5	6.7	7.8
28		9.1	8.8	11	5.7	8.5	16	14	7.6	7.5	6.0	7.8
29		9.0	8.8	10	-	9.1	17	14	8.1	9.0	5.4	7.8
30		9.0	8.5	9.6	-----	11	20	12	11	8.6	12	7.2
31		-----	8.3	10	-----	8.3	-----	12	-----	6.9	12	-----
Total	659.5	313.5	262.7	304.8	222.1	256.3	370.4	447	376.5	268.4	226.6	307.3
Mean	21.3	10.4	8.47	9.83	7.93	8.27	12.3	14.4	12.6	8.66	7.31	10.2
Ac-ft	1,310	622	521	605	441	508	735	887	747	532	449	610

Calendar year 1961: Max 110 Min 3.1 Mean 15.8 Ac-ft 11,460  
Water year 1961-62: Max 73 Min 4.6 Mean 11.0 Ac-ft 7,970

Peak discharge (base, 150 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-3	1730	3.43	259	9-19	1300	3.76	366
6-21	1330	3.38	244				

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

Note.--Discharge computed from twice-daily staff-gage readings Dec. 11-25, Jan. 11 to Feb. 1, Feb. 27 to Mar. 4.

ARKANSAS RIVER BASIN

81

7-1039. West Monument Creek near Pikeview, Colo.

Location--Lat 38°58'17", long 104°53'56", in SW¼ sec.28, T.12 S., R.67 W., on right bank in Air Force Academy Reservation, 4 miles upstream from mouth and 11½ miles northwest of Pikeview.

Drainage area--15.4 sq mi.

Records available--October 1957 to September 1962.

Gage--Water-stage recorder and Parshall flume. Datum of gage is 7,080.78 ft (City of Colorado Springs bench mark).

Average discharge--5 years, 0.69 cfs (500 acre-ft per year).

Extremes--Maximum discharge during year, 6.6 cfs July 9 (gage height, 0.63 ft); no flow for many days.  
1957-62: Maximum discharge, 27 cfs about May 14, 1958 (gage height, 1.59 ft); no flow for many days in each year.

Remarks--Records fair except those computed from once-daily staff-gage readings, which are poor. Natural flow of stream affected by storage reservoirs (combined capacity, 1,520 acre-ft) and diversions for municipal use.

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

0.0	0
.1	.4
.2	1.0
.3	1.8
.5	4.0

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.8	0	0		0	0.2	0	2.4	1.3	0.4	0.4	0
2	*.7	0	0	(*)	0	.4	0	1.6	1.3	.4	0	0
3	.6	.4	0		0	.2	0	1.7	1.3	.3	0	.2
4	.5	.5	*.3		0	.2	0	1.6	*1.5	.2	0	.2
5	.3	.5	0		*0	*.3	0	1.6	1.0	.2	0	.1
6	.2	*1.5	0		0	.2	0	1.4	.8	.2	*0	.1
7	.2	.7	0		0	.3	.1	*1.2	1.0	.2	0	.1
8	.2	3.0	0		0	.3	.1	1.3	1.2	.8	0	.1
9	.1	.8	0		0	.3	.1	1.0	1.0	*3.7	.2	.1
10	0	.5	0		0	.2	*.4	1.0	.8	3.7	0	*.1
11	0	.3	0		0	0	.5	1.0	.7	.8	.1	0
12	0	.3	0		0	0	.6	1.0	.9	.2	.5	.0
13	0	.5	0		.2	0	.7	.7	.7	.2	.5	.3
14	0	1.0	0		.2	0	.8	.6	.5	.2	.4	.3
15	0	.2	0		0	0	.9	.7	.5	.1	.2	0
16	0	0	0		0	0	1.0	.7	.9	0	.2	0
17	0	0	0		0	.2	1.1	1.0	.7	0	0	0
18	0	0	0		0	.2	1.2	2.6	.4	0	0	0
19	0	0	0		0	.2	1.2	2.4	.3	0	.5	0
20	0	0	0		1.2	.2	1.4	2.0	.3	.1	.4	0
21	0	0	0		0	.2	1.6	1.7	.3	.1	.3	0
22	0	0	0		0	.2	1.5	1.8	.4	0	.2	.1
23	0	0	0		.7	.1	1.6	1.3	.3	.5	.4	.4
24	0	0	0		0	.1	1.8	1.0	.3	.8	.2	2.9
25	0	0	0		.4	.1	1.6	.9	.3	.4	.1	3.1
26	0	0	0		0	.1	1.3	.8	.3	.4	.1	1.5
27	0	0	0		.4	.1	1.4	.8	.3	.3	.4	.3
28	0	0	0		.3	.1	1.4	.8	.3	.3	0	.1
29	0	0	0		-	0	1.6	.7	.3	.3	0	.1
30	0	0	0		-----	0	2.3	.5	.3	.5	.3	.1
31	0	-----	0		-----	0	-----	.6	-----	.6	.4	-----
Total	3.6	10.2	0.3	0	3.4	4.4	26.2	38.4	20.2	15.9	5.8	10.2
Mean	0.12	0.34	0.01	0	0.12	0.14	0.87	1.24	0.67	0.51	0.19	0.34
Ac-ft	7.1	20	0.6	0	6.7	8.7	52	76	40	32	12	20

Calendar year 1961: Max 6.0 Min 0 Mean 0.41 Ac-ft 300  
Water year 1961-62: Max 3.7 Min 0 Mean 0.38 Ac-ft 275

\* Discharge measurement or observation of no flow made on this day.

Note.--Discharge computed from once-daily staff-gage readings Oct. 10 to Nov. 2, Nov. 6 to Apr. 9, July 13-22, Aug. 2-8, 10, 17, 25, 26, 28, 29, Sept. 1, 2, 5-12, 15-22, 28-30.



## ARKANSAS RIVER BASIN

7-1045. Templeton Gap Floodway at Colorado Springs, Colo.

Location.--Lat 38°53'17", long 104°49'01", in SE¼ sec.30, T.13 S., R.66 W., on left bank 75 ft upstream from mouth of concrete flume, 400 ft upstream from bridge on U. S. Highways 85 and 87, and three-quarters of a mile north of Colorado Springs.

Drainage area.--8.46 sq mi.

Records available.--July 1951 to September 1962.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 6,200 ft (from topographic map).

Average discharge.--11 years, 0.11 cfs (80 acre-ft per year).

Extremes.--No flow during water year.

1951-62: Maximum discharge, 458 cfs July 2, 1956 (gage height, 2.63 ft), from rating curve based on computation of flow at critical depth at gage heights 1.3, 1.4, 1.8, and 3.0 ft; no flow for most of time.

Remarks.--No flow since Aug. 13, 1961. Observation of no flow generally made once a month. This is an artificial channel constructed to divert flood flows from normally dry channels around Colorado Springs during periods of heavy rainfall.

Month	Cfs-days	Maximum	Minimum	Mean	Runoff in acre-feet
Calendar year 1961....	60.2	38	0	0.16	119

ARKANSAS RIVER BASIN

83

7-1065. Fountain Creek at Pueblo, Colo.

Location.--Lat 38°16'28" (revised), long 104°36'00" (revised), in SE¼SW¼ sec.30, T.20 S., R.64 W., on left bank at downstream side of Eighth Street Bridge in Pueblo, 1.6 miles upstream from mouth.

Drainage area.--926 sq mi.

Records available.--January 1922 to September 1925, October 1940 to September 1962. Monthly discharge only for some periods, published in WSP 1311.

Gage.--Water-stage recorder. Datum of gage is 4,663.45 ft above mean sea level, datum of 1929. Prior to Feb. 13, 1923, staff gage at site half a mile upstream at different datum. Feb. 13 to July 11, 1923, staff gage and July 12, 1923, to Sept. 30, 1925, water-stage recorder, within 200 ft of present site at various datums.

Average discharge.--25 years, 51.8 cfs (37,500 acre-ft per year).

Extremes.--Maximum discharge during year, 2,520 cfs July 11 (gage height, 5.19 ft, from floodmark); minimum daily, 0.3 cfs Sept. 27-30. 1922-25, 1941-62: Maximum discharge, 17,800 cfs July 10, 1945 (gage height, 9.50 ft), from rating curve extended above 2,400 cfs on basis of slope-area measurement at gage height 8.05 ft; no flow at times. Flood of June 4, 1921, discharge, 34,000 cfs, by slope-area measurement of peak flow. Flood of May 30, 1935, discharge, 35,000 cfs, by slope-area measurement of peak flow.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor. Discharge measurements generally made twice a month. Diversions above station for irrigation of about 22,500 acres.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Dec. 22 to Apr. 21, Sept. 18-30)

2.1	0.3	2.6	6.5	3.2	71
2.2	.5	2.7	11	3.4	115
2.3	1.0	2.8	18	3.7	245
2.4	2.0	3.0	41	4.0	450

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	69	39	19	40	108	20	39	6.2	1.3	1.7	3.2	1.8
2	91	27	24	39	115	50	30	4.5	2.2	2.4	2.0	1.8
3	77	22	22	39	115	91	27	3.0	4.8	1.3	1.6	1.5
4	69	24	25	45	105	103	25	2.6	6.0	1.0	1.3	1.2
5	61	24	25	44	75	103	24	2.2	6.5	1.0	1.1	1.0
6	48	26	25	35	59	91	22	1.9	2.2	1.0	1.0	1.0
7	44	27	27	33	68	71	19	1.7	3.4	1.0	1.0	1.0
8	35	28	24	36	62	61	20	1.7	96	1.0	1.0	1.0
9	45	20	24	27	53	45	22	1.6	28	1.0	1.1	1.0
10	68	22	25	16	41	37	24	1.7	11	1.0	1.2	1.1
11	56	25	14	15	34	46	24	1.8	4.5	326	1.1	1.3
12	54	30	12	23	30	53	18	1.7	2.0	53	1.1	1.0
13	48	34	13	27	25	54	16	1.5	3.4	48	1.1	.6
14	40	24	19	25	21	49	13	1.6	5.2	11	1.1	.6
15	36	30	21	24	18	50	11	1.6	2.4	4.5	1.0	.6
16	29	33	30	23	18	50	11	1.9	1.8	5.2	1.1	.6
17	36	29	46	23	18	46	11	1.6	1.6	3.8	1.1	.7
18	40	33	53	22	25	46	9.2	2.4	1.5	2.8	1.1	.8
19	48	34	59	21	25	45	7.8	6.5	1.3	3.0	29	.8
20	42	31	69	36	30	44	6.5	2.2	1.3	2.8	1.4	.8
21	37	33	81	35	29	44	6.0	1.7	1.5	2.4	1.0	.8
22	39	29	87	33	29	42	4.8	1.3	3.4	2.2	1.2	.8
23	41	21	71	45	27	41	4.0	1.1	7.8	2.2	.9	.8
24	45	25	71	50	27	37	3.0	1.1	2.2	4.0	.9	.8
25	36	37	71	56	b21	39	3.0	1.1	1.7	1.9	.9	.7
26	28	31	61	59	b18	39	3.4	1.3	1.5	1.5	.9	.4
27	19	26	54	64	16	35	3.4	2.4	1.3	1.3	.9	.3
28	27	21	41	73	15	31	3.0	2.0	1.4	1.2	.9	.3
29	25	17	41	83	-	30	3.2	1.6	1.2	1.5	.9	.3
30	33	18	41	96	-----	34	5.5	1.4	1.2	64	.9	.3
31	45	-----	41	89	-----	39	-----	1.2	-----	8.3	1.5	-----
Total	1,411	820	1,236	1,276	1,227	1,566	418.8	66.1	240.2	563.0	64.5	25.7
Mean	45.5	27.3	39.9	41.2	43.8	50.5	14.0	2.13	8.01	18.2	2.08	0.86
Ac-ft	2,800	1,630	2,450	2,530	2,430	3,110	831	131	476	1,120	128	51

Calendar year 1961: Max 589 Min 0 Mean 45.1 Ac-ft 32,650  
Water year 1961-62: Max 326 Min 0.3 Mean 24.4 Ac-ft 17,690

Peak discharge (base, 1,700 cfs)--July 11 (1730) 2,520 cfs (5.19 ft).

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 12-17, Jan. 9-22, Feb. 27 to Mar. 2 (stage-discharge relation affected by ice during parts of periods).

7-1110. Huerfano River at Manzanares Crossing, near Redwing, Colo.

Location.--Lat 37°43'40", long 105°21'10", in sec.5, T.27 S., R.71 W., on left bank at Manzanares Crossing, a quarter of a mile downstream from Manzanares Creek and 3½ miles southwest of Redwing.

Drainage area.--73 sq mi.

Records available.--July 1923 to September 1962. Monthly discharge only for some periods, published in WSP 1311.

Gage.--Water-stage recorder. Altitude of gage is 8,150 ft (from topographic map). Prior to Sept. 8, 1934, at sites about 500 ft upstream at different datums. Sept. 8, 1934, to Mar. 15, 1937, at datum 1.36 ft higher, Mar. 16, 1937, to Sept. 30, 1945, at datum 0.86 ft higher, and Oct. 1, 1945, to Apr. 25, 1946, at datum 0.36 ft higher than present datum.

Average discharge.--39 years, 33.3 cfs (24,110 acre-ft per year).

Extremes.--Maximum discharge during year, 102 cfs May 12 (gage height, 1.27 ft); minimum daily, 10 cfs Jan. 10-12, 16-18, Feb. 28. 1923-62: Maximum discharge, 10,200 cfs Aug. 2, 1951 (gage height, 8.14 ft), from rating curve extended above 270 cfs on basis of slope-area measurement of peak flow; minimum daily determined, 4 cfs Jan. 22, 1937.

Revisions.--The maximum discharge for the water year 1961 has been revised to 182 cfs July 5 (gage height, 1.69 ft), superseding figure previously published.

Remarks.--Records good except those Nov. 1 to Mar. 27, which are poor. Discharge measurements generally made twice a month. Diversions above station for irrigation of about 1,800 acres.

Note.--Records for June to August 1957 are in error. Revised records for this period are on file in District Office and will be published in a later water supply paper.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Mar. 28)

0.3	9.0
.7	36
1.0	67
1.5	140

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	36	24	16	12	16	11	20	73	66	63	41	16
2	36	24	16	12	17	11	19	71	67	61	38	15
3	36	24	16	12	18	11	20	68	66	60	37	14
4	35	24	14	12	17	11	20	69	66	62	34	14
5	34	19	13	12	17	11	20	73	65	61	28	14
6	34	16	13	12	16	12	20	82	66	61	23	14
7	32	16	13	12	16	13	21	91	68	63	21	17
8	33	17	13	12	16	12	20	95	71	67	21	16
9	34	18	12	11	17	12	22	95	69	61	21	17
10	39	19	11	10	18	12	22	95	72	53	21	17
11	36	21	11	10	19	12	23	96	72	52	20	16
12	35	20	11	10	19	12	25	96	73	53	20	15
13	34	18	11	11	19	12	30	96	75	57	20	15
14	34	17	12	11	19	12	40	93	75	52	20	15
15	33	17	12	11	19	13	47	88	74	51	20	15
16	32	17	12	10	18	14	48	86	72	49	21	16
17	32	17	12	10	17	15	47	80	65	48	20	15
18	32	17	12	10	17	15	50	78	63	47	19	14
19	31	17	12	11	15	16	53	75	62	43	22	14
20	30	18	13	11	15	17	63	77	62	41	22	17
21	30	18	13	12	14	17	67	75	63	40	20	19
22	30	19	13	13	13	17	66	73	65	40	19	19
23	30	19	12	12	13	17	61	71	63	42	19	19
24	29	19	12	11	13	18	67	69	63	47	18	22
25	27	19	12	11	13	19	72	68	65	54	17	23
26	28	19	12	12	11	21	77	69	63	48	16	22
27	28	17	12	12	11	22	79	71	63	44	16	22
28	27	18	12	13	10	22	82	72	62	42	15	22
29	28	18	12	13	-	18	84	68	65	40	14	22
30	24	18	12	14	-----	13	82	63	66	40	14	21
31	24	-----	12	15	-----	20	-----	66	-----	44	16	-----
Total	983	564	389	360	443	458	1,367	2,442	2,007	1,586	673	517
Mean	31.7	18.8	12.5	11.6	15.8	14.8	45.6	78.8	66.9	51.2	21.7	17.2
Ac-ft	1,950	1,120	772	714	879	908	2,710	4,840	3,980	3,150	1,330	1,030

Calendar year 1961: Max 102 Min - Mean 36.0 Ac-ft 26,040

Water year 1961-62: Max 96 Min 10 Mean 32.3 Ac-ft 23,380

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

Note.--No gage-height record Nov. 1 to Mar. 27 (stage-discharge relation affected by ice during most of period), Aug. 4-6.

7-1140. Cucharas River at Boyd Ranch, near La Veta, Colo.

Location.--Lat 37°25', long 105°03', in sec.24, T.30 S., R.69 W., on left bank at Boyd Ranch, 6 miles south of La Veta.Drainage area.--56 sq mi.Records available.--October 1934 to September 1962.Gage.--Water-stage recorder. Altitude of gage is 7,800 ft (from base map).Average discharge.--28 years, 25.7 cfs (18,610 acre-ft per year).Extremes.--Maximum discharge during year, 172 cfs May 13 (gage height, 2.51 ft); minimum daily, 7.0 Sept. 18.

1934-62: Maximum discharge, 444 cfs May 23, 1955 (gage height, 4.05 ft); minimum daily, 2 cfs for several days November 1934 to January 1935, Sept. 29, 1950.

Remarks.--Records good below 55 cfs and fair above except those for periods of no gage-height record, which are poor. Discharge measurements generally made twice a month. Diversions for irrigation of about 500 acres above station.Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)

1.0	4.0
1.2	11
1.6	36
2.0	85
2.5	170

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	22	20					14	107	63	38	18	10
2	23	17					16	93	60	35	16	9.4
3	22	b17					18	88	58	33	16	8.6
4	21	b17					18	89	55	32	15	9.0
5	20	18					18	101	53	32	14	9.8
6	20						19	123	57	32	13	9.4
7	19						20	141	62	29	13	9.4
8	19						20	151	63	28	13	9.0
9	22						21	147	63	28	12	9.0
10	21						23	149	63	26	12	8.2
11	20						24	145	63	25	12	7.8
12	19						30	157	66	24	13	7.4
13	19						42	160	64	24	12	7.4
14	19						60	136	64	22	12	7.8
15	18						73	113	64	24	12	7.4
16	18		12	12	16	12	80	106	63	22	12	7.4
17	18						77	97	59	21	11	7.4
18	18	15					81	86	57	21	11	7.0
19	18						94	80	54	21	12	7.4
20	17						110	78	52	21	11	9.8
21	18						106	76	46	22	11	8.6
22	18						93	69	45	22	10	8.2
23	17						82	66	43	22	10	9.4
24	16						82	66	42	22	9.8	9.4
25	16						100	66	45	24	9.4	9.0
26	17						113	64	44	21	9.0	9.0
27	18						120	68	44	20	8.6	9.0
28	18						122	68	42	20	8.6	9.0
29	18						125	64	42	18	8.2	9.0
30	20						120	57	39	18	8.2	9.0
31	20	-----			-----		-----	54	-----	18	9.8	-----
Total	589	464	372	372	448	372	1,921	3,065	1,635	765	362.6	258.2
Mean	19.0	15.5	12	12	16	12	64.0	98.9	54.5	24.7	11.7	8.61
Ac-ft	1,170	920	738	738	889	738	3,810	6,080	3,240	1,520	719	512

Calendar year 1961: Max 144 Min - Mean 36.4 Ac-ft 26,340

Water year 1961-62: Max 160 Min 7.0 Mean 29.1 Ac-ft 21,070

Peak discharge (base, 150 cfs)--May 13 (0400) 172 cfs (2.51 ft).

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 6 to Apr. 2 (stage-discharge relation affected by ice during most of period), July 18-23.



## ARKANSAS RIVER BASIN

7-1160. Huerfano River below Huerfano Valley Dam, near Undercliffe, Colo.

Location.--Lat 38°00', long 104°28', in S½ sec.32, T.23 S., R.63 W., at left end of diversion dam for Huerfano Valley ditch, 8 miles southwest of Undercliffe.

Drainage area.--1,673 sq mi.

Records available.--October 1939 to September 1962.

Gage.--Water-stage recorder. Datum of gage is 4,886.29 ft above mean sea level, datum of 1929. Prior to July 26, 1950, at site 0.3 mile downstream at datum 14.27 ft lower and July 26, 1950, to Dec. 15, 1954, at site 0.3 mile downstream at datum 16.27 ft lower.

Average discharge.--23 years, 40.3 cfs (29,180 acre-ft per year).

Extremes.--Maximum discharge during year, 10,500 cfs July 23 (gage height, 10.37 ft, from floodmarks), from rating curve extended above 380 cfs as explained below; no flow at times.

1939-62: Maximum discharge, 16,800 cfs July 5, 1958 (gage height, 14.5 ft), from rating curve extended above 380 cfs on basis of computation of flow over dam at gage heights 11.04 and 14.5 ft; no flow at times in nearly every year.

Maximum stage and discharge known since at least 1900, that of July 5, 1958, from information by local residents.

Remarks.--Records poor. Discharge measurements or observations of no flow generally made twice a month. Diversions above station for irrigation of about 43,000 acres.

Discharge, in cubic feet per second, water year October 1961 to September 1962												
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6	16	14	14								1
2	8	14	12	52								1
3	6	11	17	28					2.1	37		.6
4	6.6	11	24	38			54				4.8	0
5	8.2	11	20	40								0
6	6.6	23	16						1.9			0
7	3.2	18	15						2.0			0
8	1.6	10	13						2.5	1,240		0
9	3.6	19	9		25		141		7.6		1.3	0
10	12	19					145		6.0		1.2	0
11	14	18					168	103	3.1		.7	0
12	5.7	20					100		1.5		1.0	0
13	11	40					99		2.6			0
14	6.6	47							1.3			0
15	11	50				19			.9	35		0
16	12	32										0
17	14	24									10	0
18	11	21		26	64							0
19	4.9	23			97				1			0
20	3.8	73	20		88							0
21	3.2	46			33		133					3
22	2.5	29			68						22	
23	2.1	15			18					670	10	
24	5.4	20								95	8.0	
25	2.2	15									4	3.3
26	1.2	14			14			5.1	16		0	2.0
27	.9	10								4.4	0	1.5
28	.6	15									0	.2
29	3.0	18									2	0
30	24	16									1	0
31	21										1	
Total	221.9	698	580	848	863	589	3,346	2,116.1	189.9	2,784.8	180.6	24.6
Mean	7.16	23.3	18.7	27.4	30.8	19	112	68.3	6.33	89.8	5.83	0.82
Ac-ft	440	1,380	1,150	1,680	1,710	1,170	6,640	4,200	377	5,520	358	49

Calendar year 1961: Max - Min 0.6 Mean 40.9 Ac-ft 29,610  
 Water year 1961-62: Max 1,240 Min 0 Mean 34.1 Ac-ft 24,670

Peak discharge (base, 3,000 cfs)--July 8 (2030) 10,100 cfs (10.29 ft); July 23 (2145) 10,500 cfs (10.37 ft).

Note.--Discharge estimated except for Oct. 4-10, 12-15, Oct. 18 to Nov. 14, Nov. 19-29, Jan. 4, 5, Feb. 20-23, Apr. 9-13, June 6-15, Aug. 9-12, 22-24, Sept. 25-27.

7-1170. Arkansas River near Nepesta, Colo.

Location.--Lat 38°11', long 104°10', in NW¼ sec.31, T.21 S., R.60 W., on right bank 100 ft downstream from diversion dam of Oxford Farmers Co. canal, 1½ miles west of Nepesta, and 6 miles downstream from Huerfano River.

Drainage area.--9,345 sq mi, of which 54 sq mi is probably noncontributing.

Records available.--April to October 1903, April to November 1912, October 1913 to September 1962. Monthly discharge only for some periods, published in WSP 1311. Records originally published for October 1933 to June 1936 did not include diversion to Oxford Farmers Co. canal, but monthly figures only for this period have been adjusted for diversion and published in WSP 1311.

Records for river below Oxford Farmers Co. canal (diversion to canal not included), published as "at Nepesta," September 1897 to October 1902 (irrigation seasons only), April to October 1904, June 1906 to September 1908 (irrigation seasons only), September 1909 to December 1910, February to September 1911 (gage heights and discharge measurements only), October 1911 to November 1912, March to August 1913 (discharge measurements only), October 1913 to September 1936. Monthly discharge only for some periods, published in WSP 1311.

Gage.--Water-stage recorders on river and on Oxford Farmers Co. canal. Datum of river gage is 4,378.68 ft above mean sea level, datum of 1929. Prior to June 5, 1921, staff gages or water-stage recorders at various sites within 5 miles upstream and 2 miles downstream at different datums. June 5, 1921, to Oct. 1, 1952, water-stage recorders at sites on river or river and canal within 300 ft at approximately present datum.

Average discharge.--49 years (1913-62), 700 cfs (506,800 acre-ft per year).

Extremes.--Maximum discharge during year, 14,400 cfs July 24; minimum daily, 101 cfs Feb. 28.

1897-1904, 1906-12, 1913-62: Maximum discharge, 180,000 cfs June 4, 1921 (gage height not determined), by slope-area measurement of peak flow at point 9 miles upstream; no flow at times in 1902, 1910, 1931, 1934.

Remarks.--Records fair below 3,000 cfs and poor above. Discharge measurements generally made two or more times a month. Discharge computed by combining discharge of river below canal with that of Oxford Farmers Co. canal. Natural flow of stream affected by transmountain diversions, storage reservoirs, power developments, ground-water withdrawals and diversions for irrigation of about 230,000 acres, and return flow from irrigated areas.

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	991	1,020	718		514	182	598	1,720	858	2,930	548	366
2	1,020	949	816		463	220	509	1,530	947	2,600	509	336
3	891	707	797		416	646	472	1,200	905	2,400	597	278
4	759	695	761		390	628	435	975	1,070	2,160	681	254
5	633	685	659		380	568	419	992	1,380	2,310	628	252
6	504	756	579		370	397	431	1,040	1,520	2,020	627	262
7	510	693	581		370	454	417	1,200	1,590	1,500	547	256
8	503	578	563		370	585	477	1,480	1,760	2,140	506	242
9	476	647	674		390	547	601	1,740	1,230	3,060	524	239
10	624	653	658		450	539	590	1,940	1,450	1,750	409	265
11	839	679	320		568	529	695	1,900	1,610	2,100	414	283
12	695	698	332		775	465	711	1,720	1,760	3,030	393	275
13	596	739	350		758	437	655	1,560	2,020	1,920	387	264
14	562	765	370		532	452	604	1,690	1,760	1,600	407	206
15	631	727	390	210	382	460	623	1,690	2,020	1,350	493	205
16	679	718			423	507	786	1,560	1,820	1,690	450	211
17	800	693			545	537	922	1,110	1,020	1,340	416	229
18	796	706			667	526	965	1,080	1,450	1,190	374	224
19	760	681			628	485	981	929	1,540	1,150	397	193
20	733	638			507	497	947	1,070	1,790	1,130	935	202
21	826	662			557	520	1,090	883	2,150	1,270	655	262
22	739	718			574	500	1,270	1,170	2,410	939	781	303
23	698	706	200		614	466	1,130	1,150	2,250	863	688	380
24	787	643			583	451	942	657	2,060	3,740	567	350
25	784	725			512	405	966	492	1,980	681	492	342
26	772	739			309	379	1,000	414	1,920	932	392	333
27	704	716			248	366	1,280	584	1,840	999	367	305
28	743	753			101	350	1,300	862	2,000	802	396	326
29	905	701			-	433	1,200	1,040	2,160	947	534	331
30	1,100	733			-	580	1,500	850	3,110	1,540	427	301
31	1,060	-----		436	-----	645	-----	847	-----	2,090	387	-----
Total	23,120	21,523	11,768	6,736	13,396	14,756	24,516	37,075	51,380	54,173	15,928	8,275
Mean	746	717	380	217	478	476	817	1,196	1,713	1,748	514	276
Ac-ft	45,860	42,690	23,340	13,360	26,570	29,270	48,630	73,540	101,900	107,500	31,590	16,410

Calendar year 1961: Max 6,110 Min 74 Mean 735 Ac-ft 531,900

Water year 1961-62: Max 3,740 Min 101 Mean 774 Ac-ft 560,700

Note.--Discharge computed from twice-daily staff-gage readings on river Dec. 10-12, Feb. 26 to Mar. 2, and on canal Dec. 11-29, Jan. 7-30, Feb. 26 to Mar. 1. Stage-discharge relation affected by ice on river Dec. 13 to Jan. 31, Feb. 4-10, and on canal Jan. 9-15, Feb. 27 to Mar. 1.

## ARKANSAS RIVER BASIN

7-1195. Apishapa River near Fowler, Colo.

Location--Lat 38°05'28", long 103°58'52", in SE¼NW¼ sec.35, T.22 S., R.59 W., near right bank on downstream side of county highway bridge, 4 miles southeast of Fowler and 5.4 miles upstream from mouth.

Drainage area--1,125 sq mi.

Records available--April 1922 to September 1925, May 1939 to September 1962. Monthly discharge only for some periods, published in WSP 1311.

Gage--Water-stage recorder. Datum of gage is 4,317.05 ft above mean sea level, datum of 1929. Prior to Aug. 29, 1923, at site 3 miles downstream at different datum. Aug. 29, 1923, to Sept. 30, 1925, at present site at different datum.

Average discharge--26 years, 36.3 cfs (26,280 acre-ft per year).

Extremes--Maximum discharge during year, 5,240 cfs July 24 (gage height, 9.04 ft); minimum daily, 1.2 cfs Apr. 12.

1922-25, 1939-62: Maximum discharge, 83,000 cfs Aug. 22, 1923, by slope-area measurement 2 miles upstream from present station, caused by failure of Apishapa Dam 31 miles upstream; no flow Feb. 5, 1951.

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. Waste water from Oxford Farmers Co. and Rocky Ford Highline canals enters river above station. Diversions above station for irrigation of about 4,700 acres.

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	38	32	31	b2.0	b7.6	11	7.4	14	24	20	12	2.6
2	35	30	29	b2.3	b7.6	13	7.4	9.6	29	17	5.3	2.4
3	34	72	22	b2.7	b11	15	21	11	5.0	16	4.7	2.4
4	34	68	19	b2.8	b18	14	17	8.3	16	20	5.3	2.6
5	33	63	18	b2.6	14	14	11	10	33	90	8.1	2.6
6	26	64	b15	2.5	12	8.7	14	10	23	50	6.0	2.6
7	24	67	b11	2.3	11	7.8	16	11	17	37	3.8	2.6
8	29	48	b8.0	2.1	16	9.6	16	11	22	34	4.4	2.6
9	31	63	b6.0	1.9	9.3	7.4	1.8	14	26	230	2.9	2.4
10	29	62	4.7	1.7	14	8.7	2.1	14	14	20	2.6	2.4
11	29	54	3.5	1.8	26	3.3	1.4	12	21	8.1	2.4	2.4
12	30	70	2.5	1.8	26	13	1.2	18	22	22	2.1	2.4
13	28	92	2.4	1.9	9.6	5.0	1.8	10	19	17	2.3	2.6
14	28	88	2.4	2.0	8.7	11	19	18	22	15	2.1	2.6
15	16	92	2.6	2.1	16	7.8	14	29	16	6.0	2.1	2.4
16	19	97	2.9	2.2	22	6.6	13	64	11	45	2.1	2.4
17	24	100	3.1	2.3	49	7.0	11	16	5.7	39	2.1	2.1
18	22	104	3.5	2.1	23	7.4	14	30	8.7	21	2.3	2.1
19	22	104	3.9	1.8	25	3.7	14	33	8.7	8.9	2.3	2.4
20	25	97	b4.3	2.0	22	2.1	15	29	7.8	5.6	2.4	2.6
21	24	90	b3.6	2.4	18	5.0	14	21	7.4	8.1	2.6	2.4
22	22	91	b3.0	2.9	19	7.0	8.3	15	8.7	8.9	3.2	2.4
23	33	97	b3.3	3.4	16	7.8	11	16	24.9	10	2.9	2.4
24	30	88	b3.7	4.0	b16	13	12	9.6	50	1,670	2.9	2.4
25	31	74	b4.5	5.0	b15	14	11	7.8	10	128	2.9	2.4
26	23	68	b3.5	b6.0	14	10	13	8.3	10	64	2.9	2.3
27	21	62	3.0	b6.4	13	7.4	19	8.7	10	49	2.9	2.3
28	28	55	2.5	b6.8	11	6.6	15	16	10	35	3.2	2.4
29	55	55	2.2	b6.8	-	7.0	9.1	26	10	34	2.6	2.9
30	29	41	2.1	b7.2	-----	10	3.3	32	30	39	2.4	2.9
31	29	-----	b2.0	b7.2	-----	7.4	-----	29	-----	22	2.6	-----
Total	881	2,188	228.2	101.0	469.8	301.0	363.5	561.3	746.0	2,789.6	108.4	74.0
Mean	28.4	72.9	7.36	3.26	16.8	9.71	12.1	18.1	24.9	90.0	3.56	2.47
Ac-ft	1,750	4,340	453	200	932	597	721	1,110	1,480	5,530	215	147

Calendar year 1961: Max 748 Min 1.0 Mean 26.7 Ac-ft 19,340  
 Water year 1961-62: Max 1,670 Min 1.2 Mean 24.1 Ac-ft 17,480

Peak discharge (base, 3,000 cfs)--July 24 (0745) 5,240 cfs (9.04 ft).

b Stage-discharge relation affected by ice.

Note--No gage-height record Dec. 10-19, 27-30, Jan. 6-25, Feb. 26 to Mar. 4 (stage-discharge relation affected by ice during most of periods), June 24 to July 4.

## ARKANSAS RIVER BASIN

89

7-1230. Arkansas River at La Junta, Colo.

Location.--Lat 37°59', long 103°31', in sec.2, T.24 S., R.55 W., on downstream side near middle of East Bridge in La Junta, just upstream from King Arroyo.

Drainage area.--12,210 sq mi, of which 115 sq mi is probably noncontributing.

Records available.--May to August 1889, September 1893 to December 1895 (gage heights, discharge measurements, and flood data only), April to October 1903, June to November 1908 (gage heights and discharge measurements only), April 1912 to September 1962. Monthly discharge only for some periods, published in WSP 1311. Published as "near La Junta" in 1903.

Gage.--Water-stage recorder, and chain gage read twice daily. Datum of gage is 4,039.60 ft above mean sea level, datum of 1929. Prior to Apr. 11, 1912, staff gages at several sites within 2 miles at various datums. Apr. 11, 1912, to June 12, 1940, water-stage recorder and staff or chain gages at several sites within 1 mile at various datums.

Average discharge.--50 years (1912-62), 261 cfs (189,000 acre-ft per year).

Extremes.--Maximum discharge during year, 7,860 cfs July 24 (gage height, 7.78 ft); minimum not determined.

1889, 1893-95, 1903, 1908, 1912-62: Maximum discharge, 200,000 cfs June 4, 1921 (gage height, 18.4 ft, at present site, datum then in use), from rating curve extended above 15,000 cfs on basis of slope-area measurement of peak flow; no flow Jan. 20-23, Mar. 20-22, 1915.

Remarks.--Records fair except those for periods of no gage-height record, which are poor. Discharge measurements generally made once a week October to April and twice a week May to September. Natural flow of stream affected by transmountain diversions, storage reservoirs, power developments, ground-water withdrawals and diversions for irrigation of about 400,000 acres, and return flow from irrigated areas.

Rating table (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 1-3, 7-14, 22-27, Jan. 1-15, Feb. 4-6, 13,  
Apr. 8, 9, 19-21, Apr. 28 to May 1, May 23-31, June 15 to July 9, July 14-20,  
July 24 to Aug. 22, Sept. 16, 17)

3.5	10	4.7	420
3.7	35	5.1	760
4.0	90	5.4	1,240
4.3	200	6.0	2,800

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	312	128	47	15	22	50	81	680	444	604	132	21
2	360	102	63	13	20	80	55	652	484	628	77	61
3	372	117	48	14	27	100	86	500	508	540	68	57
4	378	72	52	31	18	102	59	420	468	596	90	32
5	342	93	50	23	16	93	50	500	444	404	117	42
6	366	63	42	34	25	88	59	580	508	245	59	32
7	436	50	55	22	16	50	64	612	620	215	42	46
8	500	41	47	30	32	55	72	588	540	330	75	44
9	588	46	68		21	66	77	636	444	805	105	47
10	452	136			27	64	63	628	342	354	93	32
11	366	83	30		34	57	64	572	540	670	105	10
12	484	81			32	66	66	540	588	756	77	25
13	366	83			81	79	52	564	564	670	61	52
14	295	72	20		61	61	75	564	420	564	55	54
15	275	66			47	63	99	670	270	354	64	54
16	265	26	20		34	57	75	944	420	260	83	96
17	270	32			44	47	59	604	524	360	83	90
18	265	68			55	64	81	295	396	414	55	32
19	275	68			57	55	63	172	396	402	90	31
20	275	63			47	46	48	90	396	442	83	44
21	285	68			46	46	88	86	492	1120	384	48
22	330	55	10		35	42	132	108	354	588	184	54
23	414	44			44	35	188	105	230	556	285	57
24	444	64				34	124	200	384	2,520	280	55
25	420	66	15			54	99	128	402	460	240	59
26	414	61			32	36	111	86	384	303	235	61
27	384	66				25	164	83	354	188	136	64
28	366	47	15			18	176	86	300	128	42	61
29	360	63		16		31	176	111	460	96	21	70
30	372	50		17		61	484	200	680	83	32	66
31	260			20		99		372		156	38	
Total	11,291	2,074	862	595	1,001	1,824	3,090	12,376	13,356	15,811	3,491	1,497
Mean	364	69.1	27.8	19.2	35.8	58.8	103	399	445	510	113	49.9
Ac-ft	22,400	4,110	1,710	1,180	1,990	3,620	6,130	24,550	26,490	31,360	6,920	2,970

Calendar year 1961: Max 2,230 Min 4.0 Mean 186 Ac-ft 134,500  
Water year 1961-62: Max 2,520 Min - Mean 184 Ac-ft 133,400

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 10 to Jan. 2, Jan. 9-29, Feb. 24 to Mar. 2 (stage-discharge relation affected by ice during parts of periods).



## ARKANSAS RIVER BASIN

7-1240. Arkansas River at Las Animas, Colo.

Location.--Lat 38°05'08", long 103°12'50", in SW¼ sec.35, T.22 S., R.52 W., on left bank 0.4 mile downstream from bridge on U. S. Highway 50, 1.5 miles north of courthouse in Las Animas, and 3½ miles upstream from Purgatoire River.

Drainage area.--14,417 sq mi, of which 441 sq mi is probably noncontributing.

Records available.--May to November 1898 (gage heights only), August to November 1909 (gage heights and discharge measurements only), May 1939 to September 1962.

Gage.--Water-stage recorder. Datum of gage is 3,874.97 ft above mean sea level, datum of 1929. May 13 to Nov. 12, 1898, and Aug. 1 to Nov. 10, 1909, staff gage within half a mile of present site at different datum.

Average discharge.--23 years, 238 cfs (172,300 acre-ft per year).

Extremes.--Maximum discharge during year, 3,820 cfs July 25 (gage height, 11.28 ft); minimum daily, 6.8 cfs Apr. 28.  
1939-62: Maximum discharge, 44,000 cfs May 20, 1955 (gage height, 15.03 ft), from rating curve extended above 24,000 cfs on basis of slope-area measurement of peak flow; minimum daily, 1.6 cfs Sept. 17, 1956.

Remarks.--Records good except those for periods of ice effect, which are fair. Discharge measurements generally made once a week. Natural flow of stream affected by transmountain diversions, storage reservoirs, power developments, ground-water withdrawals and diversions for irrigation of about 412,000 acres, and return flow from irrigated areas.

Rating tables, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 1-31, Dec. 8, 9,  
July 16-21, 23, 24, Sept. 9-11)

Nov. 1 to Aug. 2

Aug. 3 to Sept. 30

6.6	2.5	7.6	205	6.9	8.0
6.7	11	8.0	405	7.0	22
6.9	39	9.0	1,130	7.2	62
7.3	113	10.0	2,050	7.5	145

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	298	116	50	62	105	76	70	505	350	505	111	21
2	276	101	43	59	88	88	46	575	438	589	97	15
3	302	93	50	55	82	84	23	418	450	498	78	11
4	316	95	39	53	88	82	32	295	405	568	72	94
5	294	84	44	44	77	91	15	350	328	596	65	11
6	260	88	53	57	66	82	11	394	394	232	55	12
7	355	73	48	48	71	89	20	457	457	161	51	94
8	380	61	52	52	64	80	30	438	383	118	49	80
9	528	52	43	38	75	84	26	484	484	410	47	80
10	512	43	25	39	73	89	18	512	272	496	31	94
11	316	75	22	43	68	89	10	418	286	394	22	94
12	355	97	19	43	62	93	10	300	431	547	22	11
13	345	73	21	46	57	95	11	317	457	491	27	11
14	280	57	29	46	88	84	9.3	300	512	438	29	12
15	260	48	35	46	88	75	20	533	218	356	26	18
16	240	64	45	43	82	70	16	1,100	158	161	21	15
17	219	43	50	39	82	61	10	1,290	450	118	18	16
18	216	48	52	38	91	52	10	350	470	205	15	14
19	222	80	58	34	99	53	20	214	228	282	14	15
20	240	88	64	34	95	44	15	137	328	306	15	21
21	264	84	65	34	89	39	7.6	64	438	794	44	18
22	280	88	64	34	91	34	7.6	46	561	113	110	14
23	272	70	63	33	93	21	62	64	194	306	96	12
24	380	57	62	32	90	7.6	55	73	164	827	142	12
25	386	62	64	34	84	7.6	26	97	450	1,360	130	15
26	402	57	66	39	77	15	19	44	378	194	133	15
27	392	53	68	46	69	12	10	28	306	637	130	12
28	397	62	68	56	62	10	6.8	21	241	250	88	12
29	386	61	55	76	-	9.3	21	21	210	228	38	12
30	386	50	59	95	-----	15	38	43	638	129	19	11
31	355	-----	59	111	-----	24	-----	118	-----	92	15	-----
Total	10,114	2,123	1,535	1,509	2,256	1,755.5	675.3	10,006	11,079	12,408	1,810	389.6
Mean	326	70.8	49.5	48.7	80.6	56.6	22.5	323	369	400	58.4	13.0
Ac-ft	20,060	4,210	3,040	2,990	4,470	3,480	1,340	19,850	21,970	24,610	3,590	773

Calendar year 1961: Max 2,000 Min 7.0 Mean 150 Ac-ft 108,500  
Water year 1961-62: Max 1,360 Min 6.8 Mean 152 Ac-ft 110,400

Note.--Stage-discharge relation affected by ice Dec. 10-25 (no gage-height record Dec. 11-18), Jan. 11-29, Feb. 24 to Mar. 4.

7-1245. Purgatoire River at Trinidad, Colo.

Note.--Records for the 1962 water year not available in time for inclusion in this report. They will be published in a subsequent annual report.

## ARKANSAS RIVER BASIN

7-1250. Purgatoire River near Hoehne, Colo.

Location.--Lat 37°14'50", long 104°23'50", in sec.13, T.32 S., R.63 W., on left bank 5 ft downstream from bridge on county road, 40 ft upstream from diversion dam for Hoehne ditch, 2½ miles southwest of Hoehne, and 8 miles northeast of city hall in Trinidad.

Drainage area.--857 sq mi.

Records available.--September 1954 to September 1962.

Gage.--Water-stage recorder. Datum of gage is 5,740.99 ft above mean sea level, datum of 1929.

Average discharge.--8 years, 30.7 cfs (22,230 acre-ft per year) (7 years, 34.2 cfs, 24,760 acre-ft per year; figure previously published in error).

Extremes.--Maximum discharge during year, 7,240 cfs July 12 (gage height, 6.92 ft); no flow for many days.

1954-62: Maximum discharge, 35,000 cfs May 19, 1955 (gage height, 13.97 ft), from rating curve extended above 180 cfs by logarithmic plotting on basis of flow-over-dam computations at gage heights, 3.2, 4.5, and 7.34 ft; no flow for many days in each year.

Greatest flood known since at least 1859 occurred Sept. 30, 1904.

Revisions.--The maximum discharge for the water year 1961 has been revised to 7,220 cfs July 12 (gage height, 6.91 ft), superseding figure previously published.

Remarks.--Records poor. Discharge measurements or observations of no flow generally made twice a month. Flow partly regulated by off-stream reservoirs and a flood control dam on unnamed creek in Pinon Canyon. Diversions above station for irrigation of about 10,500 acres. Diversion by Hoehne ditch 40 ft below gage is not included in these records.

Revisions.--Revised figures of discharge, in cubic feet per second, for high water periods in water year 1961, superseding figures previously published, are given herewith:

1961		1961-Con.	
Apr. 11.....	184	July 12.....	721
16.....	254	13.....	268
17.....	268	14.....	296
18.....	184	21.....	384

Month	Cfs-days	Maximum	Minimum	Mean	Runoff in acre-feet
April 1961.....	1,624.9	268	0	54.2	3,220
July.....	1,809.7	721	0	58.4	3,590
Water year 1960-61.....	-	721	0	15.5	11,210

Revised peak discharge.--1961: July 12 (2200) 7,220 cfs (6.91 ft); July 21 (1615) 4,200 cfs (5.37 ft).

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	11	0	3.0	1.9	0.3	1.3	1.1	0.6	0.6	1.6	0.9	0
2	9.7	0	3.4	1.7	.5	1.5	.3	1.0	1.5	1.8	.8	0
3	9.6	2.5	3.0	1.6	.6	1.6	.1	1.3	.6	.6	.3	0
4	8.6	3.4	3.0	1.3	.7	9.6	.1	1.3	.3	.3	.2	0
5	8.6	3.4	3.4	.4	.2	9.6	.1	1.8	1.3	1.1	.2	0
6	7.8	3.8	.7	1.5	1.3	4.5	.1	3.1	1.2	.4	.1	0
7	7.0	3.0	.2	3.4	3.8	1.1	.1	2.5	1.7	.9	.1	0
8	7.0	3.0	1.5	1.3	4.3	8.4	.1	3.2	.8	.8	.1	0
9	8.6	3.0	1.7	.3	6.3	.5	.1	2.5	1.6	1.5	.2	0
10	9.5	3.4	1.0	0	9.5	.7	.1	.4	.4	1.0	.6	0
11	7.8	3.4	.5	.2	4.9	.6	.3	.5	1.1	.5	.5	0
12	3.8	3.4	.2	.3	3.5	10	.1	.3	.6	1.420	.6	0
13	1.7	4.3	.2	.2	3.4	7	.1	.8	.4	10	.4	0
14	1.5	6.9	.3	.2	2.6	2.9	.1	7.0	3.3	1.5	.1	0
15	1.1	9.5	.3	.2	3.0	1.4	.8	1.6	2.3	82	.1	0
16	6.7	5.6	.4	.2	2.2	2.3	5.6	8.0	.7	2.3	.1	0
17	2.1	7.0	.6	.1	1.1	.4	1.8	2.5	.2	.5	.1	0
18	1.6	4.9	.8	.1	.6	.3	1.2	1.5	1.3	.2	0	0
19	2.1	4.3	2.0	.1	1.1	.3	4.4	.5	1.2	2.0	0	9.8
20	.6	4.3	2.8	.2	.6	.3	3.5	.5	.5	.4	0	26
21	.2	3.4	3.4	.4	2.8	3.9	4.6	1.3	.6	1.7	3.7	4.4
22	0	4.3	2.6	.7	1.6	.8	2.4	.7	1.6	.4	0	.2
23	.3	9.5	1.7	2.0	.4	.8	.7	.9	.8	7.0	0	.1
24	.2	2.6	1.7	b 3.0	3.6	.7	.8	1.0	.3	2.3	0	.1
25	.9	2.2	1.6	b 2.9	1.5	.6	1.0	1.2	.4	1.6	0	0
26	.3	1.9	1.4	b 2.8	10	.5	.9	.5	1.2	2.3	0	0
27	0	2.2	1.0	b 2.7	11	.5	1.6	.7	.4	6.5	0	0
28	.2	2.2	1.3	b 2.4	12	.4	.5	.9	.5	8.1	0	0
29	.1	2.8	1.7	.4	-	.4	1.3	1.6	.9	1.8	0	0
30	2.1	3.8	2.2	.2	-----	.7	1.1	.4	5.3	.3	0	0
31	.5	-----	1.9	.3	-----	.5	-----	.5	-----	.3	0	-----
Total	121.2	114.0	49.5	33.0	106.9	113.7	62.0	65.0	33.6	157.61	9.1	128.8
Mean	3.91	3.80	1.60	1.06	3.82	3.67	2.07	2.10	1.12	50.8	0.29	4.29
Ac-ft	240	226	98	65	212	226	123	129	67	3,130	18	255

Calendar year 1961: Max 721 Min 0 Mean 14.1 Ac-ft 10,220  
 Water year 1961-62: Max 1,420 Min 0 Mean 6.61 Ac-ft 4,790

Peak discharge (base, 2,000 cfs).--July 12 (1715) 7,240 cfs (6.92 ft); Sept. 19 (2230) 2,040 cfs (4.16 ft).

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 10-20, Jan. 8-23, Feb. 27 to Mar. 2 (stage-discharge relation affected by ice during parts of periods).

## ARKANSAS RIVER BASIN

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7-1251. Frijole Creek near Alfalfa, Colo.

Location.--Lat 37°12'00", long 104°11'40", in NW¼ sec.2, T.33 S., R.61 W., on right bank at downstream side of bridge on U. S. Highway 160, 1 mile upstream from mouth, 4 miles west of Alfalfa, and 16 miles east of city limits of Trinidad.

Drainage area.--80 sq mi.

Records available.--March 1957 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 5,400 ft (from topographic map).

Average discharge.--5 years, 1.70 cfs (1,230 acre-ft per year).

Extremes.--Maximum discharge during year, 710 cfs July 24 (gage height, 6.34 ft), from rating curve extended above 180 cfs on basis of slope-area measurement at gage height 8.81 ft; no flow for many days.  
1957-62: Maximum discharge, 2,310 cfs Aug. 21, 1958 (gage height, 8.81 ft), from rating curve extended above 180 cfs on basis of slope-area measurement of peak flow; no flow for many days each year.  
Flood of June 22, 1954, reached a stage of 17.23 ft, from floodmarks (discharge, 13,500 cfs, from rating curve extended above 8,800 cfs on basis of contracted-opening measurements of peak flow).

Remarks.--Records poor. Discharge measurements or observations of no flow generally made twice a month. Minor diversions above station for irrigation.

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		0			0.1		0	2	3	0	0	0
2		0			.1		0	1	1	0	0	0
3		0			.2		0		.5	0	0	0
4		0			.3		0		0	1.0	0	0
5		0			.2		0	.5	0	.7	0	0
6		0			.5		0		0	.2	0	0
7		0			.6		0		0	0	0	0
8		0			.8		0	1	2.0	0	0	0
9		.1			.8		0	2	.8	0	0	0
10		.1			.6		.1		.2	0	0	0
11		.1			.4		.1		1.0	0	5.0	0
12		.1			.3		0	.5	2.0	0	1.0	0
13		0			.2		0		.8	0	.2	0
14		0			.1		0		.2	0	0	.1
15		0			0		0		0	.1	0	.1
16		0			0		0	2.0	0	.1	0	2.0
17		0			0		0	1.5	0	0	0	.5
18		.1			0		0	1.0	0	0	0	0
19		2			0		0	.6	0	0	0	.3
20		2			0		0	.4	0	0	0	.1
21		.2			0		1.0	.2	0	2	.5	0
22		.1			0		3.0	.1	0	.5	.2	0
23		.1			0		2.5	0	0	16	0	0
24		0			0		2.5	0	0	71	0	.1
25		0			0		2.5	0	0	10	0	0
26		0			0		2.3	0	0	3	0	0
27		0			0		2.0	0	0	1	0	0
28		0			0		.9	0	0	26	0	0
29		0			-		.2	0	0	3	0	0
30		0			-----		1.0	0	0	1	0	0
31		-----			-----		-----	0	-----	1.5	0	-----
Total	0	1.3	0	0	5.2	0	18.1	17.3	11.5	137.1	6.9	3.2
Mean	0	0.04	0	0	0.19	0	0.60	0.56	0.38	4.42	0.22	0.11
Ac-ft	0	2.6	0	0	10	0	36	34	23	272	14	6.3

Calendar year 1961: Max 78 Min 0 Mean 1.83 Ac-ft 1,330  
Water year 1961-62: Max 71 Min 0 Mean 0.55 Ac-ft 398

Peak discharge (base, 200 cfs).--July 24 (0030) 710 cfs (6.34 ft); July 28 (1900) 284 cfs (5.28 ft).

Note.--No gage-height record Oct. 1 to Sept. 30, discharge estimated.



## ARKANSAS RIVER BASIN

7-1255. San Francisco Creek near Alfalfa, Colo.

Location.--Lat 37°11'10", long 104°07'50", in sec.8, T.33 S., R.60 W., on downstream side of right abutment of bridge on U. S. Highway 160, half a mile upstream from mouth, 1½ miles south of Alfalfa, and 20 miles east of Trinidad.

Drainage area.--160 sq mi.

Records available.--October 1954 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 5,320 ft (from topographic map).

Average discharge.--8 years, 9.41 cfs (6,810 acre-ft per year).

Extremes.--Maximum discharge during year, 2,360 cfs July 28 (gage height, 5.76 ft), from rating curve extended above 250 cfs on basis of slope-area measurement at gage height 13.00 ft; no flow for many days.

1954-62: Maximum discharge, 15,500 cfs May 19, 1955 (gage height, 13.00 ft), from rating curve extended above 250 cfs on basis of slope-area measurement of peak flow; no flow for many days in each year.

Flood of July 22, 1954, reached a stage of 14.40 ft, from floodmarks (discharge, 26,300 cfs, by contracted-opening measurement of peak flow).

Remarks.--Records good above 65 cfs and poor below. Discharge measurements or observations of no flow generally made twice a month. Diversions above station for irrigation of about 500 acres.

Discharge, in cubic feet per second, water year October 1961 to September 1962												
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.1	0.6	0.4				0.3	0.3	0	0	2.0	0.1
2	.1	.6	.3				.4	.3	0	0	1.0	.1
3	0	.5	.3				.4	.2	.1	0	.5	.1
4	0	.4	.3		0.6		.4	.2	.1	14	.1	.1
5	0	.4	.2				.3	.2	.1	2.3	0	.1
6	0	.4	.2				.3	.2	.1	.6	0	.1
7	0	.3	.3				.3	.2	0	.2	0	.1
8	0	.4	.3		1.4		.3	.1	105	.1	0	.1
9	0	.4	.4		1.1		.4	.1	5.0	0	0	.1
10	1.6	.4	.4		.7		1.1	.1	2.5	0	0	.1
11	.4	.4			.6	0.1	1.1	.1	1.4	0	3.6	.1
12	.4	.5			.8		.7	.1	56	0	12	0
13	.5	.6			.4		.4	.1	1.1	0	1.3	0
14	.4	.6			.4		.4	.1	.4	0	1.1	0
15	.4	.9		0.6	.3		.4	.1	.1	11	.1	.1
16	.4	1.0			.2		.2	34	0	80	0	.1
17	.5	.8			.1		.3	7.1	0	14	0	.1
18	.6	.8			.1		.4	3.8	0	.8	0	.1
19	.6	.8			.1		.4	1.8	0	.2	0	.1
20	.7	.8	.6		.1		.2	.8	0	.1	0	.1
21	.7	.8			.1		.2	.4	0	0	0	.1
22	.6	.7			.1		.2	.2	0	0	.1	.1
23	.6	.7			.1	.1	.2	.1	0	32	.1	.1
24	.6	.6				0	.2	.1	0	70	.1	.1
25	.5	.6			.1	0	.1	0	0	.3	.1	.1
26	.5	.5				.1	.1	0	0	.2	.1	0
27	.4	.4				.1	.2	0	0	.2	.1	0
28	.4	.4				.1	.1	0	0	292	.1	0
29	.5	.4				.1	.1	0	0	52	.1	0
30	.7	.4				.4	.3	0	0	14	.1	0
31	.8					.4		0		7.6	.1	
Total	13.0	17.1	15.7	18.6	11.3	3.5	10.4	50.7	171.9	591.6	55.1	2.2
Mean	0.42	0.57	0.51	0.6	0.40	0.11	0.35	1.64	5.73	19.1	1.78	0.07
Ac-ft	26	34	31	37	22	6.9	21	101	341	1,170	109	4.4

Calendar year 1961: Max 134 Min 0 Mean 4.64 Ac-ft 3,360

Water year 1961-62: Max 292 Min 0 Mean 2.63 Ac-ft 1,900

Peak discharge (base, 1,000 cfs).--July 28 (1815) 2,360 cfs (5.76 ft).

Note.--Stage-discharge relation affected by ice Nov. 24 to Dec. 10, Jan. 28 to Feb. 4. No gage-height record Dec. 11 to Jan. 27, Feb. 5-7, Feb. 24 to Mar. 22 (stage-discharge relation affected by ice during parts of periods), June 13 to July 3, July 5-14, 17-22, 25-27, July 30 to Aug. 10.

7-1260. Purgatoire River near Alfalfa, Colo.

Location.--Lat 37°11'30", long 104°07'30", in NW¼ sec. 9, T.33 S., R.60 W., on right bank 700 ft downstream from San Francisco Creek, 1½ miles southeast of Alfalfa, and 20 miles east of Trinidad.

Drainage area.--1,320 sq mi.

Records available.--March 1905 to September 1907, March 1924 to September 1928, October 1951 to September 1962. Monthly discharge only for some periods, published in WSP 1311. Published as "Purgatory River" 1905-7.

Gage.--Water-stage recorder. Altitude of gage is 5,280 ft (from topographic map). Mar. 22, 1905, to Sept. 30, 1907, staff gage 650 ft downstream at different datum. Feb. 27, 1924, to Sept. 30, 1928, water-stage recorder 1 mile downstream at different datum. Oct. 1, 1951, to July 5, 1955, water-stage recorder at site 150 ft upstream at datum 3.0 ft higher.

Average discharge.--17 years, 57.4 cfs (41,560 acre-ft per year).

Extremes.--Maximum discharge during year, 3,320 cfs July 12 (gage height, 9.52 ft); minimum daily, 4.2 cfs Sept. 17-19. 1905-7, 1924-28, 1951-62: Maximum discharge, 41,900 cfs May 19, 1955 (gage height, 31.9 ft, from floodmarks, present site and datum), from rating curve extended above 2,700 cfs on basis of slope-area measurements at gage heights 9.79, 13.35, 15.75, 30.60, and 31.9 ft; no flow at times in most years.

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 29,000 acres.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 10-30, Nov. 24 to Jan. 23, June 4-8, July 13-28, Aug. 11 to Sept. 20)

1.6	3.7	2.6	62
1.7	5.5	3.0	125
1.9	11	3.5	245
2.1	18	4.0	415
2.3	28	5.0	805

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	38	27	25	27	b 35	22	24	32	14	86	16	6.0
2	44	25	25	28	b 35	28	23	27	16	45	10	5.8
3	44	26	24	29	b 36	30	22	24	15	35	9.0	5.3
4	39	36	24	26	b 29	b 25	20	23	13	104	8.5	5.3
5	* 32	36	23	* 24	b 26	24	20	22	11	58	8.2	5.0
6	33	32	23	22	b 27	22	20	20	11	52	8.0	4.8
7	32	33	* 24	20	b 29	24	20	21	* 10	38	8.0	4.6
8	32	30	24	19	* b 30	* 23	21	27	110	34	7.8	4.4
9	35	* 30		18	31	26	25	35	50	33	* 7.8	4.4
10	33	34		17	32	24	29	26	36	30	7.8	4.4
11	30	31		22	33	b 25	31	22	33	26	3.0	4.4
12	29	33		29	33	20	* 26	19	122	265	14	4.4
13	27	38		38	34	15	23	18	50	* 244	11	* 4.4
14	24	48		35	28	16	18	18	33	42	9.5	4.4
15	24	44		36	25	17	22	26	31	35	8.5	4.4
16	23	44		34	24	18	22	* 92	27	128	7.5	4.4
17	24	38		31	23	20	31	60	26	50	7	4.2
18	24	38		29	22	21	40	37	25	32	6.5	4.2
19	23	37		27	21	23	34	30	26	31	6	4.2
20	24	34	24	33	22	21	26	26	26	27	1.2	6.7
21	23	* 34		31	* 25	22	26	25	25	32	14	4.2
22	22	35		32	25	15	27	22	30	33	15	2.6
23	21	35		34	25	* 14	24	20	33	39	* 7.8	1.8
24	20	32		* b 32	25	15	20	* 18	27	706	6.2	1.3
25	* 18	27		b 32	25	19	20	15	80	130	6.0	1.0
26	20	26		b 32	22	15	* 22	13	84	* 80	6.0	* 9.5
27	21	26		b 33	19	15	24	13	49	57	6.0	9.5
28	20	26		33	16	15	23	14	34	391	6.0	9.5
29	21	24		34	-	15	22	15	28	68	6.0	9.2
30	26	25		34	-	20	30	15	34	37	6.2	9.2
31	33	-		35	-	25	-	14	-	27	6.2	-
Total	859	984	744	906	757	634	735	789	1,109	2,995	288.5	311.9
Mean	27.7	32.8	24.0	29.2	27.0	20.5	24.5	25.5	37.0	96.6	9.31	10.4
Ac-ft	1,700	1,950	1,480	1,800	1,500	1,260	1,460	1,560	2,200	5,940	572	619

Calendar year 1961: Max 1,340 Min - Mean 47.3 Ac-ft 34,260  
Water year 1961-62: Max 706 Min 4.2 Mean 30.4 Ac-ft 22,040

Peak discharge (base, 2,000 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
7-12	1100	9.52	3,320	7-28	1900	8.72	2,730
7-24	0200	9.46	3,270				

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 9 to Jan. 23, Jan. 28-31, Feb. 9-19, Feb. 21 to Mar. 3, Mar. 12-21 (stage-discharge relation affected by ice during parts of periods), July 29 to Aug. 8, Aug. 13-22.

## ARKANSAS RIVER BASIN

7-1265. Purgatoire River at Ninemile Dam, near Higbee, Colo.

Location.--Lat 37°44', long 103°29', in NW¼ sec.7, T.27 S., R.54 W., on left bank 850 ft upstream from Ninemile Dam, 4 miles southwest of Higbee, and 5½ miles upstream from Smith Canyon.

Drainage area.--2,900 sq mi.

Records available.--October 1924 to September 1962. Monthly discharge only for some periods, published in WSP 1311.

Gage.--Water-stage recorder. Datum of gage is 4,240.59 ft above mean sea level, datum of 1929. Prior to Oct. 28, 1934, water-stage recorder at site 550 ft downstream at datum 0.60 ft higher. Oct. 28, 1934, to May 19, 1955, water-stage recorder (destroyed by flood) at present site and datum. May 25, 1955, to June 13, 1956, staff or chain gages at nearby sites at different datums. June 14 to Dec. 5, 1956, chain gage at present site and datum.

Average discharge.--38 years, 103 cfs (74,570 acre-ft per year).

Extremes.--Maximum discharge during year, 5,890 cfs July 8 (gage height, 5.78 ft); no flow Aug. 19 to Sept. 23, Sept. 30. 1924-62: Maximum discharge, 80,000 cfs May 19, 1955 (gage height, 17.7 ft), from rating curve extended above 21,000 cfs on basis of computation of peak flow over dam; no flow at times.

Remarks.--Records poor. Diversions for irrigation of about 32,000 acres above station.

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8.8	17	28					20	28	6.0	81	292
2	9.2	24	28					25	21	9.2	49	220
3	9.2	31	26	(*)				26	21	8.8	34	155
4	9.6	28	28		30	25		29	22	6.4	19	78
5	*11	22	28					29	20	*5.4	861	65
6	12	22	29					31	15	7.6	352	29
7	11	29	31		52	65		31	13	7.6	89	*14
8	11	29	28		65	68		38	*12	6.4	843	10
9	13	28			68	61	*33	9.6	5.4	249	7.6	0
10	15	*31			63	54	38	8.4	133	33	5.7	0
11	17	28			54	52	38	8.0	118	*8.4	4.2	0
12	20	31			47	49	38	13	52	7.6	2.8	*0
13	22	34			*45	36	42	14	322	166	2.0	0
14	22	31			42	40	40	9.2	302	418	5.7	0
15	20	43			38	31	31	6.0	89	301	11	0
16	17	49		20	36	36	22	59	40	313	*6.0	0
17	14	43			34	28	16	*220	21	*49	3.3	0
18	14	54			34	28	15	168	14	175	.8	0
19	14	47			34	26	17	168	9.2	56	0	0
20	20	40	15		33	24	29	89	*7.6	20	0	0
21	17	*36			29	25	34	45	734	737	*0	0
22	15	34			26	21	34	28	134	63	0	0
23	*17	34			22	21	*29	20	56	26	0	0
24	15	34				19	28	17	45	1,000	0	3.4
25	16	34				20	28	14	292	1,180	0	3.3
26	17	40			20							
27	15	29				*17	21	8.4	675	374	0	1.6
28	14	28				16	15	6.4	282	190	0	.7
29	14	26				15	13	5.7	175	100	0	.8
30	17	28				15	14	5.1	49	205	0	.5
31	16	-----			-----	22	19	4.5	33	466	0	0
					-----	24	-----	3.6	-----	205	0	-----
Total	462.8	984	571	620	1,002	963	823	1,081.9	3,645.6	8,670.0	912.1	10.3
Mean	14.9	32.8	18.4	20	35.8	31.1	27.4	34.9	122	280	29.4	0.34
Ac-ft	918	1,950	1,130	1,230	1,990	1,910	1,630	2,150	7,230	17,200	1,810	20

Calendar year 1961: Max 1,400 Min - Mean 59.1 Ac-ft 42,830  
 Water year 1961-62: Max 1,180 Min 0 Mean 54.1 Ac-ft 39,170

Peak discharge (base, 3,000 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-21	1930	5.27	4,160	7- 8	2200	5.78	5,890
6-25	2300	4.96	3,180				

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 9 to Feb. 6, Feb. 24 to Mar. 6. No gage-height record Aug. 26 to Sept. 10.

7-1285. Purgatoire River near Las Animas, Colo.

Location.--Lat 38°02'02", long 103°12'00", in sec.23, T.23 S., R.52 W., near left bank on downstream side of pier of bridge on State Highway 101, 2.3 miles southwest of courthouse in Las Animas and 4.5 miles upstream from mouth.

Drainage area.--3,503 sq mi.

Records available.--May to September 1889, July to October 1909 (gage heights and discharge measurements only), January 1922 to September 1931, July 1948 to September 1962. Monthly discharge only for some periods, published in WSP 1311. Published as Purgatoire Creek at Las Animas in 1889 and as Purgatory River near Las Animas in 1909.

Gage.--Water-stage recorder. Datum of gage is 3,877.94 ft above mean sea level, datum of 1929. May 22 to Sept. 30, 1889, staff gage, July 31 to Oct. 9, 1909, chain gage, and Apr. 1, 1922, to June 30, 1924, water-stage recorder, at railroad bridge 4 miles downstream at various datums. July 1, 1924, to Sept. 30, 1931, water-stage recorder at present site at various datums and July 23, 1948, to Sept. 30, 1955, at datum 2.00 ft higher.

Average discharge.--23 years (1922-31, 1948-62), 138 cfs (99,910 acre-ft per year).

Extremes.--Maximum discharge during year, 3,900 cfs July 27 (gage height, 5.57 ft); minimum daily, 2.1 cfs Sept. 18. 1889, 1922-31, 1948-62: Maximum discharge, 70,000 cfs May 20, 1955 (gage height, 17.00 ft, present datum), from rating curve extended above 38,000 cfs by logarithmic plotting; no flow at times in 1924-25, 1927, 1949. Greatest flood known occurred Oct. 1, 1904.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Discharge measurements generally made once a week. Diversions for irrigation of about 36,000 acres above station.

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	13	28	36	15	52	12	22	12	6.9	15	276	2.8
2	20	26	32	16	65	13	23	8.5	5.7	58	188	2.6
3	28	32	40	17	78	14	16	6.5	4.5	24	177	2.6
4	30	35	41	17	86	20	16	6.1	4.0	8.2	90	2.8
5	29	45	49	18	92	29	14	5.7	3.2	274	39	2.8
6	29	34	41	18	84	40	15	4.5	3.8	355	17	2.8
7	26	26	38	19	47	43	21	4.2	3.8	174	9.8	2.6
8	23	26	43	20	45	38	21	4.5	5.3	294	9.2	2.6
9	26	30	30	18	58	32	25	6.5	4.1	611	7.6	2.9
10	32	37	15	15	60	32	22	4.2	6.9	68	6.5	2.8
11	34	38	9	10	56	31	19	4.0	14	11	6.5	2.6
12	36	15	7	6.6	43	29	19	3.8	16	7.6	6.2	2.5
13	32	16	7	7.2	34	23	12	4.5	9.2	7.0	5.5	2.3
14	25	27	7.5	6.2	30	60	9.2	3.0	121	38	4.9	2.5
15	5.5	43	7.5	5.2	27	26	7.7	2.5	56	380	3.9	2.3
16	3.8	47	7.5	4.8	25	26	7.3	149	13	201	3.6	2.3
17	20	54	7.5	4.7	24	23	4.9	265	9.2	181	3.2	2.3
18	14	58	8	4.7	24	23	4.5	195	25	50	3.2	2.1
19	16	67	8	4.7	25	41	4.2	112	16	55	3.0	2.5
20	20	84	8	4.7	26	43	4.0	45	7.3	45	3.0	2.6
21	21	70	9	4.7	20	34	4.0	77	3.5	437	2.6	2.4
22	7.6	80	8.5	4.7	17	19	9.8	67	350	174	2.8	2.4
23	14	70	8	4.8	15	17	11	47	50	41	2.8	2.5
24	15	60	8.5	5.0	14	17	9.8	31	14	183	2.9	3.0
25	15	56	8.5	5.8	13	31	6.9	40	9.2	1,250	2.9	4.6
26	17	49	9	7.0	12	23	5.3	67	310	425	2.9	4.6
27	14	47	9.5	10	11	6.1	5.7	67	166	1,310	3.2	3.3
28	14	56	10	15	11	5.3	10	67	110	166	3.2	3.0
29	15	43	12	22	-	5.7	6.5	60	50	165	2.9	2.8
30	15	45	13	27	-----	9.8	9.8	45	22	166	2.8	2.5
31	16	-----	14	40	-----	20	-----	22	-----	218	2.9	-----
Total	625.9	1,344	552.0	377.8	1,094	785.9	365.6	1,436.5	1,456.5	7,391.8	895.0	82.4
Mean	20.2	44.8	17.8	12.2	39.1	25.4	12.2	46.3	48.6	238	28.9	2.75
Ac-ft	1,240	2,670	1,090	749	2,170	1,560	725	2,850	2,890	14,660	1,780	163

Calendar year 1961: Max 1,260 Min 0.5 Mean 44.5 Ac-ft 32,190  
 Water year 1961-62: Max 1,310 Min 2.1 Mean 45.0 Ac-ft 32,550

Peak discharge (base, 6,000 cfs).--No peak above base.

Note.--Stage-discharge relation affected by ice Dec. 9, Dec. 20 to Jan. 8, Jan. 30 to Feb. 5, Feb. 26 to Mar. 2, Mar. 4. No gage-height record Dec. 10-19, Jan. 9-29, Feb. 14-19, 23-25 (stage-discharge relation affected by ice during most of periods).



## ARKANSAS RIVER BASIN

7-1300. John Martin Reservoir at Caddoa, Colo.

Location.--Lat 38°04'05", long 102°56'13", in NE¼NW¼ sec.8, T.23 S., R.49 W., at dam on Arkansas River at Caddoa, 3.2 miles southeast of Hasty and 58 miles upstream from Colorado-Kansas State line.

Records available.--January 1943 to September 1962.

Gage.--Water-stage recorder for elevations above 3,784.17 ft and reference point and tape gage read once daily for those below (corrected). Datum of gage is 3,760.00 ft above mean sea level, datum of 1929 (Corps of Engineers bench mark); gage readings have been reduced to elevations above mean sea level. Prior to 1953 water-stage recorder and staff gage at same datum.

Extremes.--Maximum contents during year, 35,970 acre-ft Apr. 8 (elevation, 3,802.50 ft); no contents for several months.

1943-62: Maximum contents, 360,300 acre-ft July 27, 1958 (elevation, 3,850.44 ft); no contents at times in 1943, 1945-47, 1952-57, 1959-62.

Remarks.--Reservoir is formed by concrete and earth-fill dam. Storage began while dam was under construction prior to 1943, and record of contents began Jan. 1, 1943. Capacity, 645,500 acre-ft at elevation 3,870.00 ft (top of spillway gates), of which 366,600 acre-ft (between elevations 3,769.0 ft, elevation of no contents, and 3,850.97 ft) is for conservation and 278,900 acre-ft (between elevations 3,850.97 and 3,870.00 ft) is reserved for flood control. No dead storage. Figures given herein represent total contents.

Cooperation.--Record of contents furnished by Corps of Engineers.

Month-end elevation and contents, water year October 1961 to September 1962

Date	Elevation (feet)†	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	-	0	-
Oct. 31.....	-	0	0
Nov. 30.....	3,790.70	10,180	+10,180
Dec. 31.....	3,794.03	15,890	+5,710
Calendar year 1961.....	-	-	+9,630
Jan. 31.....	3,796.27	20,440	+4,550
Feb. 28.....	3,799.40	27,710	+7,270
Mar. 31.....	3,802.06	34,720	+7,010
Apr. 30.....	3,782.55	1,500	-33,220
May 31.....	-	0	-1,500
June 30.....	-	0	0
July 31.....	3,791.24	11,020	+11,020
Aug. 31.....	-	0	-11,020
Sept. 30.....	-	0	0
Water year 1961-62.....	-	-	0

† Elevation at 2400.

Location.--Lat 38°05'02", long 102°55'10", in NW¼ sec.4, T.23 S., R.49 W., on left bank 1.1 miles upstream from Caddoa Creek, 1.7 miles downstream from John Martin Dam, and 2.9 miles southeast of Hasty.

Records available.--March 1938 to September 1962. Published as "at Caddoa" prior to October 1947.

Gage.--Water-stage recorder. Datum of gage is 3,737.40 ft above mean sea level, datum of 1929 (Corps of Engineers bench mark). Prior to Feb. 22, 1940, at site 3 miles upstream at datum 22.83 ft higher. Feb. 22, 1940, to Feb. 4, 1943, at site 700 ft upstream at datum 3.64 ft higher than present datum.

Average discharge.--24 years, 355 cfs (257,000 acre-ft per year), adjusted for storage in John Martin Reservoir.

Extremes.--Maximum discharge during year, 1,920 cfs May 18 (gage height, 3.83 ft); minimum daily, 2.8 cfs Jan. 31.  
1938-62: Maximum discharge, 40,000 cfs Apr. 24, 1942 (gage height, 10.46 ft, site and datum then in use), from rating curve extended above 12,000 cfs on basis of flow-over-dam and critical-depth measurement of peak flow; no flow at times in 1945-47; minimum daily prior to construction of John Martin Reservoir, 5 cfs July 16, 1939.

Remarks.--Records excellent. Discharge measurements generally made twice a month during winter and once a week during summer. Storage and diversions above station for irrigation of about 438,000 acres and for flood control. Flow regulated by John Martin Reservoir (see preceding page).

0.3	1.8	1.1	100
.4	4.3	1.5	220
.5	9.0	2.0	440
.6	18	3.0	1,110
.8	43	4.0	2,110

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	296	<u>177</u>	3.6	4.0	<u>3.0</u>	4.0	<u>3.8</u>	808	368	905	592	45
2	314	6.2	3.8	4.3	3.0	4.0	4.0	586	465	598	327	43
3	345	4.3	3.8	4.0	3.0	4.3	4.0	550	502	550	358	43
4	376	4.3	3.8	4.0	3.3	4.3	4.0	405	475	490	435	42
5	381	4.3	3.8	3.8	3.6	<u>3.8</u>	4.0	376	425	532	455	39
6	354	4.0	3.8	3.8	3.6	<u>5.2</u>	4.0	415	405	728	646	38
7	376	3.8	3.8	3.3	3.6	4.0	3.8	470	480	350	860	38
8	445	3.8	3.8	3.6	3.8	4.3	3.8	475	550	228	868	39
9	440	4.0	4.0	3.3	4.0	4.3	518	475	490	556	875	39
10	<u>550</u>	3.8	4.0	3.0	3.8	4.3	830	514	460	696	<u>935</u>	43
11	485	4.0	4.0	3.3	3.8	4.3	748	465	309	336	211	45
12	358	4.3	<u>4.3</u>	3.3	4.0	4.0	716	425	415	480	59	43
13	465	4.3	<u>4.3</u>	3.6	3.8	4.3	716	336	455	538	56	38
14	390	4.3	4.3	3.6	3.8	4.3	754	368	470	485	54	38
15	340	4.3	4.3	3.3	3.8	4.3	774	415	465	580	49	42
16	304	4.3	4.3	3.0	3.8	4.0	787	604	252	610	48	46
17	284	4.3	4.3	3.3	3.8	4.0	800	<u>1,240</u>	318	372	43	39
18	280	4.3	4.3	3.3	3.8	4.0	815	711	514	526	39	46
19	<u>276</u>	4.3	4.3	3.3	4.0	4.0	845	<u>161</u>	368	658	<u>36</u>	43
20	292	4.3	4.3	3.3	3.8	3.8	860	<u>292</u>	314	440	<u>36</u>	46
21	309	4.3	4.3	3.3	<u>4.3</u>	3.8	868	322	368	562	40	<u>48</u>
22	327	4.8	4.3	3.0	<u>4.3</u>	3.8	890	358	580	860	108	46
23	318	4.3	4.3	3.3	4.3	4.0	958	336	562	490	136	43
24	372	4.0	4.3	3.3	4.3	4.0	950	318	<u>248</u>	520	147	42
25	440	3.8	4.3	3.3	4.3	4.0	950	314	368	768	185	43
26	445	<u>3.6</u>	4.3	3.0	4.3	4.0	974	314	475	890	159	43
27	440	3.6	4.3	3.0	4.0	3.8	1,020	309	<u>592</u>	353	168	40
28	430	3.6	4.3	3.0	3.8	3.8	<u>1,040</u>	300	420	508	159	39
29	425	3.6	4.0	3.0	-	4.0	<u>1,010</u>	296	284	709	92	<u>36</u>
30	425	<u>3.6</u>	4.0	3.0	-----	4.3	966	300	<u>372</u>	716	54	36
31	455	-----	4.0	<u>2.8</u>	-----	3.8	-----	333	-----	709	46	-----
Total	11,737	297.4	127.3	104.4	106.7	126.8	18,820.4	13,591	12,769	17,743	8,276	1,251
Mean	379	9.91	4.11	3.37	3.81	4.09	627	438	426	572	267	41.7
Ac-ft	23,780	590	252	207	212	252	37,330	26,960	25,330	35,190	16,420	2,480

Calendar year 1961:	Max	974	Min	1.8	Mean	200	Ac-ft	145,000
Water year 1961-62:	Max	1,240	Min	2.8	Mean	233	Ac-ft	168,500

## ARKANSAS RIVER BASIN

7-1330, Arkansas River at Lamar, Colo.

Location.--Lat 38°06'15", long 102°37'08", in SE¼ sec.30, T.22 S., R.46 W., on right bank 450 ft upstream from bridge on U. S. Highways 50 and 287 and 1.2 miles north of city hall in Lamar.

Drainage area.--19,780 sq mi, of which 950 sq mi is probably noncontributing.

Records available.--May 1913 to September 1955, April 1959 to September 1962. Monthly discharge only for some periods, published in WSP 1311.

Gage.--Water-stage recorder. Datum of gage is 3,599.81 ft above mean sea level, datum of 1929. Prior to June 4, 1941, at site 450 ft downstream on highway bridge at datum 5.07 ft higher. June 4, 1941, to Apr. 3, 1946, at site 1,250 ft downstream and Apr. 4, 1946, to Sept. 30, 1955, at site 600 ft downstream, both at datum 4.07 ft higher.

Average discharge.--45 years, 237 cfs (171,600 acre-ft per year).

Extremes.--Maximum discharge during year, 3,710 cfs July 27 (gage height, 9.69 ft in gage well, 9.84 ft from outside gage); minimum daily, 3.9 cfs Oct. 7, Sept. 13.

1913-55, 1959-62: Maximum discharge, 130,000 cfs June 5, 1921 (gage height, 17.0 ft, present datum), from rating curve extended above 10,000 cfs by logarithmic plotting and confirmed by relationship of discharges at La Junta 60 miles upstream and Syracuse 52 miles downstream; no flow at times in 1913-15, 1953.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Discharge measurements made two or more times a month. Flow regulated by John Martin Reservoir (see elsewhere in this report). Natural flow of stream affected by transmountain diversions, storage reservoirs, power developments, ground-water withdrawals and diversions for irrigation of about 487,000 acres, and return flow from irrigated areas.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Apr. 10)

3.0	2.3	4.0	123
3.1	5.0	5.0	376
3.2	10	6.0	710
3.3	17	7.0	1,260
3.4	26	8.0	2,050
3.6	52		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.5	19	4.4	4.4	5.2	6.5	17	359	11	147	303	4.7
2	5.0	14	4.2	4.4	4.9	6.0	9.5	142	6.5	115	82	4.5
3	4.7	4.1	4.8	4.4	4.8	5.5	7.5	86	37	30	12	4.7
4	4.5	4.2	4.9	4.6	4.6	4.8	7.0	14	56	252	10	5.0
5	4.2	4.5	5.2	4.1	4.5	4.2	7.0	8.0	36	471	13	5.5
6	4.2	4.1	4.8	3.9	4.4	3.0	6.5	9.5	9.5	467	16	6.0
7	3.9	3.3	5.6	4.1	4.4	2.7	6.0	6.5	34	338	295	5.3
8	4.5	3.1	5.6	3.5	4.4	2.5	6.5	8.5	134	37	362	5.0
9	5.2	3.4	5.8	3.2	4.4	2.4	17	7.5	131	11	356	4.7
10	9.7	3.8	5.7	2.8	4.2	2.3	391	15	181	136	376	4.7
11	12.3	3.6	5.6	2.5	4.2	2.3	362	28	54	56	260	4.5
12	4.2	4.1	5.6	2.7	4.2	2.6	370	6.5	294	9.0	14	4.2
13	4.4	5.1	5.5	3.1	4.2	2.5	376	6.5	81	8.0	11	3.9
14	5.8	5.4	5.4	2.9	4.2	2.6	327	5.0	64	9.5	9.5	4.2
15	1.8	5.8	5.3	2.8	4.2	2.5	316	5.0	95	10	8.5	4.2
16	6.5	5.5	5.3	2.5	4.4	2.5	319	32	23	25	8.0	4.2
17	5.0	5.2	5.2	2.5	4.4	2.6	347	204	8.5	11	7.5	4.5
18	5.0	5.2	5.6	2.4	4.5	2.3	339	770	19	9.5	7.5	4.5
19	5.0	5.1	5.7	2.4	4.4	2.3	370	25	52	130	7.5	4.5
20	4.7	5.4	5.8	2.5	4.4	2.3	370	9.5	8.5	11	7.0	4.5
21	4.7	5.4	5.8	2.6	4.2	2.4	388	7.0	7.0	18	7.0	4.5
22	4.7	5.1	5.6	2.7	4.4	2.4	373	6.5	56	167	7.5	4.5
23	5.5	5.2	5.4	3.2	4.5	2.5	430	7.0	257	23	8.0	4.7
24	5.5	5.4	5.2	3.6	5.0	2.3	427	7.0	21	9.0	8.5	4.7
25	2.0	5.6	5.1	3.5	6.0	2.3	430	7.0	6.5	49	8.0	4.7
26	3.4	5.4	4.9	4.2	6.9	2.3	412	7.0	425	234	8.0	4.5
27	1.7	5.4	4.9	5.5	7.0	2.2	452	6.5	162	1,400	8.0	4.2
28	8.5	5.2	4.8	6.2	6.9	2.0	467	5.5	17	176	7.0	4.5
29	6.0	4.8	4.7	6.1	-	1.6	464	5.0	6.0	336	6.5	4.5
30	6.0	4.5	4.6	5.6	-----	1.8	400	5.5	4.5	325	5.5	4.5
31	7.5	-----	4.5	5.2	-----	1.7	-----	5.0	-----	303	5.0	-----
Total	656.6	1,362	1,615	1,141	1,338	879	8,214.0	1,816.5	2,297.0	5,323.0	2,244.5	138.8
Mean	21.2	45.4	52.1	36.8	47.8	28.4	274	58.6	76.6	172	72.4	4.63
Ac-ft	1,300	2,700	3,200	2,260	2,650	1,740	16,290	3,600	4,560	10,560	4,450	275

Calendar year 1961: Max 984 Min 2.6 Mean 49.5 Ac-ft 35,840  
Water year 1961-62: Max 1,400 Min 3.9 Mean 74.0 Ac-ft 53,580

Note.--Stage-discharge relation affected by ice Dec. 10-20, 28, 29, Jan. 7-23, Feb. 24-26, Mar. 12-14. No gage-height record Jan. 24-29, Feb. 27 to Mar. 4 (stage-discharge relation affected by ice during most of periods).

## ARKANSAS RIVER BASIN

101

7-1370, Frontier ditch near Coolidge, Kans.

Location.--Lat 38°02'18", long 102°02'19", in NE¼ sec.21, T.23 S., R.43 W., on left bank 0.3 mile east of Colorado-Kansas State line, 0.5 mile downstream from Holly drain diversion, 1.5 miles west of Coolidge, and 2.3 miles downstream from diversion from Arkansas River.

Records available.--October 1950 to September 1962.

Gage.--Water-stage recorders and Parshall flume. Datum of gage is 3,353.14 ft above mean sea level, datum of 1929.

Extremes.--1950-62: Maximum daily discharge, 70 cfs May 7, 1959; no flow for many days.

Remarks.--Records excellent. This ditch diverts water from Arkansas River in Colorado for use in Kansas. These records and records for Arkansas River near Coolidge represent total flow of Arkansas River at the Colorado-Kansas State line.

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	10	42					0	0	0	14	0	30
2	3.3	26					0	0	0	8.4	31	33
3	2.8	0					0	0	0	20	39	32
4	7.9	0					0	13	0	21	35	48
5	15	0					0	30	0	23	36	47
6	20	5.6					0	28	0	32	36	45
7	14	20					0	36	0	33	25	46
8	22	26					0	49	0	30	33	46
9	26	29					0	49	0	25	20	42
10	37	30					0	46	0	46	46	33
11	26	29					0	54	0	31	42	26
12	49	28					0	60	0	37	37	23
13	42	27					15	57	0	26	27	25
14	43	29					42	*60	0	33	16	25
15	35	34					39	53	0	47	9.7	23
16	35	7.5					*38	42	0	50	8.4	21
17	50	0					25	38	0	54	5.5	26
18	35	0					41	56	0	47	4.1	33
19	30	0					41	3.3	0	38	11	33
20	8.8	0					44	2.5	0	40	24	36
21	0	0					45	1.2	10	33	44	32
22	0	0					43	0	26	39	49	21
23	0	0					*45	0	14	47	42	23
24	0	0					49	22	18	52	40	21
25	9.0	0					49	30	27	42	42	20
26	30	0					47	31	0	39	39	19
27	33	0					52	35	17	49	36	18
28	33	0					56	*35	30	48	32	22
29	38	0					51	33	30	14	30	18
30	37	0					28	36	25	0	30	20
31	40	-----					-----	29	-----	0	29	-----
Total	731.8	333.1	0	0	0	0	750	929.0	197	1,018.4	898.7	887
Mean	23.6	11.1	0	0	0	0	25.0	30.0	6.57	32.9	29.0	29.6
Ac-ft	1,450	661	0	0	0	0	1,490	1,840	391	2,020	1,780	1,760

Calendar year 1961: Max 58 Min 0 Mean 14.8 Ac-ft 10,720

Water year 1961-62: Max 60 Min 0 Mean 15.7 Ac-ft 11,390

\* Discharge measurement made on this day.



## ARKANSAS RIVER BASIN

7-1375. Arkansas River near Coolidge, Kans.

Location.--Lat 38°01'33", long 102°01'00", in NW¼ sec.26, T.23 S., R.43 W., on right bank 1,560 ft upstream from highway bridge, 1 mile south of Coolidge, and 1½ miles downstream from Colorado-Kansas State line.

Drainage area.--25,410 sq mi, of which 1,708 sq mi is probably noncontributing.

Records available.--May to October 1903, March to May 1921, October 1950 to September 1962. Monthly discharge only for some periods, published in WSP 1311.

Gage.--Water-stage recorder. Datum of gage is 3,333.84 ft above mean sea level, datum of 1929. May 5 to Oct. 31, 1903, staff gage on upstream side of bridge 1,560 ft downstream at different datum. Mar. 1 to May 31, 1921, water-stage recorder at bridge 1,560 ft downstream at different datum.

Average discharge.--12 years, 187 cfs (135,400 acre-ft per year).

Extremes.--Maximum discharge during year, 3,650 cfs May 18 (gage height, 5.66 ft); minimum daily, 2.4 cfs Aug. 30. 1903, 1921, 1950-62: Maximum discharge, 60,000 cfs May 15, 1951 (gage height, 10.67 ft), from rating curve extended above 11,000 cfs by logarithmic plotting; no flow for many days in 1903, 1954, 1960.

Remarks.--Records fair except those for periods of ice effect, which are poor. Discharge measurements generally made once a week during December and January and twice a week during rest of year. Combined flow of river and Frontier ditch (see preceding page) represents entire flow that enters Kansas. Flow regulated by John Martin Reservoir (see elsewhere in this report). Natural flow of stream affected by transmountain diversions, storage reservoirs, power developments, ground-water withdrawals and diversion for irrigation of about 500,000 acres, and return flow from irrigated areas.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 22, 23, May 9-15, 18, June 14, 15, Aug. 21 to Sept. 7, Sept. 20)

Oct. 1 to Nov. 7

Nov. 7 to Sept. 30

2.6	86	2.1	1.3	3.1	300
3.0	280	2.2	3.6	3.5	550
3.5	615	2.3	9.0	4.0	960
		2.4	23	4.5	1,500
		2.5	42	5.0	2,210
		2.8	135	5.5	3,100

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	220	127	155	128	202	100	118	390	288	66	676	28
2	146	180	140	121	180	110	114	378	336	75	408	3.1
3	137	240	128	121	150	125	118	282	402	128	270	3.6
4	151	185	140	132	145	150	124	185	440	91	160	7.9
5	156	151	155	132	150	155	132	132	372	104	118	6.8
6	166	151	165	135	160	155	132	100	372	294	91	5.2
7	175	132	175	135	160	155	110	75	578	282	72	4.1
8	166	118	170	124	165	145	107	56	592	276	121	6.3
9	175	114	165	70	165	128	97	40	571	132	202	8.4
10	513	114	130	65	145	121	91	29	537	100	234	4.2
11	255	121	100	80	135	118	270	12	504	118	288	2.3
12	286	124	80	100	132	110	426	90	426	128	282	1.9
13	280	121	80	100	145	124	426	90	402	81	107	2.5
14	265	118	110	93	140	135	348	25	288	61	72	2.7
15	260	150	130	87	155	155	300	27	264	45	64	2.3
16	275	180	132	84	150	145	306	42	218	53	56	2.0
17	260	170	135	81	145	135	324	107	196	104	47	1.2
18	240	175	136	78	150	132	282	2650	218	84	38	7.9
19	215	180	134	75	140	118	288	1330	175	45	40	8.5
20	180	165	135	73	140	118	306	498	128	165	31	1.6
21	190	160	134	71	165	118	300	324	114	104	9.0	2.7
22	175	155	137	68	170	140	288	300	81	72	7.4	2.7
23	156	150	150	87	175	145	288	354	81	114	5.2	4.2
24	156	140	145	106	170	132	360	348	218	229	4.7	2.2
25	132	135	150	125	135	118	342	306	390	128	4.1	1.6
26	118	135	165	144	90	114	330	252	196	104	4.1	1.7
27	142	132	160	163	60	110	336	252	240	537	3.4	1.5
28	156	140	128	183	70	107	348	240	264	870	3.1	1.7
29	161	145	124	204	-	104	390	229	160	420	2.7	1.6
30	137	165	132	224	-----	100	426	185	91	414	2.4	1.7
31	137	-----	140	202	-----	114	-----	202	-----	396	2.7	-----
Total	6,181	4,473	4,260	3,591	4,089	3,936	7,827	9,368	9,142	5,820	3,425.8	563.3
Mean	199	149	137	116	146	127	261	302	305	188	111	18.8
Ac-ft	12,260	8,870	8,450	7,120	8,110	7,810	15,520	18,580	18,130	11,540	6,790	1,120

Calendar year 1961: Max 2,630 Min 3.4 Mean 145 Ac-ft 104,800  
Water year 1961-62: Max 2,650 Min 2.4 Mean 172 Ac-ft 124,300

Note.--Stage-discharge relation affected by ice Dec. 10-22, Jan. 9-29 (no gage-height record Jan. 15-21), Feb. 26 to Mar. 3.

8-2135. Rio Grande at Thirtymile Bridge, near Creede, Colo.

Location.--Lat 37°43'30", long 107°15'20", in NE¼ sec.13, T.40 N., R.4 W., on right bank 70 ft below bridge, 500 ft upstream from Squaw Creek, three-quarters of a mile downstream from Rio Grande Reservoir, and 20 miles southwest of Creede.

Drainage area.--163 sq mi.

Records available.--June 1909 to September 1923, May 1925 to September 1962. No winter records 1910, 1926. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Altitude of gage is 9,300 ft (from topographic map). June 1, 1909, to Apr. 7, 1912, chain gage at site about a quarter of a mile downstream at different datum. Apr. 8, 1912, to Sept. 30, 1923, staff or chain gage 500 ft upstream at different datum. May 16, 1925, to Sept. 30, 1934, water-stage recorder at present site at datum 0.40 ft higher.

Average discharge.--49 years (1910-23, 1926-62), 219 cfs (158,500 acre-ft per year).

Extremes.--Maximum discharge during year, 1,830 cfs June 14 (gage height, 4.32 ft); minimum not determined.

1909-23, 1925-62: Maximum discharge, 7,500 cfs June 28, 1927 (gage height, 7.03 ft, present datum), from rating curve extended above 1,200 cfs; minimum daily, 0.1 cfs Nov. 2-4, 1960.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Flow regulated by Rio Grande Reservoir (capacity, 51,110 acre-ft) since 1912. Natural flow of stream affected by transmountain diversions from Colorado River basin to drainage area above station through Raber-Lohr and Fuchs ditches (see elsewhere in this report). No known diversion above station.

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

0.3	2.0	2.0	200
.4	5.0	2.3	300
.5	8.5	2.6	435
.7	18	3.0	660
1.0	38	4.0	1,490
1.3	67	5.0	2,640
1.7	130		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	107							282	395	1,160	512	63
2	95							320	564	1,070	445	63
3	*92							460	770	898	470	50
4	94							197	730	898	524	42
5	90							21	818	922	570	42
6	86							22	906	978	600	49
7	84							24	986	978	534	57
8	92							26	962	834	425	60
9	117							28	962	882	385	60
10	107							29	1,170	778	430	60
11	116						11	30	1,070	1,010	518	60
12	112							213	898	1,210	588	60
13	109							336	1,270	1,100	606	*60
14	116							293	1,670	858	612	56
15	119							502	1,300	730	540	44
16	121	7	9.4	9.8	10	10		636	826	778	518	37
17	125							524	786	906	507	37
18	125							340	954	994	490	41
19	119							340	1,190	906	490	43
20	117							445	1,290	794	496	52
21	114							11	612	1,150	716	496
22	112							11	612	*1,030	695	445
23	105							11	507	970	746	336
24	105							12	518	1,090	810	276
25	100						*12	648	1,170	746	206	95
26	95							13	*674	1,190	570	142
27	98							14	716	1,070	*425	162
28	89							15	636	1,190	475	100
29	82							16	430	1,260	534	80
30	44							173	340	1,180	540	72
31	2							340		564	65	
Total	3,089	210	291.4	303.8	280	310	508	11,101	30,817	25,505	12,640	1,873
Mean	99.6	7	9.4	9.8	10	10	16.9	358	1,027	823	408	62.4
Ac-ft	6,130	417	578	603	555	615	1,010	22,020	61,120	50,590	25,070	3,720

Calendar year 1961: Max 1,660 Min - Mean 191 Ac-ft 138,300  
 Water year 1961-62: Max 1,670 Min - Mean 238 Ac-ft 172,400

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 31 to Nov. 3. No gage-height record Nov. 4 to Apr. 24 (stage-discharge relation affected by ice during most of period).

## RIO GRANDE BASIN

8-2145. North Clear Creek below Continental Reservoir, Colo.

Location.--Lat 37°53'18", long 107°12'10", in NE¼SW¼ sec.21, T.42 N., R.3 W., on left bank 100 ft below bridge, 1,000 ft downstream from Continental Reservoir, and 15 miles west of Creede.

Drainage area.--51.7 sq mi.

Records available.--May 1929 to September 1962. Monthly discharge only for some periods, published in WSP 1312. Prior to October 1960, published as Clear Creek below Continental Reservoir.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 10,200 ft (from topographic map). Prior to Oct. 2, 1951, at site 150 ft upstream at different datum.

Average discharge.--33 years, 31.5 cfs (22,810 acre-ft per year).

Extremes.--Maximum discharge during year, 201 cfs May 15 (gage height, 2.62 ft); minimum not determined.  
1929-62: Maximum discharge, 362 cfs May 8, 1952 (gage height, 3.66 ft), from rating curve extended above 120 cfs; no flow June 22, 23, 1935.

Remarks.--Records good except those for period of no gage-height record, which are fair. Flow regulated by Continental Reservoir (capacity, 26,720 acre-ft). No diversion above station.

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

0.6	0.5	1.3	16
.7	1.0	1.5	29
.8	2.0	1.8	56
.9	3.5	2.2	112
1.0	5.5	2.7	220
1.1	8.0		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	18							109	104	66	110	16
2	17							109	101	66	125	16
3	*17							114	96	66	119	16
4	18							117	93	66	117	16
5	17							126	94	63	112	16
6	16							130	99	54	109	16
7	17							136	102	54	99	20
8	15							172	107	50	109	19
9	13						0.8	189	109	44	116	18
10	14							172	109	44	134	21
11	15							168	109	91	168	21
12	14							186	109	134	174	15
13	13							198	109	152	168	14
14	14							198	109	161	138	15
15	15							146	109	154	90	15
16	16	0.6	0.6	0.7	0.7	0.8		134	102	152	*69	17
17	17						23	125	74	154	70	16
18	18						44	116	56	125	72	15
19	17						*44	117	65	114	61	15
20	18						44	117	76	125	46	21
21	20						62	117	77	121	41	23
22	19						72	119	*88	114	40	22
23	19						93	107	93	107	40	23
24	25						109	99	93	*102	38	21
25	29						128	107	63	106	35	*20
26	28						154	117	55	96	34	18
27	30						168	116	65	79	22	17
28	34						177	114	66	67	18	17
29	36						179	*114	66	57	17	17
30	23						121	114	67	53	16	16
31	6							114		67	15	
Total	582.6	18.0	18.6	21.7	19.6	24.8	1,430.8	4,117	2,665	2,904	2,522	532
Mean	18.8	0.6	0.6	0.7	0.7	0.8	47.7	133	88.8	93.7	81.4	17.7
Ac-ft	1,160	36	37	43	39	49	2,840	8,170	5,290	5,760	5,000	1,060

Calendar year 1961: Max 225 Min - Mean 28.1 Ac-ft 20,320  
Water year 1961-62: Max 198 Min - Mean 40.7 Ac-ft 29,480

\* Discharge measurement made on this day.

Note.--No gage-height record Nov. 1 to Apr. 16.

8-2165. Willow Creek at Creede, Colo.

Location.--Lat 37°51'20", long 106°55'40", in SE¼ sec.25, T.42 N., R.1 W., on left bank at north city limits of Creede, 8 ft upstream from entrance to paved channel just downstream from Windy Gulch, half a mile downstream from confluence of East and West Willow Creeks, and 2½ miles upstream from mouth.

Drainage area.--35.3 sq mi.

Records available.--May 1951 to September 1962.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 8,880 ft (from topographic map). Prior to Sept. 2, 1953, at site 17 ft upstream at same datum.

Average discharge.--11 years, 22.3 cfs (16,140 acre-ft per year).

Extremes.--Maximum discharge during year, 394 cfs May 12 (gage height, 4.10 ft), from rating curve extended above 250 cfs; minimum not determined.

1951-62: Maximum discharge, 430 cfs June 5, 1957; maximum gage height, 4.16 ft May 23, 1958; minimum daily discharge, 0.2 cfs Mar. 25, 1956, probably caused by snowslide upstream.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions above station for municipal supply of Creede.

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

1.3	3.5	2.0	42
1.4	6.5	2.5	95
1.6	16	3.0	166
1.8	27	4.0	370

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	18	18	9.2				5.6	* 6.8	79	54	20	9.2
2	18	16	8.8				6.5	73	106	* 50	* 19	9.2
3	18	15	8.3				7.8	93	106	49	19	9.2
4	17	14	b 7.5				* 8.3	112	108	47	19	8.8
5	* 1.6	12	b 7				7.8	136	* 114	44	16	* 8.8
6	16	11	b 7		(*)	(*)	7.4	156	117	44	15	9.2
7	16	*b 12	b 6.5				7.4	195	103	40	14	12
8	16	14	6.5				7.4	212	99	37	14	11
9	20	15	6.5				7.4	250	107	36	12	10
10	18	14	6.5				7.4	254	105	34	12	9.2
11	18	13					7.8	250	* 102	33	12	8.3
12	18	13	(*)				8.8	272	106	33	14	8.3
13	18	11				4	12	242	114	35	14	7.8
14	19	14					17	184	103	31	12	8.3
15	20	12		6.5	5		22	144	87	30	12	8.3
16	20	b 10					28	116	75	28	12	9.6
17	20	11					33	100	66	26	12	8.8
18	20	10					41	90	64	26	12	7.8
19	20	b 10					56	94	* 70	28	14	7.4
20	20	b 10					87	110	72	26	17	11
21	20	10	7.5				82	101	70	23	22	16
22	21	9.2					66	81	68	23	17	15
23	20	b 10					61	85	64	23	14	12
24	20	b 9.5					79	* 97	59	27	14	11
25	19	9.6					107	100	57	26	12	12
26	18	9.6				* 5	123	97	58	23	12	11
27	19	b 8.5				5.6	89	95	56	23	11	11
28	18	b 8.5				5.9	93	76	54	22	11	11
29	17	b 8.5				6.2	102	70	56	20	10	10
30	16	8.8				5.3	79	68	56	20	10	9.6
31	18					5.0		70		20	9.6	
Total	572	347.2	231.3	201.5	140	133.0	1,266.6	4,091	2,501	981	433.6	300.8
Mean	18.5	11.6	7.46	6.5	5	4.29	42.2	132	83.4	31.6	14.0	10.0
Ac-ft	1,130	689	459	400	278	264	2,510	8,110	4,960	1,950	860	597

Calendar year 1961: Max 81 Min - Mean 16.5 Ac-ft 11,980  
Water year 1961-62: Max 272 Min - Mean 30.7 Ac-ft 22,210

Peak discharge (base, 120 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-25	2000	2.83	139	6-13	2000	2.87	145
5-12	2000	4.10	394				

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 8 to Mar. 26 (stage-discharge relation affected by ice during part of period).



## RIO GRANDE BASIN

8-2175. Rio Grande at Wagonwheel Gap, Colo.

Location.--Lat 37°46'00", long 106°49'50", in NE¼ sec.35, T.41 N., R.1 E., on right bank 250 ft upstream from private bridge, 0.2 mile upstream from Goose Creek, and 0.3 mile west of town of Wagonwheel Gap.

Drainage area.--780 sq mi.

Records available.--May 1951 to September 1962.

Gage.--Water-stage recorder. Datum of gage is 8,431.26 ft above mean sea level, datum of 1929.

Average discharge.--11 years, 506 cfs (366,300 acre-ft per year).

Extremes.--Maximum discharge during year, 3,060 cfs June 15 (gage height, 4.59 ft); minimum not determined.

1951-62: Maximum discharge, 4,870 cfs July 26, 1957 (gage height, 5.38 ft); minimum daily, 46 cfs Dec. 9, 1956.

Remarks.--Records good except those for periods of ice effect, which are poor. Flow regulated by three reservoirs (total capacity, 121,400 acre-ft). Diversions above station for irrigation. Transmountain diversions to drainage area above station from Colorado River basin (see elsewhere in this report).

Rating table, except period of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Apr. 8 to May 10)

1.1	110	2.5	710
1.3	144	3.0	1,100
1.6	232	4.0	2,200
2.0	415	4.5	2,920

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	306	218	140				130	*1.180	1.340	1.940	1.180	258
2	288	195	130				150	1.280	1.590	*1.950	*1.140	241
3	275	151	120				160	1.530	1.900	1.660	1.130	241
4	271	140	110				*170	1.800	2.030	1.620	1.130	222
5	*271	120	95				170	1.520	*1.870	1.600	1.150	*215
6	266	110	90		(*)	(*)	180	1.650	2.260	1.610	1.180	212
7	258	*120	90				180	1.740	2.320	1.600	1.160	245
8	258	130	90				201	1.740	2.100	1.470	1.040	254
9	440	140	90				205	1.900	2.300	1.400	970	249
10	390	150	90				212	2.000	2.500	1.350	978	236
11	370	150	85				225	1.990	2.470	1.390	1.090	222
12	370	150	*80				266	2.140	1.950	1.750	1.220	215
13	352	130	80			100	342	2.210	2.570	1.870	1.250	212
14	365	110	90				440	1.850	2.780	1.640	1.240	201
15	385	130	100				592	1.840	2.660	1.420	1.110	198
16	400	130		90	110		759	1.950	1.910	1.410	962	195
17	410	130					836	1.830	1.690	1.520	898	195
18	410	120					922	1.510	1.740	1.690	836	192
19	405	110					986	1.420	*2.060	1.700	822	189
20	400	110					1,070	1.580	2.500	1.510	822	198
21	385	110					1,030	1.720	2.360	1.420	822	266
22	390	120					866	1.710	2.170	1.340	801	293
23	365	120	100				801	1.690	2.010	1.360	668	288
24	352	120					874	*1.800	2.060	1.470	574	298
25	347	130					1,030	1.900	2.070	1.530	487	302
26	334	140				*110	1,060	1.850	2.080	1.340	380	266
27	347	130				120	914	2.000	1.950	1.130	352	254
28	342	120				150	946	1.870	1.990	1.060	375	254
29	338	110				170	994	1.560	2.030	1.110	288	249
30	302	120				180	898	1.340	2.110	1.120	280	241
31	258	-----				180	-----	1.350	-----	1.180	258	-----
Total	10,650	3,964	3,080	2,790	3,080	3,410	17,609	53,450	63,370	46,160	26,593	7,101
Mean	344	132	99.4	90	110	110	587	1,724	2,112	1,489	858	237
Ac-ft	21,120	7,860	6,110	5,530	6,110	6,760	34,930	106,000	125,700	91,560	52,750	14,080

Calendar year 1961: Max 2,840 Min 60 Mean 458 Ac-ft 331,300  
Water year 1961-62: Max 2,780 Min - Mean 661 Ac-ft 478,500

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 4 to Apr. 7 (no gage-height record Dec. 12 to Mar. 26).

8-2185. Goose Creek at Wagonwheel Gap, Colo.

Location--Lat 37°45'07", long 106°49'46", in SW¼SE¼ sec.35, T.41 N., R.1 E., on left bank a quarter of a mile downstream from Pierce Creek, 1 mile upstream from mouth, 1 mile south of Wagonwheel Gap, and 8.8 miles southeast of Creede.

Drainage area--90 sq mi, approximately.

Records available--June 1954 to September 1962.

Gage--Water-stage recorder. Altitude of gage is 8,460 ft (from topographic map).

Average discharge--8 years, 59.2 cfs (42,860 acre-ft per year).

Extremes--Maximum discharge during year, 448 cfs May 9 (gage height, 4.03 ft); minimum not determined.

1954-62: Maximum discharge, 645 cfs July 27, 1957 (gage height, 4.44 ft); minimum daily, 9.6 cfs Nov. 15, 16, Dec. 5, 1956. Flood in June 1927 is the greatest known including those in October 1911 and June 18, 1949. Flood in October 1911 probably exceeded that of June 18, 1949, from information by local residents.

Remarks--Records good except those for periods of ice effect or no gage-height record, which are fair. Several small diversions above station for irrigation. Lake Humphreys (capacity, 842 acre-ft) above station with a fixed spillway and no gates has slight effect on flow.

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

2.5	17	3.2	134
2.6	23	3.4	195
2.7	33	3.6	270
2.8	46	4.0	435
2.9	64		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	25	32					24	*150	178	202	55	22
2	23	28					27	152	209	*188	*51	22
3	23	29					32	178	242	174	53	21
4	24	31					38	220	278	170	53	20
5	*24	28		(*)			36	254	*290	160	46	*20
6	24	22			(*)	(*)	42	278	302	150	42	21
7	24	*34					43	322	306	144	41	27
8	25	30					38	362	282	134	38	30
9	68	27					38	386	290	124	37	29
10	48	24					37	386	298	117	36	24
11	40	25				19	43	366	306	108	37	22
12	38	26	(*)		(*)		59	390	322	100	55	21
13	36	24					75	350	334	100	42	21
14	38	20					105	310	326	91	37	21
15	38	19					144	262	298	77	34	23
16	38		17	15	20		174	230	*250	73	34	22
17	38						198	202	223	71	34	23
18	38						209	181	223	75	33	21
19	37						234	178	250	73	36	21
20	36						250	195	270	66	37	23
21	34					18	223	195	266	60	36	34
22	37	(*)				*19	192	178	270	59	41	33
23	33	19				18	184	188	262	60	37	28
24	*31					18	220	*209	254	64	31	26
25	28					18	206	216	234	77	30	27
26	28					*19	234	*216	223	64	29	26
27	28					22	*206	238	223	*59	25	26
28	27					27	223	202	206	57	25	28
29	27					27	226	181	209	53	24	27
30	27					24	174	167	212	53	*23	25
31	33					22		181		60	23	
Total	1,018	684	527	465	560	612	3,934	7,543	7,836	3,063	1,155	734
Mean	32.8	22.8	17	15	20	19.7	131	243	261	98.8	37.3	24.5
Ac-ft	2,020	1,360	1,050	922	1,110	1,210	7,800	14,960	15,540	6,080	2,290	1,460

Calendar year 1961: Max 254 Min - Mean 49.6 Ac-ft 35,960  
 Water year 1961-62: Max 390 Min - Mean 77.1 Ac-ft 55,800

Peak discharge (base, 200 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-20	1900	3.59	278	5-27	0030	3.57	258
4-28	2230	3.59	274	6-13	0030	3.85	370
5-9	2230	4.03	448				

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 14 to Dec. 11. No gage-height record Oct. 1-5, Dec. 12 to Mar. 22 (stage-discharge relation affected by ice during most of period).

8-2195. South Fork Rio Grande at South Fork, Colo.

Location.--Lat 37°39'40", long 106°38'50", in sec.4, T.39 N., R.3 E., on left bank near U. S. Highway 160, a quarter of a mile downstream from Church Creek, 1½ miles upstream from mouth, and 1½ miles southwest of village of South Fork.

Drainage area.--216 sq mi.

Records available.--August 1910 to September 1922, May 1936 to September 1962. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Datum of gage is 8,221.79 ft above mean sea level, datum of 1929. Aug. 9, 1910, to Mar. 28, 1915, staff or chain gage and Mar. 29, 1915, to Sept. 30, 1922, water-stage recorder, at bridges 1 mile downstream at different datums.

Average discharge.--38 years, 215 cfs (155,700 acre-ft per year).

Extremes.--Maximum discharge during year, 1,670 cfs May 12 (gage height, 5.20 ft); minimum not determined.

1910-22, 1936-62: Maximum discharge, 8,000 cfs Oct. 5, 1911 (gage height, 9.7 ft, from floodmarks, present site and datum), from rating curve extended above 1,500 cfs; minimum daily, 14 cfs Nov. 28, 29, 1960.

Maximum stage known since at least 1873, that of Oct. 5, 1911. Flood of June 29, 1927, reached a stage about 1 ft lower than that of Oct. 5, 1911, from information by local resident.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Transmountain diversions from Colorado River basin to drainage area above station through Treasure Pass ditch (see elsewhere in this report). Natural flow of stream affected by a few small diversions for irrigation, slight regulation by Beaver Creek Reservoir (capacity, 4,760 acre-ft) and several smaller storage reservoirs.

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

1.2	39	3.0	415
1.4	57	4.0	850
1.6	80	5.0	1,500
2.0	142	6.0	2,460
2.5	258		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	87	85					74	530	770	570	140	52
2	76	80					90	518	850	522	136	52
3	*78	67					115	578	932	490	139	52
4	75	80					*144	720	1,070	446	139	52
5	73	75		(*)			134	861	1,130	412	125	51
6	72	70					146	996	1,170	384	114	53
7	69	65					162	1,160	1,150	352	110	67
8	68	65					169	1,260	1,110	320	102	67
9	134	80					167	1,350	1,090	289	99	67
10	117	80					153	1,420	1,100	261	96	59
11	103	75					153	1,450	1,140	241	115	56
12	109	77			(*)		186	1,530	1,150	225	155	52
13	98	80					258	1,360	1,150	217	112	49
14	106	70					348	1,120	1,030	200	96	48
15	111	65					474	954	845	178	90	47
16	112		50	45	56	50	602	835	745	164	90	46
17	112						673	755	686	151	90	50
18	109						750	700	673	164	88	43
19	*104						835	691	715	191	95	41
20	100						944	815	800	182	96	49
21	94						878	850	845	169	104	87
22	104	(*)					740	790	*866	162	111	79
23	96	65				(*)	691	866	850	169	102	59
24	90						775	954	800	175	88	53
25	84						840	984	750	182	78	53
26	83						835	*954	705	162	76	52
27	103						780	1,000	682	*155	66	54
28	80						820	850	614	155	66	61
29	78						820	765	606	147	60	61
30	65						624	755	590	141	*53	53
31	80							750		152	53	
Total	2,870	2,089	1,550	1,395	1,568	1,550	14,380	29,121	26,614	7,728	3,084	1,665
Mean	92.6	69.6	50	45	56	50	479	939	887	249	99.5	55.3
Ac-ft	5,690	4,140	3,070	2,770	3,110	3,070	28,520	57,760	52,790	15,330	6,120	3,300

Calendar year 1961: Max 944 Min 15 Mean 161 Ac-ft 116,400  
 Water year 1961-62: Max 1,530 Min - Mean 256 Ac-ft 185,700

Peak discharge (base, 900 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-20	2030	4.42	1,090	5-27	0030	4.35	1,100
5-12	0100	5.20	1,670	6-6	2130	4.72	1,320

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 31, Nov. 1, Nov. 4 to Dec. 11. No gage-height record Dec. 12 to Apr. 3 (stage-discharge relation affected by ice during most of period), July 30 to Aug. 29.

8-2200. Rio Grande near Del Norte, Colo.

Location.--Lat 37°41'20", long 106°27'40", in NW¼ sec.29, T.40 N., R.5 E., on right bank 20 ft downstream from county highway bridge, 5 miles upstream from Pinos Creek, and 6 miles west of Del Norte.

Drainage area.--1,320 sq mi, approximately.

Records available.--June 1889 to September 1962. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Datum of gage is 7,980.25 ft above mean sea level, datum of 1929. Prior to May 16, 1908, staff gage at site 4 miles downstream at different datum. May 16, 1908, to Nov. 8, 1910, staff or chain gage on bridge at present site and datum.

Average discharge.--73 years, 922 cfs (667,500 acre-ft per year).

Extremes.--Maximum discharge during year, 4,760 cfs May 13 (gage height, 4.14 ft); minimum not determined.

1889-1962: Maximum discharge, 18,000 cfs Oct. 5, 1911 (gage height, 6.80 ft), from rating curve extended above 12,900 cfs; minimum daily, 69 cfs Aug. 21, 1902.

Maximum stage known since at least 1873, that of Oct. 5, 1911, from information by local residents.

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. Small diversions above station for irrigation. Flow regulated by Beaver Creek Reservoir since 1910, Santa Maria Reservoir since 1912, Rio Grande Reservoir since 1913, and Continental Reservoir since 1925 (total capacity, 126,100 acre-ft), and by several smaller reservoirs. Transmountain diversions to drainage area above station from Colorado River basin (see elsewhere in 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. 30 to Nov. 2, Nov. 5, 8-12, 15-18, 21, 25, 26, Apr. 29 to May 13)

0.8	180	2.5	1,570
1.1	335	3.0	2,320
1.5	588	4.0	4,240
2.0	1,010	5.0	6,520

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	419	377	220			240	359	2,060	2,300	2,860	1,470	335
2	401	324	210			265	419	2,160	2,660	2,750	1,430	313
3	377	250	215			260	494	2,460	3,060	2,430	1,370	302
4	377	290	203			260	527	3,040	3,440	2,300	1,370	286
5	365	313	208			260	507	2,950	3,310	2,220	1,340	264
6	359	265	198			260	540	3,210	3,760	2,190	1,350	269
7	347	230	193			250	581	3,580	3,970	2,140	1,320	308
8	341	269	212			245	547	3,720	3,600	2,000	1,210	359
9	527	353	242			240	534	4,010	3,800	1,830	1,100	353
10	610	313	208			230	534	4,180	3,970	1,780	1,100	335
11	490	302	208			225	534	4,240	4,140	1,690	1,190	318
12	510	335	200			220	618	4,390	3,600	2,020	1,380	296
13	468	330	190			215	779	4,340	4,090	2,220	1,400	286
14	481	225	200			225	804	3,720	4,180	2,030	1,390	280
15	514	275	210			240	1,260	3,310	4,090	1,760	1,280	275
16	534	286	220	210	225	280	1,650	3,280	3,170	1,670	1,110	264
17	547	296	210			270	1,860	3,060	2,820	1,730	1,070	264
18	547	253	210			260	2,030	2,660	2,770	1,890	992	242
19	534	175	200			250	2,260	2,460	3,080	2,050	974	237
20	527	175	210			245	2,520	2,720	3,560	1,840	964	248
21	514	275	210			235	2,500	2,880	3,620	1,710	955	296
22	527	190	220			230	2,100	2,750	3,460	1,600	955	407
23	514	205	220			220	1,870	2,820	3,290	1,620	848	383
24	481	215	210			248	2,060	3,020	3,230	1,730	729	377
25	474	248	210			208	2,370	3,120	3,190	1,860	634	389
26	462	264	220			242	2,430	3,080	3,140	1,670	547	365
27	455	210	210			335	2,180	3,250	3,040	1,450	455	347
28	449	205	210			407	2,220	3,020	2,910	1,320	468	347
29	455	185	230			443	2,360	2,630	2,970	1,340	401	347
30	474	230	225			395	1,980	2,340	3,100	1,350	353	330
31	425	-----	225			330	-----	2,320	-----	1,470	347	-----
Total	14,505	7,863	6,557	6,510	6,300	8,233	41,427	96,780	101,320	58,520	31,502	9,422
Mean	468	262	212	210	225	266	1,381	3,122	3,377	1,888	1,016	314
Ac-ft	28,770	15,600	13,010	12,910	12,500	16,330	82,170	192,000	201,000	116,100	62,480	18,690

Calendar year 1961: Max 4,050 Min 105 Mean 692 Ac-ft 501,000  
 Water year 1961-62: Max 4,390 Min - Mean 1,066 Ac-ft 771,600

Note.--Stage-discharge relation affected by ice Nov. 3, 4, 6, 7, 13, 14, 19, 20, 22-24, Nov. 27 to Dec. 3, Dec. 12-30. No gage-height record Oct. 10-12, Dec. 31 to Mar. 23 (stage-discharge relation affected by ice during most of period).



8-2205, Pinos Creek near Del Norte, Colo.

Location.--Lat 37°35'30", long 106°26'50", in sec.29, T.39 N., R.5 E., on left bank just downstream from Bennett Creek, 8 miles southwest of Del Norte.

Drainage area.--53 sq mi, approximately.

Records available.--April 1919 to September 1924, May 1936 to September 1962. No winter records prior to 1950 except water years 1941, 1944-47. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder and rectangular box flume. Altitude of gage is 8,350 ft (from topographic map). May 1, 1919, to Sept. 30, 1924, staff gages at sites about 1,000 ft downstream at different datums.

Average discharge.--18 years (1940-41, 1943-47, 1949-62), 23.8 cfs (17,230 acre-ft per year).

Extremes.--Maximum discharge during year, 252 cfs May 10 (gage height, 2.45 ft); minimum not determined.

1919-24, 1936-62: Maximum discharge not determined, occurred June 3, 1922, caused by failure of private fish-lake dam; maximum discharge determined, 720 cfs Aug. 3, 1936 (gage-height, 4.19 ft), by slope-area measurement of peak flow; minimum daily recorded, 1.8 cfs Sept. 26-28, 1951.

Maximum stage known since at least 1903, that of June 3, 1922, from information by local residents.

Remarks.--Records good except those for periods of no gage-height record, which are poor. One small diversion above station.

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

Oct. 1 to Nov. 30

Dec. 1 to Sept. 30

0.2	3.0	0.3	6.0	1.5	118
.3	5.5	.5	15	2.0	185
.5	13	.7	30	2.5	260
.7	26	1.0	60		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Discharge, in cubic feet per second, water year October 1901 to September 1902																					
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.									
1	9.0	9					10	86	105	83	20	7.6									
2	8.3						12	86	111	79	18	7.6									
3	8.3						*14	90	111	67	20	7.2									
4	8.6						14	*118	118	57	20	7.2									
5	9.0						14	134	118	61	16	7.2									
6	8.6	8.6					7	5.5	8	7	14	143	120	53	14	7.2					
7	8.6										17	163	123	50	13	10					
8	8.6										16	182	122	47	12	10					
9	15										16	202	120	45	12	9.6					
10	12										15	209	123	41	12	8.0					
11	10												(*)	17	214	125	38	14	7.6		
12	10													21	216	128	36	26	7.2		
13	9.8													29	204	126	35	15	7.2		
14	9.8													41	181	125	34	14	7.2		
15	10													53	153	120	33	12	8.0		
16	9.8	9				69								134	114	30	12	7.6			
17	9.4					72								124	108	28	14	7.6			
18	9.8					80								118	105	33	14	*6.8			
19	*9.8					98								118	*106	31	14	6.8			
20	10					117								119	106	28	12	8.8			
21	9.8	(*)														112	113	106	25	12	9.6
22	10						96	108	106	25						14	9.6				
23	9.0						94	111	106	29						12	8.4				
24	9.4						108	113	102	32						10	8.4				
25	9.0						122	110	98	33						9.6	8.8				
26	9.8	10								124						110	96	28	9.2	8.4	
27	10									106						113	93	23	8.8	8.4	
28	9.8									116	105	92	22			8.4	8.4				
29	8.0									125	101	92	*20			8.0	8.8				
30	4.8									102	104	87	20			7.6	8.0				
31	9.0										106		22			7.6					
Total	293.0	269.6								217	170.5	224	217			1,844	4,188	3,312	1,188	411.2	243.2
Mean	9.45	8.99								7	5.5	8	7			61.5	135	110	38.3	13.3	8.11
Ac-ft	581	535	430	338	444					430	3,660	8,310	6,570			2,360	816	482			

Calendar year 1961: Max 92 Min - Mean 19.1 Ac-ft 13,840

Water year 1961-62: Max 216 Min - Mean 34.5 Ac-ft 24,960

Peak discharge (base, 120 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-20	2000	1.58	128	5-10	2000	2.45	252
4-25	2000	1.69	142	6-11	2300	1.62	133

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 31 to Nov. 5, Nov. 7 to Apr. 3 (stage-discharge relation affected by ice during most of periods).

RIO GRANDE BASIN

111

8-2215. Rio Grande near Monte Vista, Colo.

Location.--Lat 37°36'30", long 106°08'50", at west line of sec.19, T.39 N., R.8 E., on left bank 25 ft downstream from bridge on U. S. Highway 285, 2 miles north of Monte Vista, and 12 miles downstream from San Francisco Creek.

Drainage area.--1,590 sq mi, approximately.

Records available.--May 1926 to September 1962. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Datum of gage is 7,654.16 ft above mean sea level, datum of 1929. May 1, 1926, to July 5, 1927, staff or slope gage near present site at datum 0.50 ft lower. July 6-22, 1927, chain gage and July 23, 1927, to Feb. 22, 1934, water-stage recorder, near present site at datum 0.50 ft higher. Feb. 23, 1934, to Aug. 19, 1936, water-stage recorder at present site and datum. Aug. 20 to Dec. 30, 1936, water-stage recorder at site 75 ft downstream at present datum. Dec. 31, 1936, to Apr. 2, 1937, water-stage recorder at present site and datum. Apr. 3, 1937, to June 14, 1938, water-stage recorder at site 75 ft downstream at present datum.

Average discharge.--36 years, 330 cfs (238,900 acre-ft per year).

Extremes.--Maximum discharge during year, 1,970 cfs May 13 (gage height, 5.29 ft), from rating curve extended above 1,200 cfs; minimum daily, 8.9 cfs Oct. 4, 5.  
1926-62: Maximum discharge, 18,500 cfs June 30, 1927 (gage height, 7.35 ft, present datum, from floodmarks); minimum daily, 1.5 cfs Apr. 14, 1959.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Diversions above station for irrigation of about 90,000 acres. Flow regulated by Beaver Creek, Santa Maria, Rio Grande, and Continental Reservoirs (total capacity, 126,100 acre-ft), and by several smaller reservoirs. Transmountain diversions to drainage area above station from Colorado River basin (see elsewhere in this report).

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Nov. 27 to Dec. 9)

2.0	4.0	2.4	59	3.5	545
2.1	11	2.7	133	4.0	890
2.2	23	3.0	254	5.0	1,690

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	13	426	236			210	269	305	834	904	175	87
2	15	378	222			230	300	486	862	820	167	97
3	10	322	231			240	167	500	974	694	153	85
4	8.9	285	*196	(*)		240	116	*715	1,130	666	183	82
5	8.9	344	153			208	92	558	799	631	140	85
6	*9.6	295	140			192	61	590	799	597	116	87
7	25	285	140			164	97	855	946	552	116	97
8	51	295	164			160	104	974	778	512	118	121
9	97	372	175			133	127	1,170	939	500	116	107
10	295	322	171			157	76	1,340	1,060	538	147	82
11	130	254				175	48	1,370	1,230	384	171	59
12	116	274				188	25	1,480	995	450	236	59
13	116	300				167	97	1,690	1,180	506	150	59
14	85	236				167	92	1,170	1,240	456	99	67
15	121	222				171	249	960	1,250	343	99	70
16	136	*269		165	200	147	584	1,190	1,050	236	102	72
17	107	280				153	785	1,050	925	200	90	78
18	74	226				157	855	897	*729	217	116	63
19	*48	183				157	974	876	848	338	167	61
20	42	140				124	1,000	1,050	1,010	280	113	67
21	46	204				133	1,040	1,090	1,010	183	118	87
22	53	226			(*)	94	771	1,030	904	167	118	97
23	150	153				*70	584	1,030	904	204	127	57
24	70	179				53	390	1,020	939	245	92	53
25	38	196				50	349	1,020	932	295	97	51
26	48	236				57	310	995	911	*231	118	*50
27	35	213				61	259	1,010	904	188	113	40
28	46	196				76	396	974	848	150	80	46
29	65	179				113	604	862	820	167	*127	46
30	167	204				140	408	827	932	175	104	44
31	486					274		862		183	80	
Total	2,712.4	7,694	5,188	5,115	5,600	4,661	11,229	29,946	28,682	12,012	3,948	2,156
Mean	87.5	256	167	165	200	150	374	966	956	387	127	71.9
Ac-ft	5,380	15,260	10,290	10,150	11,110	9,240	22,270	59,400	56,890	23,830	7,830	4,280

Calendar year 1961: Max 1,270 Min 4.0 Mean 228 Ac-ft 165,300  
Water year 1961-62: Max 1,690 Min 8.9 Mean 326 Ac-ft 235,900

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 10 to Mar. 2 (no gage-height record Dec. 12 to Jan. 24).

## RIO GRANDE BASIN

8-2230. Rio Grande at Alamosa, Colo.

Location.--Lat 37°29', long 105°53', in SE¼ sec.4, T.37 N., R.10 E., on right bank a quarter of a mile northwest of city limits of Alamosa and 9 miles upstream from Alamosa Creek.

Drainage area.--1,710 sq mi, approximately.

Records available.--May 1912 to September 1962. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Datum of gage is 7,532.66 ft above mean sea level, datum of 1929. Prior to Apr. 7, 1915, staff or chain gage and Apr. 7, 1915, to Nov. 5, 1935, water-stage recorder, at railroad and highway bridges in Alamosa 1 to 2½ miles downstream at different datums. Nov. 6, 1935, to June 30, 1942, water-stage recorder at present site at datum 1.00 ft higher.

Average discharge.--50 years, 268 cfs (194,000 acre-ft per year).

Extremes.--Maximum discharge during year, 1,160 cfs Apr. 22 (gage height, 4.77 ft), from rating curve extended above 310 cfs; minimum daily, 20 cfs Oct. 8.

1912-62: Maximum discharge, 14,000 cfs July 1, 1927 (gage height, 8.37 ft, site and datum then in use); maximum gage height, 10.62 ft June 20, 1949; minimum daily discharge, 1.0 cfs May 19, 1950.

Flood in October 1911 (stage, 0.2 ft lower than July 1, 1927, from floodmark) probably exceeded that of July 1, 1927, and is probably the greatest known since at least 1884, from information by local resident.

Remarks.--Records good except those for periods of ice effect, which are poor. Natural flow of stream affected by transmountain diversions, storage reservoirs, ground-water withdrawals and diversions for irrigation, and return flow from irrigated areas.

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

1.1	17	2.5	230
1.3	33	3.0	375
1.5	55	4.0	750
2.0	131	4.6	1,060

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	24	468				200	333	183	131	148	64	49
2	23	522				210	363	117	134	195	58	44
3	23	468				230	384	167	167	177	50	41
4	22	402				240	270	175	218	131	47	40
5	22	372				230	199	276	321	141	44	35
6	*21	426				270	175	162	148	155	42	33
7	21	372				240	143	162	114	143	36	34
8	20	354				220	158	*321	156	118	34	35
9	22	399				210	162	378	97	103	31	38
10	22	475				191	179	550	121	103	28	42
11	62	416				183	145	666	181	141	28	44
12	50	351				178	123	690	303	97	28	44
13	43					170	106	760	179	97	29	40
14	42					165	143	855	285	104	39	36
15	35					175	153	436	384	92	39	35
16	29	(*)	200	190	300	185	330	387	482	86	33	33
17	26					199	562	440	412	85	29	34
18	25					193	746	291	*267	98	27	34
19	25					195	910	189	138	91	26	34
20	25		(*)			197	980	212	136	108	24	37
21	23	250				175	1,040	318	177	88	26	38
22	21				(*)	175	1,040	245	183	78	26	38
23	23					*151	690	225	125	72	30	40
24	55					128	399	225	115	72	38	43
25	*60					115	285	179	128	*76	39	38
26	37				(*)	110	220	151	129	85	38	33
27	35					109	165	133	120	82	38	30
28	35					112	110	128	126	74	*39	28
29	47					118	145	110	108	72	66	28
30	67					146	321	98	100	66	67	28
31	143					201		103		66	53	
Total	1,128	9,525	6,200	5,890	8,400	5,621	10,979	9,332	5,685	3,244	1,196	1,106
Mean	36.4	318	200	190	300	181	366	301	190	105	38.6	36.9
Ac-ft	2,240	18,890	12,300	11,680	16,660	11,150	21,780	18,510	11,280	6,430	2,370	2,190

Calendar year 1961: Max 522 Min 20 Mean 105 Ac-ft 75,670

Water year 1961-62: Max 1,040 Min 20 Mean 187 Ac-ft 135,500

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 13 to Mar. 9, Mar. 12-16.

RIO GRANDE BASIN

113

Closed basin in San Luis Valley, Colo.

8-2245. Kerber Creek at Ashley Ranch, near Villa Grove, Colo.

Location.--Lat 38°15', long 106°08', in sec.7, T.46 N., R.8 E., on left bank at Ashley Ranch, 5 miles upstream from Little Kerber Creek and 10 miles west of Villa Grove.

Drainage area.--38 sq mi, approximately.

Records available.--June 1923 to September 1926 (published as Kerber Creek near Villa Grove), May 1936 to September 1962. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Altitude of gage is about 9,300 ft (from topographic map).

Average discharge.--29 years, 13.1 cfs (9,480 acre-ft per year).

Extremes.--Maximum discharge during year, 107 cfs May 13 (gage height, 2.25 ft); maximum gage height recorded, 2.58 ft Nov. 4 (backwater from ice); minimum discharge not determined.  
1923-26, 1936-62: Maximum discharge, 407 cfs May 14, 1941, from rating curve extended above 140 cfs; maximum gage height, 5.04 ft May 11, 1947 (backwater from beaver dam); minimum daily discharge recorded, 0.2 cfs Sept. 3, 1950.  
Maximum discharge known since at least 1872, that of May 14, 1941, from information by local residents.

Remarks.--Records poor. No diversion 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 15-25, July 30 to Sept. 20)

Oct. 1 to Mar. 31			Apr. 1 to Sept. 30		
1.6	2.2		1.1	1.0	1.6
1.7	5.0		1.2	2.5	1.8
1.9	14		1.3	5.5	2.0
			1.4	10	2.2
					99

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.7							53	36	12	5.5	2.8
2	6.6							49	34	17	5.5	2.5
3	5.0							50	34	16	5.5	3.1
4	5.0							53	33	7.8	5.5	2.8
5	5.0							56	33	9.1	4.9	3.1
6	4.7							61	32	16	4.9	2.8
7	4.7		(*)					64	31	12	5.2	3.1
8	4.7							67	28	16	4.6	4.0
9	12							70	27	17	4.6	3.1
10	*7.4							73	27	12	4.6	2.8
11	6.2				(*)			74	27	12	4.3	2.8
12	5.8							87	27	16	4.3	2.8
13	5.8						28	87	30	19	4.3	3.1
14	5.4	(*)						76	27	14	4.3	3.1
15	5.4							64	24	17	4.0	3.1
16	5.4	4	4.5	3.5	4	4.5		55	22	18	4.0	3.1
17	5.8							50	19	12	4.3	3.4
18	5.4							51	17	9.1	4.3	2.8
19	5.4							47	17	9.6	3.7	2.2
20	5.4							51	17	9.6	4.0	2.8
21	5.0					(*)		51	19	9.1	4.3	* 5.2
22	5.0							49	25	10	4.0	5.2
23	5.0							45	22	11	4.0	4.6
24	5.0							44	21	14	3.4	4.3
25	5.0							*45	21	8.6	3.1	5.0
26	5.4						* 87	45	16	* 7.8	2.8	5.0
27	5.0						83	46	16	5.5	2.8	4.2
28	4.7						80	45	*20	5.2	3.4	3.5
29	3.3						71	43	20	5.2	2.8	3.1
30	6						61	38	15	4.6	2.8	2.8
31	9							37		4.3	2.8	
Total	174.2	120	139.5	108.5	112	139.5	1,082	1,726	737	356.5	128.5	102.2
Mean	5.62	4	4.5	3.5	4	4.5	36.1	55.7	24.6	11.5	4.15	3.41
Ac-ft	346	238	277	215	222	277	2,150	3,420	1,460	707	255	203

Calendar year 1961: Max 40 Min - Mean 7.84 Ac-ft 5,680  
Water year 1961-62: Max - Min - Mean 13.5 Ac-ft 9,770

Peak discharge (base, 70 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
#	Unknown	Unknown	+100	5-13	1230	2.25	107
##	Unknown	Unknown	+90				

# Apr. 20 or 21.

## Apr. 25 or 26.

† About.

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 3, 4, 23-26, Oct. 30 to Nov. 5. No gage-height record Nov. 6 to Apr. 26 (stage-discharge relation affected by ice during most of period), Sept. 23-30.



## RIO GRANDE BASIN

Closed basin in San Luis Valley, Colo.

8-2270. Saguache Creek near Saguache, Colo.

Location.--Lat 38°10', long 106°17', in SE¼ sec.10, T.45 N., R.6 E., on left bank just upstream from Ford Creek, 10 miles northwest of Saguache.

Drainage area.--595 sq mi.

Records available.--August 1910 to September 1912, June 1914 to September 1962. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Altitude of gage is about 8,050 ft (estimated from nearby U. S. Coast and Geodetic Survey level line). Prior to Apr. 9, 1934, at sites three-quarters of a mile downstream at different datums.

Average discharge.--50 years, 71.8 cfs (51,980 acre-ft per year).

Extremes.--Maximum discharge during year, 287 cfs May 13 (gage height, 1.46 ft); minimum not determined.  
1910-12, 1914-62: Maximum discharge, 756 cfs May 2, 1928 (gage height, 5.10 ft, site and datum then in use), from rating curve extended above 250 cfs; minimum daily recorded, 8.2 cfs Dec. 22, 1950, Aug. 17, 1951.  
Greatest flood known occurred in 1869. Flood in 1884 or 1886 exceeded that of May 2, 1928, from information by local residents.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Natural flow of stream affected by transmountain diversions from Colorado River basin to drainage area above station through Tarbell ditch (see elsewhere in this report) and diversions above station for irrigation.

Revisions.--Records for May and June 1951 are in error. Revised records for this period are on file in District Office and will be published in a later water supply paper.

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

0.4	26	0.9	108
.6	50	1.2	195
.7	66	1.5	303

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	33	56					32	130	130	135	64	34
2	32	49					40	130	127	127	60	33
3	30	32					50	130	138	122	61	33
4	33	44					70	152	141	116	74	32
5	35	47				28	52	161	135	113	66	30
6	35	30					44	173	141	116	53	29
7	34	30	(*)				38	*198	144	113	49	35
8	32	38					33	225	144	101	46	49
9	62	53				26	28	228	135	96	45	44
10	*55	50			28	27	36	235	138	92	45	37
11	46	41			(*)	30	37	242	138	83	41	35
12	42	47				34	37	246	144	90	42	33
13	41	35				28	44	246	147	108	49	30
14	41	*30				32	68	260	158	103	45	30
15	44	46				33	92	218	155	94	42	33
16	45	52	14	16		38	108	189	144	83	40	34
17	44	47				35	127	173	135	79	40	36
18	42	41				34	138	164	130	76	40	32
19	41	41				32	170	155	130	79	44	29
20	41	38				32	218	147	*138	77	58	26
21	41	34			28	*30	212	150	141	70	55	47
22	41	30			33	30	152	147	144	61	61	60
23	41	31			34	35	127	147	144	63	60	50
24	38	33			29	38	132	147	138	74	55	42
25	37	34			34	36	164	150	138	106	49	40
26	37	34			28	44	161	150	132	*106	44	*38
27	38	25			29	55	144	155	132	79	38	40
28	38	20			28	53	144	158	127	76	37	41
29	42	18			-	55	158	147	122	74	35	40
30	40	19			-----	60	152	122	135	64	*35	36
31	55	-----			-----	38	-----	124	-----	64	34	-----
Total	1,256	1,125	434	496	803	1,079	3,008	5,399	4,145	2,840	1,507	1,108
Mean	40.5	37.5	14	16	28.7	34.8	100	174	138	91.6	48.6	36.9
Ac-ft	2,490	2,230	861	984	1,590	2,140	5,970	10,710	8,220	5,630	2,990	2,200

Calendar year 1961: Max 130

Min -

Mean 43.1

Ac-ft 31,190

Water year 1961-62: Max 260

Min -

Mean 63.6

Ac-ft 46,020

Peak discharge (base, 210 cfs)-- Apr. 20 (1900) 284 cfs (1.45 ft); May 13 (2300) 287 cfs (1.46 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 22 to Feb. 20, Mar. 1-8. No gage-height record Oct. 1-10, Jan. 2-5, 20, 21, Jan. 24 to Feb. 11 (stage-discharge relation affected by ice during most of periods).

Closed basin in San Luis Valley, Colo.

8-2275. North Crestone Creek near Crestone, Colo.

Location.--Lat 38°00'49", long 105°41'32", on right bank in canyon, 1½ miles northeast of Crestone, Saguache County, and 3½ miles upstream from South Crestone Creek.

Drainage area.--10.7 sq mi.

Records available.--May 1936 to September 1962 (no winter records prior to 1948).

Gage.--Water-stage recorder. Altitude of gage is 8,360 ft (from topographic map).

Average discharge.--15 years (1947-62), 10.7 cfs (7,750 acre-ft per year).

Extremes.--Maximum discharge during year, 55 cfs May 12 (gage height, 1.72 ft); minimum not determined.

1936-62: Maximum discharge, 735 cfs Aug. 6, 1936 (gage height, 4.33 ft), from rating curve extended above 160 cfs on basis of slope-area measurement of peak flow; minimum daily recorded, 0.4 cfs Apr. 3, 1945.

Maximum stage known probably since at least 1884 occurred in October 1911. No flood since that in October 1911 has exceeded the flood of Aug. 6, 1936, from information by local residents.

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

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Sept. 9-27)

0.9	1.3	1.4	20
1.0	3.0	1.6	39
1.1	5.5	1.8	66
1.2	9.0		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6.6	4.8	2.5				2.8	15	19	26	6.6	2.0
2	6.6	4.8	2.3				*3.2	13	21	25	6.2	2.0
3	6.2	6.2	2.3				3.5	14	22	22	5.8	2.0
4	5.8	4.5					4.2	16	25	20	5.8	1.8
5	5.8	4.0					3.8	18	26	18	5.2	1.8
6	5.5	5.0					3.8	24	32	17	5.0	2.0
7	5.5	4.5	(*)				3.8	31	35	16	5.8	3.2
8	5.2	3.8					3.8	36	31	15	4.5	3.2
9	6.2	3.5					3.5	40	35	15	4.5	2.7
10	*6.2	3.5					3.5	43	36	14	4.2	2.5
11	6.6	3.2			(*)		3.5	46	37	12	4.5	2.3
12	6.2	3.5					3.8	48	37	14	4.2	2.2
13	6.2	3.5					5.0	44	38	12	4.2	2.0
14	6.6	*4.2					7.2	36	37	11	4.0	2.0
15	6.6	4.0					11	28	29	9.5	3.8	2.0
16	6.6	3.8		1.8	2.2	2.3	15	25	24	9.0	3.8	2.2
17	6.6	3.8	2.5				17	22	21	8.6	3.5	1.8
18	6.6	3.5					20	22	20	8.3	3.2	1.6
19	6.6	3.0					28	21	21	8.3	3.2	1.6
20	6.2	3.0					32	22	26	8.0	3.2	2.8
21	5.8	3.0					27	20	26	7.6	3.2	*4.8
22	5.8	3.0					21	18	25	8.3	3.8	4.2
23	5.5	2.8					19	18	23	9.0	3.8	3.8
24	5.5	2.8					26	22	24	8.6	3.2	3.8
25	5.5	2.7					34	*22	25	*8.3	2.8	3.8
26	5.2	2.7					30	22	25	8.0	2.7	3.8
27	5.2	2.7					24	22	22	7.2	2.5	3.8
28	4.5	2.7					26	19	22	6.9	2.3	4.0
29	4.8	2.7					25	18	22	6.9	2.2	3.8
30	5.2	2.7					19	17	25	7.2	2.0	3.5
31	4.8	-----					-----	19	-----	7.2	2.0	-----
Total	182.9	107.9	77.1	55.8	61.6	71.3	429.4	781	811	373.9	121.7	83.0
Mean	5.90	3.60	2.49	1.8	2.2	2.3	14.3	25.2	27.0	12.1	3.93	2.77
Ac-ft	363	214	153	111	122	141	852	1,550	1,610	742	241	165

Calendar year 1961: Max 56 Min - Mean 10.7 Ac-ft 7,730  
 Water year 1961-62: Max 48 Min - Mean 8.65 Ac-ft 6,260

Peak discharge (base, 60 cfs).--No peak above base.

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 13-15, 19, 20, 29, Dec. 4-9. No gage-height record Dec. 10 to Apr. 2 (stage-discharge relation affected by ice during most of period).

## RIO GRANDE BASIN

Closed basin in San Luis Valley, Colo.

8-2305. Carnero Creek near La Garita, Colo.

Location.--Lat 37°52', long 106°19', in sec.28, T.42 N., R.6 E., on left bank 4 miles northwest of La Garita and 5½ miles downstream from North Fork.

Drainage area.--117 sq mi.

Records available.--April 1919 to September 1962. No winter records prior to water year 1945 except water years 1926, 1941. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Altitude of gage is 8,200 ft (from topographic map). Prior to Aug. 6, 1925, staff gage or water-stage recorder at site 300 ft downstream at different datum. Aug. 6, 1925, to Apr. 20, 1929, staff gage or water-stage recorder at present site and datum.

Average discharge.--20 years (1925-26, 1940-41, 1944-62), 11.0 cfs (7,960 acre-ft per year).

Extremes.--Maximum discharge during year, 299 cfs Apr. 20 (gage height, 2.32 ft), from rating curve extended above 71 cfs; minimum daily, 1.4 cfs Aug. 31, Sept. 1, 6.  
1919-62: Maximum discharge, 1,600 cfs July 21, 1945 (gage height, 5.75 ft), from rating curve extended above 160 cfs; no flow for several days during summer months in 1951, 1955-56.

Remarks.--Records poor prior to June 15 and fair thereafter. Diversions above station for irrigation.

Rating tables, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Apr. 18 to May 9)

Oct. 1 to Mar. 25

Mar. 26 to Sept. 30

0.3	2.3	0.1	0	0.7	27
.4	4.4	.2	1.7	1.0	62
.5	9.0	.3	4.1	1.5	145
		.5	13		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.9	4.4					12	38	21	7.8	5.3	1.4
2	4.9	3.8					13	38	21	7.8	5.3	1.5
3	4.9	4.0					15	38	19	8.2	6.2	1.5
4	4.4	3.8					14	44	18	8.2	6.6	1.5
5	4.4	3.6					13	48	18	9.6	6.6	1.5
6	4.9						12	54	17	9.6	4.9	1.4
7	4.4						14	62	17	8.2	3.9	2.4
8	4.4						12	66	17	7.4	3.4	4.1
9	8.5						11	70	17	7.0	3.1	3.9
10	* 7.6						11	* 72	17	7.4	3.1	3.4
11	4.4						12	72	17	6.2	2.7	2.7
12	3.8						15	65	15	5.7	2.7	2.2
13	3.1						25	65	14	8.2	3.6	2.2
14	2.9						43	59	14	7.4	3.1	1.7
15	2.9						65	52	14	6.2	2.4	2.2
16	3.1						90	47	13	5.3	2.2	2.4
17	3.1						109	43	13	5.3	2.4	2.4
18	3.1						118	39	13	4.9	3.6	2.2
19	2.9						137	35	12	7.0	4.9	1.9
20	2.7						139	32	* 12	6.6	8.7	3.1
21	2.5							99	29	11	4.5	5.3
22	3.4							53	27	11	3.6	5.3
23	3.8							43	26	9.6	4.1	6.6
24	4.2							65	25	9.6	7.4	6.2
25	3.8							82	23	9.6	13	4.5
26	3.1							6	79	22	9.6	13
27	2.7							8	57	22	9.2	9.2
28	2.7							11	59	22	9.2	* 7.4
29	2.9							* 13	66	21	8.7	7.0
30	2.5							12	56	20	8.7	6.2
31	5.3							12	-----	21	-----	6.6
Total	122.2	112.1	71.3	68.2	126.0	149.5	1,539	1,297	415.2	226.0	129.0	92.2
Mean	3.94	3.74	2.3	2.2	4.5	4.82	51.3	41.8	13.8	7.29	4.16	3.07
Ac-ft	242	222	141	135	250	297	3,050	2,570	824	448	256	183

Calendar year 1961: Max 57 Min - Mean 7.19 Ac-ft 5,210

Water year 1961-62: Max 139 Min 1.4 Mean 11.9 Ac-ft 8,620

Peak discharge (base, 110 cfs)--Apr. 20 (0030) 299 cfs (2.32 ft); Apr. 25 (0100) 124 cfs (1.60 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 3-20, Mar. 31 to Apr. 2. No gage-height record Nov. 21 to Mar. 29 (stage-discharge relation affected by ice during most of period).

Closed basin in San Luis Valley, Colo.

8-2310. La Garita Creek near La Garita, Colo.

Location--Lat 37°48'50", long 106°19'10", in sec.9, T.41 N., R.6 E., on right bank 4 miles southwest of La Garita and 4½ miles downstream from Little La Garita Creek.

Drainage area--61 sq mi, approximately.

Records available--April 1919 to September 1962. No winter records prior to water year 1948 except water years 1926, 1941, 1945-46. Monthly discharge only for some periods, published in WSP 1312.

Gage--Water-stage recorder. Altitude of gage is 8,030 ft (from topographic map). Apr. 1, 1919, to June 23, 1927, staff gages and June 24, 1927, to Nov. 13, 1935, water-stage recorder, at sites within a quarter of a mile downstream at different datums.

Average discharge--19 years (1925-26, 1940-41, 1944-46, 1947-62), 12.6 cfs (9,120 acre-ft per year).

Extremes--Maximum discharge during year, 179 cfs May 6 (gage height, 1.47 ft); minimum not determined.

1919-62: Maximum discharge, 530 cfs July 9, 1957 (gage height, 3.00 ft), from rating curve extended above 140 cfs; minimum daily recorded, 0.2 cfs Sept. 28, 29, 1956.

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

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

0.2	1.5	0.6	19
.3	4.0	.8	38
.4	7.5	1.0	66
.5	12	1.5	172

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.4	4.8					8.8	52	35	12	9.3	4.4
2	4.0	4.4					9.3	56	36	13	8.0	5.0
3	3.8	4.4					11	63	34	12	8.0	5.0
4	4.4	4.4					11	86	32	12	9.8	4.7
5	4.7	4.4					9.8	90	31	14	8.4	4.7
6	4.4	4.7					11	117	30	15	6.8	4.7
7	4.0	5.0	(*)				11	122	30	13	6.1	6.4
8	4.0	5.8					10	115	29	12	5.8	7.2
9	8.4	6.4					11	115	26	11	5.8	6.1
10	* 6.8	5.8					11	* 113	26	10	5.8	5.4
11	5.8	5.8			(*)		9.8	111	24	9.3	5.8	4.7
12	6.1	6.4					13	115	23	9.8	6.1	4.7
13	5.4	5.6				6	18	111	22	11	7.2	4.7
14	6.4	* 5.6					23	90	22	11	5.8	4.4
15	7.2	5.7					32	80	21	9.3	5.4	5.0
16	6.4		4.5	4	8		44	75	18	9.3	5.4	5.4
17	5.8						60	66	18	8.8	6.0	5.8
18	5.0						63	64	18	8.0	7.2	5.0
19	4.7						66	60	17	9.8	8.0	4.7
20	4.7						70	60	* 16	9.3	9.3	5.4
21	4.4					(*)	60	54	15	8.0	7.2	7.5
22	4.4						51	48	16	7.2	9.8	8.0
23	3.8	5					47	47	15	10	8.0	6.4
24	4.4						54	47	15	16	7.2	5.8
25	4.7						62	42	14	19	6.1	7.5
26	4.7					8	63	42	14	12	5.8	* 6.1
27	5.0					9	60	44	13	9.3	4.7	5.4
28	4.7					10	60	42	13	* 11	4.4	5.0
29	4.7					* 11	64	36	13	9.8	3.5	5.0
30	5.4					8.8	58	34	13	9.3	* 4.0	4.4
31	5.0					10		34		11	4.0	
Total	157.6	154.2	139.5	124	224	206.8	1,081.7	2,231	649	342.2	204.7	164.5
Mean	5.08	5.14	4.5	4	8	6.67	36.1	72.0	21.6	11.0	6.60	5.48
Ac-ft	313	306	277	246	444	410	2,150	4,430	1,290	679	406	326

Calendar year 1961: Max 36 Min - Mean 8.10 Ac-ft 5,870  
 Water year 1961-62: Max 122 Min - Mean 15.6 Ac-ft 11,280

Peak discharge (base, 80 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-19	2300	1.21	115	5-6	2030	1.47	179
4-24	2200	1.06	84				

\* Discharge measurement made on this day.

Note--Stage-discharge relation affected by ice Nov. 5-8, 15-18. No gage-height record Nov. 1-4, 13, 14, Nov. 19 to Mar. 29 (stage-discharge relation affected by ice during most of periods), Aug. 16-18.



## RIO GRANDE BASIN

8-2360. Alamosa Creek above Terrace Reservoir, Colo.

Location.--Lat 37°23', long 106°21', in sec.8, T.36 N., R.6 E., on left bank 3 miles upstream from Terrace Reservoir Dam and 15 miles northwest of Capulin.

Drainage area.--107 sq mi.

Records available.--September 1911 to September 1912 (published as Rio Alamosa near Monte Vista), May to June 1914, April 1915 to September 1927, October 1934 to September 1962. No winter records water years 1919-23. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Altitude of gage is 8,600 ft (from topographic map). Sept. 29, 1911, to Sept. 30, 1912, staff gage at ranger station 1.8 miles upstream at different datum. Apr. 25, 1914, to May 6, 1915, staff gage and May 7, 1915, to Sept. 30, 1927, water-stage recorder, near present site at different datums. Datum lowered 0.27 ft Mar. 28, 1925.

Average discharge.--36 years (1911-12, 1915-18, 1923-27, 1934-62), 117 cfs (84,700 acre-ft per year).

Extremes.--Maximum discharge during year, 960 cfs May 9 (gage height, 3.20 ft); minimum not determined. 1911-12, 1914-27, 1934-62: Maximum discharge, 5,200 cfs Oct. 5, 1911 (gage height, 11.0 ft, site and datum then in use, from floodmark), from rating curve extended above 1,000 cfs on basis of computation of peak flow over dam about 8 miles upstream; minimum not determined.

Maximum stage known since at least 1854, that of Oct. 5, 1911, from information by local residents.

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

Rating tables, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Nov. 14-16)

Oct. 1 to Mar. 25

Mar. 26 to Sept. 30

0.8	17	0.8	15	2.0	225
1.0	32	1.0	29	2.5	460
1.3	66	1.3	60	3.0	800
		1.6	109	3.5	1,210

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	45	43					34	284	375	300	80	22
2	43	37					37	288	406	276	66	22
3	41	35					39	325	448	260	66	21
4	40	42					42	418	556	250	64	20
5	39	37					43	532	562	250	56	20
6	37	34					43	626	600	222	52	19
7	36	34					47	705	612	208	49	25
8	35	42					49	736	568	194	48	29
9	51	38					49	816	568	178	45	25
10	45	36					50	800	580	156	41	23
11	*44	36					52	752	586	148	43	21
12	46	38					60	784	586	137	64	20
13	42	35					87	690	593	135	48	19
14	46	30					130	600	550	118	45	19
15	52	*37					190	490	490	107	41	19
16	54	30					246	400	400	100	39	20
17	57	30					296	355	345	94	41	23
18	56	25					345	335	360	96	42	20
19	53	24					385	360	390	96	42	19
20	51	24					448	460	430	87	40	24
21	48						412	436	436	79	40	37
22	48						335	375	430	79	42	34
23	40						315	472	424	79	38	28
24	40						375	550	395	*94	34	*27
25	39						454	526	*355	105	31	26
26	39						32	442	490	335	85	29
27	41						*35	390	*508	350	82	27
28	39						37	418	400	315	71	25
29	34						40	418	340	305	68	*23
30	25						38	330	350	300	71	25
31	40						33		380		90	23
Total	1,346	897	527	496	560	790	6,561	15,583	13,650	4,315	1,347	709
Mean	43.4	29.9	17	16	20	25.5	219	503	455	139	43.5	23.6
Ac-ft	2,670	1,780	1,050	984	1,110	1,570	13,010	30,910	27,070	8,560	2,670	1,410

Calendar year 1961: Max 612 Min - Mean 92.4 Ac-ft 66,900  
Water year 1961-62: Max 816 Min - Mean 128 Ac-ft 92,790

Peak discharge (base, 670 cfs).--May 9 (2230) 960 cfs (3.20 ft); June 6 (2200) 712 cfs (2.89 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 17 to Dec. 11. No gage-height record Dec. 12 to Mar. 26 (stage-discharge relation affected by ice during most of period).

8-2380. La Jara Creek at Gallegos Ranch, near Capulin, Colo.

Location.--Lat 37°12'30", long 106°11'20", in NE¼ sec.10, T.34 N., R.7 E., on left bank 2.7 miles downstream from Canyon Del Rancho, 7 miles southwest of Capulin, and 16½ miles downstream from La Jara Reservoir.

Drainage area.--98 sq mi, approximately.

Records available.--April 1916 to November 1917, April 1919 to November 1923, May 1936 to September 1962. No winter records prior to 1950 except water year 1944. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Altitude of gage is 8,130 ft (from topographic map). Apr. 1, 1916, to Nov. 30, 1917, and Apr. 1, 1919, to Nov. 30, 1923, near present site at different datums.

Average discharge.--14 years (1943-44, 1949-62), 16.5 cfs (11,950 acre-ft per year).

Extremes.--Maximum discharge during year, 194 cfs Apr. 29 (gage height, 4.32 ft), from rating curve extended above 88 cfs; minimum not determined.  
1916-17, 1919-23, 1936-62: Maximum discharge, 653 cfs Apr. 22, 1919, Apr. 15, 1937 (gage height, 5.94 ft, present site and datum); minimum daily recorded, 2.2 cfs Nov. 6, 1951.

Remarks.--Records poor prior to May 1 and good thereafter. Small diversions above station for irrigation. Flow regulated by La Jara Reservoir (capacity, 14,040 acre-ft).

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

Oct. 1 to Apr. 15

Apr. 16 to Sept. 30

2.0	4.5	2.2	2.0
2.1	7.0	2.3	7.0
2.3	14	2.5	19
2.6	27	3.0	54
3.0	54	4.0	152

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7.7	10	13				11	84	31	10	10	5.0
2	8.0	9.1	14				10	92	37	10	10	5.0
3	9.1	6.5	13				12	100	36	9.4	8.2	5.0
4	8.8	6.9	11				14	106	28	9.4	8.8	5.0
5	9.1	9.8	4.8				13	110	26	11	6.5	5.5
6	9.1	9.7	* 6.8				13	124	25	13	6.0	6.0
7	9.4	9.8	6.8				14	122	24	11	6.0	8.2
8	9.4	8.7	7.0		(*)		15	116	24	10	5.5	8.8
9	12	9.4	8.0				14	109	23	8.2	5.5	7.6
10	11	8.8	9.8				14	105	21	7.6	5.0	6.5
11	9.4	7.0	9.4				14	85	21	7.0	5.0	6.0
12	8.8	8.4					* 15	79	21	7.0	6.5	6.0
13	8.4	6.8				6.5	19	69	21	7.0	6.0	6.0
14	8.0	5.5					33	56	20	7.0	8.2	6.5
15	7.4	* 13					43	52	20	6.0	6.0	6.5
16	7.4	11		6.5	9		60	45	20	5.5	6.0	8.2
17	7.4	12					85	44	18	6.0	6.0	8.2
18	* 6.2	11					92	44	17	6.0	6.0	7.0
19	6.2	9					103	42	17	6.5	6.5	6.5
20	6.2	9					126	36	17	6.5	7.0	8.2
21	6.2	11	7				126	33	16	6.0	7.0	10
22	6.5	11					122	30	15	6.0	6.5	7.6
23	6.8	9.1					111	28	15	8.2	6.0	7.0
24	6.8	10					117	26	12	8.8	5.5	* 7.0
25	7.4	11					128	32	12	10	5.5	7.6
26	7.7	10				8	148	32	* 11	12	5.0	7.0
27	8.4	11				11	125	* 33	11	11	5.0	7.0
28	8.8	11				15	134	34	11	8.2	5.0	7.0
29	9.8	9.1				13	148	33	11	7.0	5.0	7.0
30	9.4	12				11	110	31	10	8.8	5.0	7.0
31	9.4	-----			-----	11	-----	31	-----	* 11	5.0	-----
Total	256.2	286.6	243.6	201.5	252	231.5	1,989	1,963	591	261.1	195.2	205.9
Mean	8.26	9.55	7.86	6.5	9	7.47	66.3	63.3	19.7	8.42	6.30	6.86
Ac-ft	508	568	483	400	500	459	3,950	3,890	1,170	518	387	408

Calendar year 1961: Max 231 Min - Mean 18.2 Ac-ft 13,160  
Water year 1961-62: Max 148 Min - Mean 18.3 Ac-ft 13,240

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 4, 6, 8, 13, Dec. 8, 9, Mar. 28, 29, 31, Apr. 1. No gage-height record Nov. 16-20, Dec. 12 to Mar. 27 (stage-discharge relation affected by ice during most of periods), May 14-16, 21-23, July 30, 31.

## RIO GRANDE BASIN

8-2400. Rio Grande above mouth of Trinchera Creek, near La Sauses, Colo.

Location.--Lat 37°19', long 105°45', in sec.35, T.36 N., R.11 E., on right bank a quarter of a mile upstream from Trinchera Creek, 3½ miles north of La Sauses, and 13 miles southeast of Alamosa.

Drainage area.--5,740 sq mi, approximately (includes 2,940 sq mi in closed basin in northern part of San Luis Valley, Colo.).

Records available.--May 1936 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 7,500 ft (estimated from nearby level lines).

Average discharge.--26 years, 249 cfs (180,300 acre-ft per year).

Extremes.--1960-61: Maximum discharge during water year, 743 cfs May 1 (gage height, 3.94 ft); minimum daily, 17 cfs May 19.  
1961-62: Maximum discharge during water year, 1,180 cfs Apr. 22 (gage height, 4.93 ft); minimum daily, 35 cfs Oct. 8, July 22.  
1936-62: Maximum discharge, 5,470 cfs June 21, 1949 (gage height, 9.50 ft), from rating curve extended above 3,600 cfs; minimum daily, 0.4 cfs July 4, 1940.

Remarks.--Records good during water year 1961 and fair during water year 1962 except those for periods of ice effect or no gage-height record, which are poor. Natural flow of stream affected by transmountain diversions, storage reservoirs, ground-water withdrawals and diversions for irrigation, and return flow from irrigated areas.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used May 29 to June 27, 1961, Sept. 23-30, 1961, Oct. 13-31, 1961, June 18 to July 28, 1962)

Oct. 1, 1960 to Sept. 30, 1961

Oct. 1, 1961 to Sept. 30, 1962

0.7	12
1.0	34
1.5	85
2.0	166
3.0	398

1.1	32
1.5	70
2.0	138
2.5	240
3.0	370
4.0	720
5.0	1,210

Discharge, in cubic feet per second, water year October 1960 to September 1961

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	28	60	90	120	*140	160	125	223	194	63	28	25
2	28	59	90	115	140	175	125	294	*216	58	32	34
3	27	58	90	105	135	185	120	204	225	55	*46	73
4	26	56	94	100	135	185	*119	190	174	53	42	72
5	26	55	88	110	135	180	119	178	149	52	42	71
6	26	54	66	110	140	170	132	160	135	52	43	71
7	25	*54	78	110	140	170	145	158	120	54	42	*77
8	32	54	84	110	145	160	170	153	83	52	41	137
9	30	53	90	110	150	150	174	133	120	49	38	92
10	30	56	100	110	160	160	153	93	164	47	34	70
11	30	58	105	*110	160	160	142	63	156	46	31	60
12	28	56	120	110	160	160	130	42	135	47	36	65
13	29	55	135	110	165	155	122	29	138	46	52	78
14	32	59	135	115	170	144	112	28	125	46	59	73
15	33	54	135	120	175	142	111	29	96	44	56	65
16	40	52	140	120	180	137	112	*41	74	41	55	52
17	48	50	135	115	190	133	86	35	71	40	55	48
18	75	50	125	115	190	*128	63	22	80	*38	54	47
19	*130	50	*120	115	190	122	74	17	83	45	51	51
20	160	56	120	115	190	116	96	19	102	64	36	52
21	132	62	130	115	*185	112	98	22	119	85	36	52
22	114	68	135	115	185	110	95	32	130	64	36	83
23	102	72	140	115	185	104	91	33	*142	52	*34	83
24	89	72	140	120	170	99	*112	46	127	43	32	71
25	81	72	140	130	180	98	164	37	110	39	28	60
26	74	72	140	135	170	100	149	58	95	136	28	62
27	71	72	140	130	150	99	145	66	85	74	27	59
28	68	*88	135	125	155	102	127	78	79	69	27	53
29	65	92	130	125	-	110	110	80	74	43	25	46
30	64	90	130	125	-----	108	99	71	69	34	26	43
31	63	-----	125	135	-----	108	-----	130	-----	28	25	-----
Total	1,806	1,859	3,625	3,615	4,570	4,242	3,620	2,764	3,670	1,659	1,197	1,925
Mean	58.3	62.0	117	117	163	137	121	89.2	122	53.5	38.6	64.2
Ac-ft	3,580	3,690	7,190	7,170	9,060	8,410	7,180	5,480	7,280	3,290	2,370	3,820

Calendar year 1960: Max 865 Min 13 Mean 135 Ac-ft 97,720

Water year 1960-61: Max 294 Min 17 Mean 94.7 Ac-ft 68,520

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 16-25, Nov. 28 to Mar. 12 (no gage-height record Dec. 6, 7, Dec. 18 to Feb. 21, Feb. 24 to Mar. 4).

8-2400. Rio Grande above mouth of Trinchera Creek, near La Sauses, Colo.--Continued

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	41	160	269				281	600	283	209	140	*73
2	41	450	283				353	504	288	225	131	69
3	39	600	301				382	511	304	218	117	64
4	*38	520	298				385	522	331	231	105	64
5	38	440	286				291	511	345	257	106	55
6	37	490	262				252	532	382	286	108	52
7	36	470	242				229	433	376	376	101	54
8	35	420	245				214	481	336	403	92	66
9	36	380	250				233	636	339	394	85	76
10	38	420	235				257	716	331	367	79	68
11	38	440				265	271	885	331	328	74	68
12	70	450					245	885	388	301	68	67
13	79	420					227	875	370	288	53	63
14	76	380					214	970	385	262	51	55
15	74	360		220	385		257	980	500	229	51	55
16	67	380					293	608	708	196	49	53
17	57	370					457	656	672	174	47	53
18	51	350					664	616	628	156	43	53
19	50	330					830	469	478	114	42	52
20	47	315					1,020	400	418	*48	44	54
21	45	*309	(*)230			250	1,090	433	350	40	56	55
22	44	293			(*)	230	1,140	421	373	35	45	53
23	40	298				210	1,100	336	348	43	44	56
24	42	293				*190	830	345	281	68	104	61
25	70	271				166	616	288	271	71	85	56
26	*81	271		(*)		158	511	264	274	78	89	50
27	85	291				151	472	252	*266	86	72	49
28	75	311				152	418	245	196	276	73	47
29	80	296				158	418	*222	240	205	73	48
30	90	276				180	504	229	205	158	81	52
31	120	-----			-----	200	-----	236	-----	147	76	-----
Total	1,760	11,054	7,501	6,820	10,780	7,345	14,454	16,061	10,997	6,269	2,384	1,741
Mean	56.8	368	242	220	385	237	482	518	367	202	76.9	58.0
Ac-ft	3,490	21,930	14,880	13,530	21,380	14,570	28,670	31,860	21,810	12,430	4,730	3,450

Calendar year 1961: Max 600 Min 17 Mean 130 Ac-ft 94,360

Water year 1961-62: Max 1,140 Min 35 Mean 266 Ac-ft 192,700

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 27 to Nov. 21, Dec. 9-21, Dec. 22 to Mar. 24 (stage-discharge relation affected by ice during most of periods).



## RIO GRANDE BASIN

8-2405. Trinchera Creek above Turners Ranch, near Fort Garland, Colo.

Location.--Lat 37°22', long 105°17', in Sangre de Cristo Grant, on right bank just downstream from confluence of North and South Forks, 1 mile upstream from Turners Ranch and 7 miles southeast of Fort Garland, Costilla County.

Drainage area.--45 sq mi, approximately.

Records available.--April 1923 to September 1962. No winter records prior to 1935 except water year 1928. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Prior to Apr. 12, 1929, at site 200 ft upstream at different datum.

Average discharge.--29 years (1927-28, 1934-62), 25.0 cfs (18,100 acre-ft per year).

Extremes.--Maximum discharge during year, 123 cfs May 14 (gage height, 3.06 ft); minimum not determined.

1923-62: Maximum discharge, 689 cfs May 27, 1942, from rating curve extended above 240 cfs; maximum gage height, 3.73 ft May 10, 1947; minimum daily discharge recorded, 3.0 cfs Oct. 3, 1942.

Outstanding floods occurred in 1886 and in October 1911. The flood in 1886 probably exceeded that in October 1911 and the flood in October 1911 probably exceeded all subsequent floods, from information by local residents.

Remarks.--Records good except those for period of no gage-height record, which are poor. No regulation or diversion above station.

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

1.9	4.5	2.5	41
2.1	11	2.8	78
2.3	24	3.1	126

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	15	13					17	64	60	31	18	86
2	15	(*)					15	62	58	30	16	82
3	16						13	62	57	29	15	82
4	16						15	63	56	29	15	78
5	15						14	68	54	30	13	75
6	15						14	77	56	29	12	78
7	14				(*)		13	84	56	26	12	89
8	13						13	91	54	27	12	92
9	*16					(*)	13	96	53	30	12	82
10	16						12	102	51	25	11	78
11	15						12	104	49	23	12	78
12	15						13	112	49	24	14	72
13	15						17	115	49	23	11	72
14	14						26	110	48	22	11	72
15	14						36	104	46	21	10	72
16	14	11	9	9	11	10	40	99	45	21	10	72
17	13						41	94	44	*20	10	72
18	12						44	89	43	19	9.6	69
19	11						53	86	41	19	9.2	72
20	11						65	84	39	18	10	*96
21	11						67	81	*38	18	10	10
22	11						62	77	37	18	10	89
23	10						58	74	36	19	9.6	86
24	11						64	*74	35	20	8.9	96
25	12						74	72	36	18	8.9	89
26	12						75	71	36	18	8.6	92
27	13						71	70	36	16	8.2	92
28	13						74	71	33	16	7.8	92
29	13					(*)	15	75	34	16	8.2	92
30	13						14	71	65	33	16	8.2
31	13						21	62	62	18	8.6	89
Total	417	332	279	279	308	330	1,177	2,553	1,362	689	339.8	248.6
Mean	13.5	11.1	9	9	11	10.6	39.2	82.4	45.4	22.2	11.0	8.29
Ac-ft	827	659	553	553	611	655	2,330	5,060	2,700	1,370	674	493

Calendar year 1961: Max 104 Min - Mean 22.6 Ac-ft 16,380  
 Water year 1961-62: Max 115 Min - Mean 22.8 Ac-ft 16,480

Peak discharge (base, 50 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-20	1900	2.80	83	5-14	0645	3.06	123
4-28	2030	2.81	83				

\* Discharge measurement made on this day.

Note.--No gage-height record Nov. 2 to Mar. 28 (stage-discharge relation affected by ice during most of period).

8-2415. Sangre de Cristo Creek near Fort Garland, Colo.

Note.--Records for the 1962 water year not available in time for inclusion in this report. They will be published in a subsequent annual report.

## RIO GRANDE BASIN

8-2425. Ute Creek near Fort Garland, Colo.

Location.--Lat 37°27', long 105°26', in S½ sec.10, T.30 S., R.72 W., on left bank 1½ miles north of Fort Garland and 6 miles upstream from mouth.

Drainage area.--32 sq mi, approximately.

Records available.--March to October 1916, May 1923 to September 1962. Monthly discharge only for some periods, published in WSP 1302.

Gage.--Water-stage recorder. Altitude of gage is 8,030 ft (from topographic map). Mar. 18 to Oct. 9, 1916, staff gage and Cippoletti weir at different datum.

Average discharge.--39 years, 21.4 cfs (15,490 acre-ft per year).

Extremes.--Maximum discharge during year, 91 cfs Apr. 20 (gage height, 1.83 ft); minimum not determined.

1916, 1923-62: Maximum daily discharge, 630 cfs May 15, 1941; no flow July 28-31, Sept. 6-29, 1956.

Outstanding floods occurred in 1886 and in October 1911. The flood in 1886 probably exceeded that in October 1911 and the flood in October 1911 probably exceeded all subsequent floods, from information by local residents.

Remarks.--Records good below 40 cfs and fair above except those for periods of ice effect or no gage-height record, which are poor. A few diversions above station for irrigation.

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

0.6	3.5
.7	7.0
.9	17
1.4	52
1.8	88

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	16	12					b 12	47	34	26	21	49
2	16	* 11					14	48	36	23	17	46
3	16	b 11					16	49	36	21	16	42
4	16	b 10					18	53	36	26	14	38
5	14	b 9.5					16	55	36	24	12	42
6	14	b 10					16	63	38	26	11	38
7	14	b 11			(*)		14	73	40	37	10	60
8	14	b 10					15	76	40	35	10	70
9	* 16	10				(*)	14	76	40	27	10	63
10	18	10					14	78	40	23	10	60
11	16	9.5					15	81	41	19	10	56
12	14	7.5					18	85	45	16	9.0	52
13	14	b 9				11	24	82	46	16	8.5	49
14	14	8.5					34	74	45	16	8.0	49
15	13	9					40	64	40	15	8.0	46
16	12		9	9.5	10		46	57	36	15	7.5	46
17	12						48	50	31	* 14	8.0	46
18	12						54	46	30	14	6.6	38
19	12						62	46	29	14	6.0	38
20	12		(*)				75	52	31	13	6.3	* 56
21	11						84	50	30	14	6.3	10
22	11						76	46	30	12	6.0	8.5
23	10	9					68	41	* 29	14	5.6	8.0
24	10						65	* 43	28	17	4.6	9.0
25	11						74	46	26	25	4.9	9.0
26	10					19	81	44	27	22	6.0	10
27	10					18	73	45	29	17	5.6	10
28	9.5					* 17	72	46	28	16	5.6	14
29	9.5					16	71	41	24	14	5.2	12
30	10					10	58	38	24	18	4.6	10
31	12					b 13		36		22	4.9	
Total	399.0	283.0	279	294.5	280	368	1,287	1,731	1,025	611	268.2	199.9
Mean	12.9	9.43	9	9.5	10	11.9	42.9	55.8	34.2	19.7	8.65	6.86
Ac-ft	791	561	553	584	555	730	2,550	3,430	2,030	1,210	532	396

Calendar year 1961: Max 102 Min - Mean 21.8 Ac-ft 15,800

Water year 1961-62: Max 85 Min - Mean 19.2 Ac-ft 13,920

Peak discharge (base, 100 cfs).--No peak above base.

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 14 to Mar. 28 (stage-discharge relation affected by ice during most of period).

8-2435. Trinchera Creek below Smith Reservoir, near Blanca, Colo.

Location.--Lat 37°23', long 105°33', in sec.4, T.31 S., R.73 W. (unsurveyed), on right bank 800 ft downstream from bridge, 1 mile downstream from Smith Reservoir, and 5 miles southwest of Blanca.

Drainage area.--396 sq mi.

Records available.--October 1928 to September 1962. No winter records prior to 1944 except water years 1931, 1934-36, 1938. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Altitude of gage is 7,700 ft (estimated from nearby U. S. Coast and Geodetic Survey level lines). Prior to Apr. 19, 1943, at datum 1.00 ft higher.

Average discharge.--24 years (1930-31, 1933-36, 1937-38, 1943-62), 12.2 cfs (8,830 acre-ft per year).

Extremes.--Maximum discharge during year, 229 cfs Apr. 22 (gage height, 3.00 ft); minimum daily, 0.3 cfs Nov. 7.

1929-62: Maximum daily discharge, 1,340 cfs May 11, 1942; no flow Sept. 13, 14, 16, 17, 1957.

Outstanding floods occurred in 1886 and October 1911. The flood in 1886 probably exceeded that in October 1911 and the flood in October 1911 probably exceeded all subsequent floods, from information by local residents.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Diversions above station for irrigation. Flow regulated by Smith Reservoir (capacity, 5,335 acre-ft).

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

0.4	0	0.9	22
.5	.9	1.4	62
.6	3.8	2.0	116
.7	8.5	2.6	178

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.1	1.5				1.1	2.7	130	16	24	3.8	1.8
2	6.2	*1.3				1.3	34	120	16	24	3.8	1.8
3	9.8	.7				1.3	38	106	16	24	3.8	1.8
4	9.8	.7				1.3	44	88	16	24	3.8	1.8
5	9.8	.6				1.4	49	77	16	23	3.8	1.8
6	9.8	.4				1.4	52	70	16	23	3.4	1.8
7	9.8	.3				1.5	47	60	16	23	3.1	2.1
8	9.8	2.1			(*)	1.5	45	43	16	23	3.1	2.1
9	*9.8	7.1				*1.7	43	37	16	23	3.1	2.1
10	9.2	7.1				1.6	44	33	16	23	3.1	2.1
11	9.8	7.1				1.6	44	26	16	23	2.4	2.1
12	9.8	7.1			6.5	1.5	44	29	16	22	1.8	2.1
13	9.2	7.6				1.3	49	56	16	21	1.8	2.1
14	9.8					1.3	60	63	18	16	1.8	2.1
15	7.6					1.3	76	37	21	8.0	1.8	2.1
16	3.8					1.3	96	18	21	8.0	1.8	2.1
17	3.8					1.6	99	13	21	*7.6	1.8	1.5
18	3.8					1.8	98	9.2	21	7.6	1.8	1.8
19	3.1					2.0	108	6.2	23	6.6	1.8	3.1
20	3.4			(*)		2.0	122	4.7	24	5.2	1.8	*3.4
21	3.4	7.5				2.0	144	3.4	24	5.2	1.8	3.1
22	3.8					2.0	170	3.8	24	5.2	1.8	3.1
23	3.8					2.0	162	8.5	*24	4.7	1.8	3.1
24	3.8					*6.2	21	155	*8.5	24	4.7	1.8
25	3.8					6.2	20	143	8.5	24	4.7	1.8
26	3.4					6.2	20	145	8.0	24	4.7	1.8
27	3.4					6.6	*21	153	7.6	24	4.7	1.8
28	3.4					9	24	145	7.1	24	4.7	1.8
29	3.1					-	30	139	9.8	24	4.7	1.8
30	2.7					-----	39	139	14	24	4.3	1.8
31	2.4					-----	26	-----	16	-----	3.8	1.8
Total	188.2	171.1	217	201.5	183.7	560	2,714	1,121.3	597	410.4	73.2	72.6
Mean	6.07	5.70	7	6.5	6.56	18.1	90.5	36.2	19.9	13.2	2.36	2.42
Ac-ft	373	339	430	400	364	1,110	5,380	2,220	1,180	814	145	144

Calendar year 1961: Max 144 Min 0.3 Mean 11.3 Ac-ft 8,190  
 Water year 1961-62: Max 170 Min 0.3 Mean 17.8 Ac-ft 12,900

\* Discharge measurement made on this day.

Note.--No gage-height record Nov. 14 to Feb. 23 (stage-discharge relation affected by ice during most of period), Feb. 28, Mar. 1, 12, 15-20, May 31 to June 5.



## RIO GRANDE BASIN

8-2445. Platoro Reservoir at Platoro, Colo.

Location.--Lat 37°21'00", long 106°32'35", in NW¼SW¼ sec.22, T.36 N., R.4 E., on right bank in valvehouse, 400 ft downstream from Platoro Dam on Conejos River, half a mile west of Platoro, 3½ miles downstream from Adams Fork, and 7 miles southwest of Jasper.

Drainage area.--40 sq mi, approximately.

Records available.--November 1951 to September 1962.

Gage.--Mercury manometer. Datum of gage is 9,911.5 ft above mean sea level (Bureau of Reclamation bench mark). Gage readings have been reduced to elevations above mean sea level. Prior to June 9, 1955, mercury manometer at present site and datum. June 9, 1955, to Sept. 30, 1959, water-stage recorder in gate chamber at dam for elevations above 9,921.0 ft at same datum.

Extremes.--Maximum contents observed during year, 16,700 acre-ft June 12 to Sept. 30 (elevation, 9,976.7 ft); minimum, 3,400 acre-ft Nov. 6 to Apr. 1 (elevation 9,943.9 ft).  
1951-62: Maximum contents, 61,420 acre-ft June 9, 11, 1958 (elevation, 10,035.5 ft); no contents for long periods in 1952-56.

Remarks.--Reservoir is formed by an earth- and rock-fill dam and dikes. Dam completed Dec. 9, 1951; storage began Nov. 7, 1951. Capacity of reservoir, 60,000 acre-ft between elevations 9,911.5 (sill of trashrack at outlet) and 10,034.0 ft (crest of spillway). No dead storage. Reservoir is used for irrigation and flood control. Figures given herein represent usable contents.

Cooperation.--Records furnished by Bureau of Reclamation.

Month-end elevation and contents, water year October 1961 to September 1962

Date	Elevation (feet)†	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	9,956.2	7,400	-
Oct. 31.....	9,956.2	7,400	0
Nov. 30.....	9,943.9	3,400	-4,000
Dec. 31.....	9,943.9	3,400	0
Calendar year 1961.....	-	-	-610
Jan. 31.....	9,943.9	3,400	0
Feb. 28.....	9,943.9	3,400	0
Mar. 31.....	9,943.9	3,400	0
Apr. 30.....	9,956.5	7,500	+4,100
May 31.....	9,970.6	13,600	+6,100
June 30.....	9,976.7	16,700	+3,100
July 31.....	9,976.7	16,700	0
Aug. 31.....	9,976.7	16,700	0
Sept. 30.....	9,976.7	16,700	0
Water year 1961-62.....	-	-	+9,300

† Elevation at 0800 on first day of following month.

8-2450. Conejos River below Platoro Reservoir, Colo.

Location--Lat 37°21'20", long 106°32'35", in NW¼ sec.22, T.36 N., R.4 E., on left bank 1,500 ft downstream from valve house for Platoro Reservoir and half a mile northwest of Platoro.

Drainage area--40 sq mi, approximately.

Records available--May 1952 to September 1962.

Gage--Water-stage recorder and concrete control. Datum of gage is 9,866.60 ft above mean sea level (levels by Bureau of Reclamation).

Average discharge--10 years, 83.8 cfs (60,670 acre-ft per year).

Extremes--Maximum discharge during year, 665 cfs June 11 (gage height, 3.62 ft); minimum daily, 6.4 cfs Sept. 9-20.

1952-62: Maximum discharge, 1,160 cfs Nov. 1, 1957; maximum gage height, 4.29 ft June 15, 1958; no flow Oct. 16-20, 1955. Maximum stage known since at least 1854 occurred Oct. 5, 1911, from information by local residents.

Remarks--Records good except those for period of no gage-height record, which are poor. No diversion above station. Flow completely regulated by Platoro Reservoir (see preceding page).

Cooperation--Two discharge measurements furnished by Bureau of Reclamation.

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

0.9	2.0	2.0	116
1.1	8.5	2.5	225
1.2	13	3.0	385
1.4	26	3.5	590
1.6	49	4.0	860
1.8	81		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	36	451						252	267	234	31	7.8
2	36	645						255	267	267	39	7.1
3	36	625						237	309	340	54	6.8
4	36	507						222	540	336	54	6.8
5	36							222	590	336	54	6.8
6	20							222	460	336	54	6.8
7	11							125	399	294	54	6.8
8	11							17	402	276	55	6.8
9	12							15	527	202	49	6.4
10	11							13	630	176	36	6.4
11	*20						12	12	468	153	36	6.4
12	25							9.8	456	126	37	6.4
13	25							135	558	118	37	6.4
14	25							340	625	118	37	6.4
15	25							350	625	120	36	6.4
16	54	12	12	12	12	12		261	625	120	35	6.4
17	74							234	424	120	34	6.4
18	74							187	357	81	33	6.4
19	74							168	357	49	33	*6.4
20	62							285	460	41	32	6.4
21	58							364	532	41	32	6.8
22	56							220	586	41	31	6.8
23	55							189	610	42	30	7.1
24	56						108	270	610	52	29	7.1
25	34						161	424	*610	81	29	7.4
26	25							157	468	545	84	7.4
27	25							157	468	402	83	7.8
28	25							159	*378	402	83	*7.8
29	25							153	270	402	52	7.8
30	25							187	270	285	*30	7.8
31	25							267			31	11
Total	1,112	2,540	372	372	336	372	1,358	7,149.8	14,330	4,463	1,095	206.3
Mean	35.9	84.7	12	12	12	12	45.3	231	478	144	35.3	6.88
Ac-ft	2,210	5,040	738	738	666	738	2,690	14,180	28,420	8,850	2,170	409

Calendar year 1961: Max 645 Min - Mean 83.1 Ac-ft 60,160

Water year 1961-62: Max 645 Min 6.4 Mean 92.3 Ac-ft 66,850

\* Discharge measurement made on this day.

Note.--No gage-height record Nov. 5 to Apr. 24.

8-2465. Conejos River near Mogote, Colo.

Location.--Lat 37°03'20", long 106°11'10", in SE¼ sec.34, T.33 N., R.7 E., on right bank 25 ft upstream from bridge on State Highway 174, 0.3 mile downstream from Fox Creek, 5.3 miles west of Mogote, and 10 miles west of Antonito.

Drainage area.--282 sq mi.

Records available.--April 1903 to October 1905, October 1911 to September 1962. Monthly discharge only for some periods, published in WSP 1312. Records for March 1900 at site 5½ miles upstream and May 1905 to September 1911 (some missing periods most years) at site 3½ miles upstream not equivalent to present site owing to inflow.

Gage.--Water-stage recorder. Datum of gage is 8,271.54 ft above mean sea level (State Highway Department bench mark). Apr. 17, 1903, to Oct. 31, 1905, staff gage 500 ft downstream at different datum. Oct. 5, 1911, to early 1915, chain gage at present site and datum.

Average discharge.--53 years, 343 cfs (248,300 acre-ft per year).

Extremes.--Maximum discharge during year, 2,180 cfs May 10 (gage height, 4.08 ft); minimum daily, 25 cfs Dec. 12.

1903-62: Maximum discharge, 9,000 cfs Oct. 5, 1911 (gage height, 8.50 ft, from floodmarks, present site and datum), from rating curve extended above 3,100 cfs; minimum daily determined, 10 cfs July 18, 1904.

Maximum stage known since at least 1854, that of Oct. 5, 1911, from information by local residents.

Remarks.--Records good except those for periods of ice effect, which are fair. Discharge measurements generally made twice a month. Divisions for irrigation of about 500 acres of hay meadows above station. Some regulation by Platoro Reservoir (see elsewhere in this report).

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

(Shifting-control method used Nov. 6 to Dec. 11, Feb. 15, 16, 25-27, Mar. 7, 8, 23, 24, Apr. 11-14, May 16 to July 6, July 30 to Sept. 30)

0.3	21	1.5	340
.5	51	2.0	570
.7	92	3.0	1,190
1.0	169	4.0	2,130

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	125	206	57			69	92	906	894	768	169	55
2	113	675	55			63	101	924	981	724	146	51
3	108	692	51			61	118	1,040	1,000	736	140	46
4	106	697	48			57	140	1,200	1,400	736	143	46
5	104	284	46			57	143	1,400	1,700	724	135	45
6	101	99	51			57	149	1,660	1,750	758	115	45
7	90	84	49		70	59	154	1,850	1,580	675	122	55
8	82	86	46			59	166	1,800	1,500	605	120	67
9	115	86	46			57	166	1,950	1,460	570	118	61
10	122	79	38			54	169	1,960	1,700	461	113	55
11	110	79	28			52	172	1,940	1,750	425	104	51
12	122	82	25			58	197	1,960	1,420	376	115	46
13	118	77	30			57	252	1,690	1,660	360	108	45
14	118	65	40			54	317	1,730	1,750	329	106	45
15	120	84	50		73	58	402	1,620	1,620	298	97	45
16	120	71	75		75	62	545	1,270	1,440	280	94	45
17	143	73	80		67	65	642	1,050	1,180	273	97	51
18	149	61	70		63	66	724	995	948	266	94	48
19	149	61	70		61	64	812	888	988	229	97	45
20	146	61	70		61	62	924	1,030	1,090	210	97	48
21	135	69	65		61	60	876	1,220	1,270	197	108	79
22	135	59	70		59	66	724	1,050	1,290	191	94	84
23	128	69	70		61	59	664	960	1,370	191	90	71
24	120	79	65		63	59	790	1,180	1,310	197	88	67
25	120	71	60		63	60	1,090	1,330	1,270	210	86	69
26	104	61	55		53	77	1,130	1,380	1,210	210	82	69
27	104	67	60		57	88	1,020	1,450	1,020	206	77	69
28	101	65	60		63	101	1,090	1,280	954	194	71	75
29	101	65	65		-	108	1,170	912	930	181	65	77
30	99	59	60		-----	99	936	840	870	157	59	69
31	122	-----	55		-----	88	-----	900	-----	181	57	-----
Total	3,630	4,366	1,710	1,705	1,860	2,056	15,875	41,365	39,305	11,918	3,207	1,724
Mean	117	146	55.2	55	66.4	66.3	529	1,334	1,310	384	103	57.5
Ac-ft	7,200	8,660	3,390	3,380	3,690	4,080	31,490	82,050	77,960	23,640	6,360	3,420

Calendar year 1961: Max 2,000 Min 25 Mean 281 Ac-ft 203,200

Water year 1961-62: Max 1,960 Min 25 Mean 353 Ac-ft 255,300

Note.--Stage-discharge relation affected by ice Dec. 12 to Feb. 14, Feb. 17-24, Feb. 28 to Mar. 6, Mar. 9-22, 25.

## 8-2475. San Antonio River at Ortiz, Colo.

Location--Lat 37°00', long 106°02', in New Mexico, in NE $\frac{1}{4}$  sec.25, T.32 N., R.8 E., on left bank a quarter of a mile south of New Mexico-Colorado State line, half a mile south of Ortiz, and half a mile upstream from Los Pinos River.

Drainage area--110 sq mi, approximately.

Records available--April 1919 to October 1920, October 1924 to September 1962 (no winter records prior to 1941). Monthly discharge only for some periods, published in WSP 1312.

Gage--Water-stage recorder. Altitude of gage is 8,000 ft (from topographic map). Prior to Apr. 7, 1926, staff gage at various locations near present site at different datums. Apr. 7, 1926, to June 24, 1954, water-stage recorder at site 200 ft downstream at present datum.

Average discharge--22 years (1940-62), 27.3 cfs (19,760 acre-ft per year).

Extremes--Maximum discharge during year, 786 cfs Apr. 20 (gage height, 3.98 ft); no flow July 16-24, Aug. 10 to Sept. 22. 1919-20, 1924-62: Maximum discharge, 1,750 cfs Apr. 15, 1937 (gage height, 5.38 ft), from rating curve extended above 1,100 cfs; no flow at times in most years. Maximum stage known since at least 1854 occurred Oct. 5, 1911, from information by local residents.

Remarks--Records good except those prior to Apr. 6 and those June 7-26, which are poor. Discharge measurements or observations of no flow generally made twice a month. A few small diversions above station for irrigation.

Rating table, Mar. 1 to Sept. 30, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 1 to Feb. 28)

0.2	0	0.8	4.0	1.6	75
.4	.2	.9	6.7	2.0	150
.5	.5	1.0	11	2.5	270
.6	1.1	1.1	17	3.0	415
.7	2.1	1.3	35	4.0	795

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.8	9.1	2.6				10	205	26	0.7	0.2	0
2	1.8	b6.6	4.0				15	260	25	.5	.2	0
3	1.8	b3.8	3.8				40	316	23	.4	.7	0
4	2.1	b5.3	3.3				65	361	20	.4	.6	0
5	2.1	b5.9	3.0				100	364	17	.5	.3	0
6	2.1	3.3	b2.8				195	379	15	.7	.2	0
7	1.8	4.6	b2.8				182	370	14	1.8	.2	0
8	1.6	4.6	b2.6				210	364	12	1.1	.1	0
9	4.3	6.9	b2.6				198	328	10	.7	.1	0
10	8	5.9	b2.4				178	282	9.0	.6	0	0
11	4.5	6.6	2.2				148	248	7.6	.4	0	0
12	5.5	4.6	2.0				162	220	6.2	.3	0	0
13	4.5	2.3	2.0				218	180	6.2	.2	0	0
14	4.5	1.3	3.0				262	142	5.8	.2	0	0
15	4	5.9	4.8				310	116	5.4	.1	0	0
16	4	4.6	6.0	3.5	13	9	361	101	4.0	0	0	0
17	4	b5.0	5.2				403	85	3.0	0	0	0
18	3.5	b3.8	5.2				438	82	2.5	0	0	0
19	3.3	b3.0	5.0				506	78	2.0	0	0	0
20	3.0	b6.2	4.6				581	77	1.5	0	0	0
21	2.8	b6.2	5.0				554	70	1.1	0	0	0
22	2.8	b3.8	5.4				412	57	.9	0	0	0
23	3.0	b6.9	5.0				373	55	.8	0	0	.4
24	2.8	5.0	4.4				435	51	.6	0	0	1.2
25	2.8	5.3	3.6				521	45	.5	.6	0	1.9
26	3.3	4.3	3.2				514	35	.4	2.0	0	3.8
27	3.5	3.3	3.0				448	37	.4	1.3	0	2.7
28	6.6	3.0	3.2				455	36	.7	.9	0	2.1
29	6.6	3.3	3.4				435	34	.9	.5	0	3.2
30	5.6	3.5	3.4				322	29	.9	.4	0	2.3
31	8.2	-----	3.2				-----	28	-----	.5	0	-----
Total	116.2	143.9	112.7	108.5	364	279	9,051	5,035	222.4	14.8	2.6	17.6
Mean	3.75	4.80	3.64	3.5	13	9	302	162	7.41	0.48	0.08	0.59
Ac-ft	230	285	224	215	722	553	17,950	9,990	441	29	5.2	35

Calendar year 1961: Max 441 Min 0 Mean 29.9 Ac-ft 21,630  
Water year 1961-62: Max 581 Min 0 Mean 42.4 Ac-ft 30,680

Peak discharge (base, 330 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-7	2130	2.81	358	4-25	2400	3.65	650
4-20	2300	3.98	786	5-7	0100	3.20	482

b Stage-discharge relation affected by ice.

Note.--No gage-height record Oct. 10-18, Dec. 11 to Apr. 5 (stage-discharge relation affected by ice during most of period), June 7-26.



## RIO GRANDE BASIN

8-2480. Los Pinos River near Ortiz, Colo.

Location.--Lat 36°59', long 106°05', in NE¼ sec.34, T.32 N., R.8 E., in New Mexico, on left bank 1 mile south of New Mexico-Colorado State line, 2 miles southwest of Ortiz, and 2½ miles upstream from mouth.

Drainage area.--167 sq mi.

Records available.--January 1915 to December 1920, October 1924 to September 1962. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Altitude of gage is 8,100 ft (from topographic map). Prior to Apr. 15, 1955, at site 350 ft upstream at datum 2.52 ft higher.

Average discharge.--43 years, 127 cfs (91,940 acre-ft per year).

Extremes.--Maximum discharge during year, 1,480 cfs May 9 (gage height, 5.78 ft); minimum daily, 9.5 cfs Sept. 1-6. 1915-20, 1924-62: Maximum discharge, 3,160 cfs May 12, 1941 (gage height, 5.77 ft, site and datum then in use), from rating curve extended above 1,600 cfs; minimum observed, 4.0 cfs Dec. 17, 1945 (discharge measurement), but may have been less during periods of no gage-height record.

Maximum stage known since at least 1854 occurred Oct. 5, 1911, from information by local residents.

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 above station for irrigation.

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	27	40	b25				25	678	360	135	46	95
2	27	b25	b20				28	696	384	121	38	95
3	27	b20	b15				40	821	368	111	33	95
4	28	b30	b14				54	931	396	109	34	95
5	26	28	b13				73	986	412	105	26	95
6	25	b25	b16				83	1,120	420	97	22	95
7	24	b20	b15				97	1,200	416	85	19	14
8	23	25	14				105	1,260	396	80	18	17
9	42	30	15				109	1,280	376	67	17	14
10	59	30	14				111	1,250	372	60	16	12
11	42	30	12				117	1,210	356	56	16	11
12	50	30	11				139	1,150	348	52	29	10
13	45	25	15				178	986	352	54	23	10
14	45	20	20				236	860	344	52	25	10
15	42	38	25				328	740	312	45	21	12
16	40	35	21	17	30	26	464	669	270	40	19	12
17	39	36	23				610	606	233	40	22	14
18	37	30	20				740	628	218	38	18	15
19	35	30	18				860	624	210	35	17	13
20	33	45	19				997	674	212	45	19	16
21	32	48	19				964	624	212	35	23	32
22	33	30	18				799	548	205	35	20	28
23	31	b40	19				782	579	198	42	17	22
24	27	b50	20				887	592	188	47	16	22
25	26	b45	18				1,010	570	178	39	14	23
26	26	34	16				1,040	520	170	37	13	22
27	31	b30	16				1,010	530	165	28	12	20
28	32	b25	17				1,070	489	155	25	12	24
29	26	b20	17				1,030	404	147	23	11	24
30	35	26	15				816	364	141	24	11	22
31	43	-----	15				-----	376	-----	46	10	-----
Total	1,058	940	535	527	840	806	14,802	23,965	3,514	1,808	637	4760
Mean	34.1	31.3	17.3	17	30	26	493	773	284	58.3	20.5	15.9
Ac-ft	2,100	1,860	1,060	1,050	1,670	1,600	29,360	47,530	16,890	3,590	1,260	944

Calendar year 1961: Max 1,050 Min - Mean 110 Ac-ft 79,620  
 Water year 1961-62: Max 1,280 Min 9.5 Mean 150 Ac-ft 108,900

Peak discharge (base, 900 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-20	2100	5.34	1,200	5-9	2300	5.78	1,480
4-28	2130	5.38	1,240				

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 8-22, Dec. 8 to Apr. 6 (stage-discharge relation affected by ice during most of periods).

8-2485. San Antonio River at mouth, near Manassa, Colo.

Location.--Lat 37°11', long 105°53', in sec.21, T.34 N., R.10 E., on right bank a quarter of a mile downstream from bridge on State Highway 142, 1 mile upstream from mouth, and 3½ miles east of Manassa.

Drainage area.--348 sq mi.

Records available.--April 1923 to September 1962. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Altitude of gage is 7,680 ft (estimated from nearby U. S. Coast and Geodetic Survey level line). Prior to Apr. 23, 1936, at former bridge site 200 ft upstream at same datum.

Average discharge.--39 years, 85.6 cfs (61,970 acre-ft per year).

Extremes.--Maximum discharge during year, 1,070 cfs May 10 (gage height, 5.74 ft); no flow Aug. 16 to Sept. 30.

1923-62: Maximum discharge, 2,620 cfs May 14, 1941, from rating curve extended above 2,200 cfs; maximum gage height, 6.42 ft May 6, 1952; no flow at times in most years.

Maximum stage known since at least 1854 occurred Oct. 5, 1911, from information by local residents.

Remarks.--Records good except those for Nov. 13 to Mar. 24, Apr. 30 to May 10, which are poor. Natural flow of stream affected by diversions to Cave Lake Reservoir (capacity, 9,700 acre-ft) and diversions for irrigation above station.

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

Oct. 1-10				Oct. 11 to Sept. 30			
0.5	0.8	0.2	0	0.8	4.0	2.0	130
.6	1.3	.3	.3	.9	7.2	3.0	308
.7	2.0	.5	1.1	1.0	12	4.0	530
.8	3.1	.6	1.6	1.1	19	5.0	810
		.7	2.5	1.4	50	6.0	1,160

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.3	27	22				50	680	254	72	2.2	(*)
2	2.0	26	19				51	500	272	74	2.3	
3	1.7	19	21				65	450	266	63	2.6	
4	*1.6	17	21				87	460	272	58	2.1	
5	1.7	16	18				112	500	268	60	1.7	
6												
7	1.7	15	14				122	620	274	62	1.4	
8	1.6	14	7.2				117	750	272	54	1.2	
9	1.3	14	b10				134	890	245	49	1.1	
10	1.2	16	11				150	960	218	44	1.0	
	1.5	18	11		(*)		*150	1,000	200	38	.9	
11	6.9	17				17	138	915	210	27	.7	
12	5.6	16					138	817	200	19	.8	
13	6.6	b15					164	682	189	22	.8	
14	6.9	16					225	580	175	19	.7	
15	8.2	*18					296	482	158	13	.3	
16	8.6	20		12	20		392	421	148	8.2	0	
17	11	21					499	368	134	6.2	0	
18	9.6	22					578	354	120	5.9	0	
19	8.2	25					685	334	95	*5.3	0	
20	5.6	20					838	336	72	3.8	0	
21	5.6	23	12 (*)				18	943	332	56	3.0	0
22	6.2	21					17	870	294	46	2.3	0
23	6.2	18					17	731	302	41	2.6	0
24	7.2	18					*18	750	302	*46	7.2	0
25	*5.6	18					17	852	282	46	9.1	0
26	6.6	22					18	936	255	47	6.2	0
27	10	21					28	904	272	49	5.9	0
28	11	19					51	856	302	47	6.2	0
29	18	19					67	880	*312	43	5.6	0
30	19	20					74	800	257	54	3.6	0
31	22	-----					56	-----	254	-----	2.6	0
Total	211.2	571	406.2	372	560	721	13,513	15,263	4,517	757.7	19.8	0
Mean	6.81	19.0	13.1	12	20	23.3	450	492	151	24.4	0.64	0
Ac-ft	419	1,130	806	738	1,110	1,430	26,800	30,270	8,960	1,500	39	0

Calendar year 1961: Max 999 Min 0 Mean 67.1 Ac-ft 48,530  
 Water year 1961-62: Max 1,000 Min 0 Mean 101 Ac-ft 73,200

Peak discharge (base, 500 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-21	1330	5.61	1,020	5-10	1500	5.74	1,070
4-25	1300	5.52	992				

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 10 to Mar. 24 (stage-discharge relation affected by ice during most of period), Apr. 30 to May 10.

8-2490. Conejos River near La Sauses, Colo.

Location.--Lat 37°18', long 105°45', in secs. 2 and 11 (two channels), T.35 N., R.11 E., on left bank of main channel 125 ft downstream from bridge on State Highway 158 and on right bank of secondary channel 50 ft downstream from bridge on State Highway 158, half a mile upstream from mouth, 1.8 miles north of La Sauses, and 13 miles southeast of Alamosa.

Drainage area.--887 sq mi.

Records available.--March 1921 to September 1962. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Two water-stage recorders. Datum of gage on main (north) channel is 7,495.02 ft, and on secondary (south) channel is 7,495.89 ft, above mean sea level (levels by Bureau of Reclamation). Main channel: Prior to Oct. 23, 1934, at bridge 125 ft upstream at various datums; Oct. 23, 1934, to Apr. 10, 1937, at site 50 ft upstream, and Apr. 11 to Sept. 30, 1937, at present site, at datum 1.00 ft higher. South channel: Prior to Oct. 23, 1934, at bridge 50 ft upstream at datum 0.44 ft higher. Oct. 23, 1934, to May 3, 1936, at site 30 ft upstream at present datum.

Average discharge.--41 years, 197 cfs (142,600 acre-ft per year).

Extremes.--Maximum discharge during year, 1,560 cfs May 10; no flow Aug. 7-11, 14-17.

1921-62: Maximum discharge, 3,890 cfs May 15, 1941; no flow at times in 1934, 1948, 1950-51, 1953-62.

Maximum stage known since at least 1854 occurred Oct. 5, 1911, from information by local residents.

Remarks.--Records fair. Discharge measurements or observations of no flow generally made twice a month. Diversions for irrigation of about 75,000 acres above station.

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	72	69	109	77	90	74	126	786	285	42	1.8	1.0
2	8.9	166	104	77	93	85	126	606	306	42	1.5	1.6
3	12	482	104	75	95	88	126	555	339	41	.2	1.8
4	13	556	94	80	101	106	131	577	384	38	.1	1.6
5	13	556	81	84	103	102	165	679	551	40	.1	2.4
6	13	200	75	84	106	109	177	828	791	48	.1	3.6
7	16	135	71	70	112	114	181	1,110	871	61	0	5.0
8	16	123	70	75	112	109	196	1,260	722	61	0	5.0
9	16	116	77	75	115	102	217	1,310	553	58	0	4.5
10	16	134	80	72	126	88	211	1,460	543	55	0	3.1
11	16	125	74	70	130	78	202	1,380	632	49	0	2.8
12	18	121	65	70	140	74	199	1,030	632	42	.1	2.8
13	22	114	65	72	161	79	211	866	529	40	.1	2.4
14	26	106	70	75	193	72	267	658	595	40	0	.6
15	27	109	71	74	189	81	370	551	605	36	0	.9
16	27	119	77	74	189	83	540	419	510	30	0	1.2
17	29	102	76	72	186	87	701	332	424	14	0	1.3
18	33	96	75	75	161	92	855	287	313	3.8	.1	1.6
19	33	84	76	77	140	87	994	246	194	2.7	.6	1.8
20	32	76	77	82	133	81	1,180	218	142	3.6	1.6	2.6
21	37	81	84	80	133	76	1,330	228	108	2.1	2.1	2.4
22	34	82	87	80	123	75	1,290	224	99	1.7	3.1	2.4
23	30	72	82	77	122	75	1,020	208	82	2.0	3.6	2.6
24	27	72	77	80	116	72	805	205	68	2.6	3.8	3.4
25	28	77	78	82	116	68	941	206	72	3.6	3.8	1.3
26	28	91	77	87	102	68	1,200	216	100	3.7	4.1	.2
27	25	96	78	82	96	73	1,260	280	87	3.0	4.1	.3
28	28	86	79	89	83	101	1,140	362	69	2.7	3.8	.3
29	39	94	79	89	-	142	1,200	407	59	2.3	3.6	.3
30	49	100	78	89	-----	158	1,180	309	44	3.4	.9	.3
31	55	-----	78	89	-----	141	-----	276	-----	2.5	.8	-----
Total	774.1	4,440	2,468	2,434	3,566	2,840	13,541	18,079	10,709	776.7	40.0	61.1
Mean	25.0	148	79.6	78.5	127	91.6	618	583	357	25.1	1.29	2.04
Ac-ft	1,540	8,810	4,900	4,830	7,070	5,630	36,780	35,860	21,240	1,540	79	121

Calendar year 1961: Max 1,150 Min 0 Mean 104 Ac-ft 75,580

Water year 1961-62: Max 1,460 Min 0 Mean 177 Ac-ft 128,400

Note.--Stage-discharge relation affected by ice on main channel Nov. 13, Dec. 9 to Jan. 4, Jan. 10-19, and on secondary channel Nov. 13, 14, Dec. 10-25, Feb. 26-28. No gage-height record on secondary channel Dec. 26 to Feb. 23 (stage-discharge relation affected by ice during most of period). Stage-discharge relation indefinite on secondary channel Oct. 4-16.

## 8-2500. Culebra Creek at San Luis, Colo.

Location.--Lat 37°11', long 105°26', in Beaubien Grant, at bridge on left bank, 1 mile south of San Luis, Costilla County, and 1 mile upstream from Rito Seco.

Drainage area.--220 sq mi.

Records available.--April 1927 to September 1962. Monthly discharge only for some periods, published in WSP 1312. Records for January 1910 to December 1911, published as "Culebra River" in WSP 288 and 308, have been found to be unreliable and should not be used.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 8,000 ft (from topographic map). Prior to May 23, 1931, water-stage recorder at present site at different datum.

Average discharge.--35 years, 51.8 cfs (37,500 acre-ft per year).

Extremes.--Maximum discharge during year, 171 cfs June 13 (gage height, 2.05 ft); minimum daily, 12 cfs Sept. 10-13. 1927-62: Maximum discharge, 654 cfs July 1, 1947 (gage height, 5.09 ft), from rating curve extended above 300 cfs; minimum daily, 4.6 cfs Oct. 31, 1950.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Diversions above station for irrigation. Flow regulated by Sanchez Reservoir on Ventero Creek (capacity, 103,000 acre-ft).

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

0.2	8.0
.5	24
1.0	59
1.5	107
2.0	165

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	17	19	18	15	18	16	18	29	52	67	58	54
2	16	18	17	14	18	16	18	31	70	83	53	54
3	16	16	17	14	18	16	18	44	74	106	53	53
4	17	16	16	14	18	16	19	53	74	74	62	52
5	16	16	16	14	18	16	19	52	69	63	68	51
6	16	16	*16	15	18	18	19	60	75	64	95	50
7	16	18	16	16	17	17	18	82	90	61	122	51
8	16	18	16	16	16	17	18	93	90	57	122	34
9	16	19	13	15	*18	17	19	86	90	57	122	13
10	18	19	13	14	19	16	19	88	94	63	93	12
11	16	18	14	14	19	16	19	57	96	91	65	12
12	16	19	13	14	20	18	18	84	134	118	65	12
13	16	18	13	14	21	16	*18	54	143	117	94	12
14	16	18	14	14	19	17	17	26	126	89	123	14
15	16	*19	15	14	18	17	17	58	125	58	93	16
16	16	19	16	14	17	19	17	84	122	72	64	16
17	16	18	16	14	16	18	18	72	124	124	62	16
18	*16	18	16	15	16	19	18	68	122	158	60	17
19	16	18	16	16	16	19	17	89	120	149	60	17
20	16	18	16	16	16	19	16	115	114	102	60	*21
21	16	19	16	16	16	18	16	109	105	97	60	23
22	16	19	16	16	16	18	16	108	105	73	36	20
23	14	19	16	16	16	18	17	108	96	54	51	20
24	15	19	16	16	16	19	18	105	*61	97	36	21
25	16	19	16	16	16	19	19	107	66	108	38	21
26	16	18	16	16	16	18	18	111	118	107	53	21
27	17	16	16	16	14	18	17	110	131	89	62	19
28	17	16	16	16	15	17	16	*97	129	57	59	20
29	17	16	16	16	-	17	16	61	99	*55	57	19
30	16	17	16	17	-----	17	23	52	68	57	54	19
31	17	-----	15	18	-----	18	-----	48	-----	58	54	-----
Total	501	536	482	471	481	540	536	2,341	2,982	2,625	2,154	780
Mean	16.2	17.9	15.5	15.2	17.2	17.4	17.9	75.5	99.4	84.7	69.5	26.0
Ac-ft	994	1,060	936	934	954	1,070	1,060	4,640	5,910	5,210	4,270	1,550

Calendar year 1961: Max 164 Min 10 Mean 35.1 Ac-ft 25,420  
 Water year 1961-62: Max 158 Min 12 Mean 39.5 Ac-ft 28,610

\* Discharge measurement made on this day.

Note.--No gage-height record Aug. 6 to Sept. 2, Sept. 11-16.



## RIO GRANDE BASIN

8-2515. Rio Grande near Lobatos, Colo.

Location.--Lat 37°05', long 105°45', in sec.22, T.33 N., R.11 E., on right bank at highway bridge, 6 miles north of Colorado-New Mexico State line, 7 miles downstream from Culebra Creek, 10 miles east of Lobatos, and 14 miles east of Antonito.

Drainage area.--7,700 sq mi, approximately (includes 2,940 sq mi in closed basin in northern part of San Luis Valley, Colo.).

Records available.--June 1899 to September 1962. Monthly discharge only for some periods, published in WSP 1312. Published as "at Genicero" 1899-1901, and as "near Genicero" 1902-4.

Gage.--Water-stage recorder. Datum of gage is 7,427.63 ft above mean sea level, datum of 1929. Prior to Nov. 8, 1910, staff or chain gage at same site and datum.

Average discharge.--63 years, 633 cfs (458,300 acre-ft per year).

Extremes.--Maximum discharge during year, 2,620 cfs Apr. 22 (gage height, 3.88 ft); minimum daily, 39 cfs Aug. 19.

1899-1962: Maximum discharge observed, 13,200 cfs June 8, 1905 (gage height, 9.1 ft), from rating curve extended above 8,000 cfs, no flow at times in 1950-51, 1956.

Maximum stage known, probably since at least 1828, occurred June 8, 1905.

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. Natural flow of stream affected by transmountain diversions, storage reservoirs, ground-water withdrawals and diversions for irrigation, and return flow from irrigated areas.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Nov. 2-6, June 2 to July 3)

0.6	26	2.0	554
.8	58	2.5	940
1.1	134	3.0	1,510
1.5	284	4.0	2,790

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	69	163	384			479	390	1,680	531	280	150	82
2	71	251	406			525	496	1,380	554	289	144	76
3	73	681	423			612	513	1,240	586	298	131	73
4	69	854	418			519	537	1,280	632	289	120	69
5	62	883	401			479	508	1,340	753	322	108	69
6	62	717	384			446	462	1,490	1,010	353	114	62
7	65	542	384			502	462	1,620	1,190	374	108	69
8	62	502	289		500	468	446	1,820	1,050	468	100	67
9	71	468	210			434	479	1,970	892	451	92	85
10	76	474	160			418	502	2,150	802	446	82	85
										446		
11	71	537	110			412	508	2,290	854	401	76	78
12	73	531	115			342	485	2,130	951	368	76	78
13	111	450	210			303	474	1,950	836	342	69	73
14	108	505	230			272	490	1,790	864	332	53	71
15	111	468	260			332	632	1,770	951	294	49	62
				270								
16	114	485	265			379	811	1,340	1,060	259	47	62
17	102	479	270		639	457	1,080	1,040	1,120	231	44	58
18	92	470	270		605	395	1,570	1,030	962	199	44	56
19	90	455	270		573	379	1,930	802	777	181	32	56
20	88	445	270		560	368	2,250	653	612	117	44	62
21	85	395	275		592	358	2,480	625	508	65	53	69
22	85	375	275		525	348	2,510	681	479	51	65	65
23	80	370	270		485	342	2,340	580	485	51	54	65
24	69	355	265		496	322	1,870	537	412	67	53	67
25	73	342	265		485	289	1,620	519	353	85	125	73
26	102	348	265		490	272	1,730	474	368	85	90	65
27	105	379	265		423	259	1,770	479	418	98	85	56
28	95	390	265		418	272	1,640	605	358	114	78	54
29	98	390	265		-	308	1,640	674	322	276	80	54
30	111	390	265		-----	353	1,750	605	327	177	80	54
31	131	-----	265		-----	384	-----	513	-----	160	88	-----
Total	2,674	14,094	8,669	8,370	14,291	12,028	34,375	37,057	21,017	7,523	2,541	2,015
Mean	86.3	470	280	270	510	388	1,146	1,195	701	243	82.0	67.2
Ac-ft	5,300	27,960	17,190	16,600	28,350	23,860	68,180	73,500	41,690	14,920	5,040	4,000

Calendar year 1961: Max 1,230 Min 30 Mean 234 Ac-ft 169,200  
Water year 1961-62: Max 2,510 Min 39 Mean 451 Ac-ft 326,600

Note.--Stage-discharge relation affected by ice Nov. 13, 14, 18-20, 22-24, Dec. 4, Dec. 9 to Feb. 16. No gage-height record Oct. 1-3, Dec. 25 to Jan. 4.

## 8-2520. Rio Grande at Colorado-New Mexico State line

Location.--Lat 37°00', long 105°43', in SE¼ sec.36, T.1 N., R.75 W., in Beaubien Grant, on left bank a quarter of a mile upstream from Colorado-New Mexico State line, 1½ miles upstream from Costilla Creek, and 5¼ miles west of Jaroso.

Records available.--October 1953 to September 1962.

Gage.--Water-stage recorder.

Average discharge.--9 years, 270 cfs (195,500 acre-ft per year).

Extremes.--Maximum discharge during year, 2,420 cfs May 12 (gage height, 5.64 ft); minimum daily, 46 cfs Aug. 20.

1953-62: Maximum discharge, 4,150 cfs May 29, 1958 (gage height, 7.07 ft); no flow at times in 1956.

Flood of June 8, 1905 (daily discharge, 13,100 cfs at station near Lobatos 5.8 miles upstream) was probably the greatest since at least 1828.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Natural flow of stream affected by transmountain diversions, storage reservoirs, ground-water withdrawals and diversions for irrigation, and return flow from irrigated areas.

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

1.2	27	4.0	1,040
1.4	61	5.0	1,790
2.0	222	6.0	2,820
3.0	555		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	59	166	368				372	1710	535	359	163	76
2	61	231	375				459	1450	579	343	149	76
3	61	615	385				498	1270	603	349	138	72
4	* 63	880	398				531	1290	658	336	127	68
5	61	900	368				515	1380	756	340	108	68
6	59	770	340				470	1520	974	362	106	65
7	59	539	305				466	1650	1200	378	111	65
8	57	484	261				452	1840	1150	438	106	70
9	63	445	216			410	466	1960	1010	448	98	70
10	70	445	138				494	2120	900	450	88	88
11	70	494	100				*508	2300	910	410	81	76
12	70	498					494	2260	992	380	81	74
13	96	408					473	2050	950	350	76	74
14	111	466					487	1870	910	335	63	70
15	108	442					579	1800	992	300	55	63
16	111	438		280	500		738	1530	1050	265	55	61
17	106	452					956	1120	1180	235	52	59
18	96	428				398	1300	*1030	1050	210	53	55
19	88	435				365	1600	860	915	185	48	55
20	88	414				356	1910	725	707	*130	46	61
21	83	*381	(*)285				343	2190	734	619	72	53
22	83	352					333	2300	795	567	55	68
23	83	340				(*)	324	2220	648	591	53	*55
24	76	346		(*)			*314	1840	563	559	61	52
25	*74	340					289	1530	559	487	86	98
26	98	333					264	1570	512	470	83	96
27	108	362					252	1640	504	501	93	86
28	96	375					255	1530	595	476	111	76
29	103	378					289	1470	666	394	252	74
30	113	372					340	1650	640	404	198	79
31	143	-----					368	-----	543	-----	172	83
Total	2,617	13,529	8,954	8,680	14,000	11,460	31,708	38,494	23,089	7,839	2,624	1,986
Mean	84.4	451	289	280	500	370	1,057	1,242	770	253	84.6	66.2
Ac-ft	5,190	26,830	17,760	17,220	27,770	22,730	62,890	76,350	45,800	15,550	5,200	3,940
Calendar year 1961: Max 1,260 Min 25 Mean 235 Ac-ft 170,400												
Water year 1961-62: Max 2,300 Min 46 Mean 452 Ac-ft 327,200												

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 12 to Feb. 27, Mar. 10, 11. No gage-height record Jan. 1-19, Feb. 28 to Mar. 9, Mar. 12-17 (stage-discharge relation affected by ice during most of periods), July 10-20.

## COLORADO RIVER MAIN STEM

9-105. Colorado River below Baker Gulch, near Grand Lake, Colo.

Location--Lat 40°19'33", long 105°51'22", in sec.12, T.4 N., R.76 W., on left bank 500 ft downstream from Baker Gulch, 1 mile upstream from Bowen Gulch, and 5 miles northwest of town of Grand Lake.

Drainage area--53.0 sq mi.

Records available--May 1953 to September 1962.

Gage--Water-stage recorder. Altitude of gage is 8,750 ft (from topographic map).

Average discharge--9 years, 55.3 cfs (40,040 acre-ft per year).

Extremes--Maximum discharge during year, 582 cfs June 15 (gage height, 6.10 ft); minimum daily, 8.0 cfs on many days.  
1953-62: Maximum discharge, 976 cfs June 30, 1957 (gage height, 7.19 ft); minimum daily, 3.6 cfs Jan. 19, 1957.

Remarks--Records good except those for periods of ice effect, which are poor. Transmountain diversion above station by Grand River ditch (see elsewhere in this report).

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

3.2	7.0	4.5	156
3.3	11	5.0	260
3.5	23	6.0	550
4.0	76		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	86	56	25	13	10	8.0	10	119	163	379	49	18
2	79	50	24	13	9.0	9	10	109	198	332	42	18
3	79	45	23	12	*9.0	10	10	111	228	316	42	16
4	84	40	23	12	9.0	10	10	*137	265	*284	44	16
5	89	35	22	12	9.0	9.6	10	165	270	251	37	15
6	93	37	20	12	9.0	9.2	10	200	255	237	34	15
7	100	*38	20	12	8.0	*9.4	10	233	255	222	32	15
8	106	40	*20	11	8.0	9.4	10	270	228	200	31	16
9	111	42	19	10	8.0	9.4	*10	305	198	186	30	16
10	108	44	19	9.0	8.0	9.4	10	347	194	163	29	15
11	100	41	19	9.6	8.0	9.4	11	373	224	149	27	14
12	*92	40	19	10	9.0	8.0	12	408	244	151	28	13
13	86	39	18	*11	9.0	8.0	13	382	279	158	27	*13
14	83	38	18	11	8.0	8.0	16	324	465	134	25	13
15	86	36	17	11	8.0	8.0	22	260	540	114	*29	14
16	89	39	16	10	8.4	8.4	35	251	459	101	22	13
17	95	39	16	10	8.4	8.4	50	248	*358	93	22	12
18	95	37	16	11	8.4	8.4	68	213	302	83	25	12
19	89	34	16	10	8.0	8.4	86	192	310	95	28	11
20	89	31	15	11	8.0	8.0	140	207	300	*71	25	13
21	83	34	14	12	8.6	8.0	140	192	327	66	22	20
22	86	35	14	10	8.6	8.0	148	184	355	63	24	25
23	70	35	14	8.0	9.8	8.0	161	*174	*344	66	27	25
24	72	35	14	8.0	9.0	8.0	182	160	330	79	30	23
25	68	34	14	8.0	9.0	8.0	207	156	327	70	23	23
26	66	33	14	9.0	8.0	9.0	190	154	341	72	25	22
27	70	30	14	9.0	8.0	10	167	180	352	70	24	21
28	67	28	14	9.0	8.0	10	178	161	316	58	22	22
29	56	25	14	9.0	-	10	172	170	338	51	20	24
30	59	25	14	9.0	-----	10	136	154	438	49	20	23
31	59	-----	13	9.0	-----	10	-----	158	-----	51	20	-----
Total	2,595	1,115	538	320.6	239.2	275.4	2,234	6,697	9,203	4,414	885	516
Mean	83.7	37.2	17.4	10.3	8.54	8.88	74.5	216	307	142	28.5	17.2
Ac-ft	5,150	2,210	1,070	636	474	546	4,430	13,280	18,250	8,760	1,760	1,020

Calendar year 1961: Max 530 Min - Mean 71.2 Ac-ft 51,580  
Water year 1961-62: Max 540 Min 8.0 Mean 79.5 Ac-ft 57,590

\* Discharge measurement made on this day.

Note--Stage-discharge relation affected by ice Nov. 3-11, Nov. 13 to Apr. 21.

9-110. Colorado River near Grand Lake, Colo.

Location.--Lat 40°13'08", long 105°51'25", in NE¼SW¼ sec.13, T.3 N., R.76 W., on left bank 200 ft downstream from bridge on U. S. Highway 34, 400 ft upstream from high-water line of Shadow Mountain Lake at elevation 8,367 ft, and 3 miles southwest of town of Grand Lake.

Drainage area.--103 sq mi.

Records available.--July 1904 to September 1918, October 1933 to September 1962. Monthly discharge only for some periods, published in WSP 1313. Published as "Grand River (North Fork)" 1904 and as "North Fork of Grand River" 1905-18.

Gage.--Water-stage recorder. Altitude of gage is 8,380 ft (from topographic map). Prior to June 15, 1934, staff gage at same site and datum. June 15, 1934, to Sept. 26, 1944, water-stage recorder at site 1,100 ft downstream at different datum.

Average discharge.--43 years, 96.7 cfs (70,010 acre-ft per year).

Extremes.--Maximum discharge during year, 747 cfs June 15 (gage height, 5.91 ft); maximum gage height, 5.98 ft Feb. 14 (backwater from ice); minimum daily discharge, 18 cfs Jan. 23-25, Mar. 25. 1904-18, 1933-62: Maximum discharge observed, 1,840 cfs June 15, 16, 1918 (gage height, 7.0 ft), from rating curve extended above 1,100 cfs; minimum daily, 1.7 cfs July 18, 19, 1934.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Diversions above station for irrigation of about 200 acres of hay meadows above station and about 2,000 acres below. Transmountain diversion above station by Grand River ditch through La Poudre Pass to Cache la Poudre River basin (see elsewhere in this report).

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

3.4	18	4.5	170
3.6	32	5.0	315
3.9	68	5.5	520
4.2	116	5.9	760

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	150	97	44	26	23	20	22	223	290	531	110	33
2	132	90	39	26	22	21	22	215	350	448	97	32
3	132	68	39	26	*22	23	22	208	385	421	87	31
4	136	60	39	25	22	23	22	*250	443	*401	98	30
5	141	56	39	27	22	22	22	308	470	350	90	29
6	146	60	40	26	22	22	22	368	443	332	74	28
7	150	*58	39	26	21	*23	22	409	*443	304	67	27
8	156	58	*39	22	21	23	*22	485	434	265	62	29
9	164	58	38	21	21	23	22	526	364	238	61	30
10	168	60	38	20	21	23	22	599	343	188	60	28
11	150	60	37	20	21	23	22	617	382	166	58	26
12	*145	54	37	21	22	22	22	683	374	158	55	25
13	134	52	36	*21	22	21	24	647	425	180	58	*23
14	129	50	35	21	21	21	27	558	558	152	54	23
15	132	47	34	20	21	22	32	452	708	126	*48	26
16	137	50	33	20	22	22	49	425	659	105	44	25
17	143	50	33	20	22	22	68	438	510	94	42	23
18	145	50	33	21	21	22	94	401	401	84	48	22
19	139	45	32	20	21	21	166	360	421	76	67	22
20	139	41	31	21	22	21	223	382	434	*54	55	24
21	132	44	31	23	22	21	268	368	466	30	46	38
22	137	48	30	20	22	21	274	357	510	26	44	42
23	116	48	30	18	23	21	274	350	*500	27	48	39
24	122	49	31	18	22	20	336	326	485	75	60	37
25	108	48	30	18	22	18	389	304	475	58	43	36
26	106	48	31	19	22	20	368	294	490	57	49	35
27	113	47	29	19	21	22	336	346	510	65	46	33
28	113	44	29	19	20	22	357	329	485	46	41	35
29	98	44	29	20	-	22	346	329	452	36	36	39
30	95	38	28	21	-----	22	265	304	581	31	35	43
31	103	-----	27	21	-----	22	-----	290	-----	76	34	-----
Total	4,111	1,622	1,060	666	606	671	4,160	12,151	13,791	5,200	1,817	913
Mean	133	54.1	34.2	21.5	21.6	21.6	139	392	460	168	58.6	30.4
Ac-ft	8,150	3,220	2,100	1,320	1,200	1,330	8,250	24,100	27,350	10,310	3,600	1,810

Calendar year 1961: Max 564 Min 3.5 Mean 92.1 Ac-ft 66,670  
 Water year 1961-62: Max 708 Min 18 Mean 128 Ac-ft 92,740

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 4-25, 27-30, Dec. 2-5, 7-9, 11-13, 21-25, 27, 28, Dec. 31 to Jan. 4, Jan. 9-12, 14-16, Feb. 14, 15, 18, 19, Feb. 26 to Mar. 2, Mar. 4-6, 11-17, 19, 21, 23-28, Apr. 2, 12-14. No gage-height record Jan. 13, Jan. 17 to Feb. 2 (stage-discharge relation affected by ice during part of periods).



## GRAND LAKE OUTLET BASIN

9-130. Alva B. Adams tunnel at east portal, near Estes Park, Colo.

Location.--Lat 40°19'40", long 105°34'39", in SW 1/4 sec. 9, T.4 N., R.73 W., on right bank at upstream end of Aspen Creek siphon, 700 ft downstream from east portal and 4 1/2 miles southwest of Estes Park.

Records available.--October 1946 to September 1962. Monthly discharge only for August and September 1947.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 8,250 ft (from topographic map). Prior to Oct. 1, 1950, water-stage recorder and Parshall flume at different datum. Oct. 1, 1950, to Sept. 30, 1952, water-stage recorder and Cippoletti weir at different datum.

Average discharge.--16 years, 212 cfs (153,500 acre-ft per year).

Extremes.--Maximum discharge during year, 671 cfs Jan. 23 (gage height, 4.63 ft); no flow for many days.  
1946-62: Maximum discharge, that of Jan. 23, 1962; no flow at times in most years.

Remarks.--Records excellent. This is a transmountain diversion from Grand Lake and Shadow Mountain Lake for power and irrigation development in the South Platte River basin as part of the Colorado-Big Thompson project. Diversion point is at west portal near town of Grand Lake, 13.35 miles west of east portal.

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0	155	373	244	318	418	0	106	415	589	249	215
2	216	206	204	392	326	352	205	2.0	389	581	229	89
3	240	231	3.6	382	92	248	203	230	277	578	210	227
4	222	112	342	403	1.4	172	205	76	291	574	317	264
5	219	92	358	334	316	317	211	105	197	572	360	305
6	248	282	249	176	338	382	254	10	245	570	259	*290
7	107	270	357	113	387	334	2.0	104	290	578	296	312
8	0	218	368	354	315	314	0	0	263	585	301	445
9	284	224	223	379	250	368	266	0	284	581	378	367
10	287	224	189	450	251	390	312	0	414	585	404	445
11	72	2.0	406	467	136	262	152	0	1.7	587	258	447
12	128	47	433	412	346	451	155	0	0	585	211	457
13	1.2	303	417	183	364	402	107	0	0	583	329	550
14	153	291	421	159	373	406	1.8	318	130	567	279	550
15	1.8	268	415	403	439	402	120	331	160	535	337	556
16	196	276	160	419	459	367	253	210	154	431	405	555
17	239	246	1.4	380	321	84	210	326	168	561	372	556
18	218	136	347	420	279	2.0	206	296	354	574	289	554
19	*195	2.0	412	447	*469	256	195	238	379	477	199	550
20	158	289	379	167	471	295	104	189	201	453	348	554
21	0	330	371	206	438	251	117	292	165	363	353	554
22	0	381	365	401	488	284	52	314	99	352	375	551
23	232	82	94	459	494	255	69	398	53	340	365	548
24	279	351	1.4	362	433	2.0	127	374	1.8	181	361	548
25	226	4.7	1.4	417	404	1.0	254	410	153	250	233	548
26	238	1.4	333	420	506	254	244	412	305	*439	118	*546
27	240	341	326	229	522	*177	206	356	357	375	287	548
28	2.0	349	330	153	437	197	191	390	357	400	399	52
29	284	*354	335	*366	-	109	179	414	405	266	343	1.4
30	262	354	238	398	-----	152	225	413	592	343	301	12
31	-----	-----	137	355	-----	0	-----	421	-----	214	231	-----
Total	4,948.0	6,422.1	3,589.8	10,450	9,973.4	7,904.0	4,825.8	6,735	7,100.5	14,669	9,396	12,192.6
Mean	160	214	277	337	356	255	161	217	237	473	303	416
Ac-ft	9,810	12,740	17,040	20,730	19,780	15,680	9,570	13,360	14,080	29,100	18,640	24,110

Calendar year 1961: Max 550 Min 0 Mean 238 Ac-ft 172,600

Water year 1961-62: Max 592 Min 0 Mean 283 Ac-ft 204,700

\* Discharge measurement made on this day.

## 9-145. Shadow Mountain Lake near Grand Lake, Colo.

Location.--Lat 40°12'30", long 105°50'20", in SW¼ sec.19, T.3 N., R.75 W., in gatehouse on left side of outlet gates near center of Shadow Mountain Dam on the Colorado River, 1 mile upstream from Pole Creek and 3¼ miles south of town of Grand Lake.

Drainage area.--190 sq mi.

Records available.--April 1947 to September 1962. Prior to October 1960, published as Shadow Mountain Reservoir near Grand Lake.

Gage.--Water-stage recorder for elevations above 8,364.0 ft and reference points along upstream face of dam for those below. Datum of gage is at mean sea level (Bureau of Reclamation bench mark). Supplementary water-stage recorder at Grand Lake outlet gates about 3 miles from dam.

Extremes.--Maximum contents during year, 17,860 acre-ft Oct. 15, 18, 20, 21 (elevation, 8,367.00 ft); minimum, 16,450 acre-ft Nov. 3 (elevation, 8,366.23 ft).

1947-62: Maximum contents, 17,920 acre-ft May 22, 1955 (elevation, 8,367.03 ft); minimum since appreciable storage was first attained, 2,630 acre-ft May 14, 1948.

Remarks.--Figures given herein are combined figures of usable contents for Shadow Mountain Lake and Grand Lake. Shadow Mountain Lake is used for stabilization of water level in Grand Lake, from which it is separated by gates. Shadow Mountain Lake is formed by earth- and rock-fill dam and dikes. Storage began in April 1947. Capacity, 17,860 acre-ft (including usable capacity of Grand Lake above elevation 8,365 ft) between elevations 8,347 (sill of outlet gate) and 8,367 ft (maximum water surface). Dead storage in Shadow Mountain Lake, 506 acre-ft. Dead Storage in Grand Lake not determined. Capacity of Shadow Mountain Lake and Grand Lake usable for diversion through Alva. B. Adams tunnel, 3,660 acre-ft between elevations 8,365 (crest of tunnel inlet) and 8,367 ft (maximum water surface). Transmountain diversion from Colorado River basin, including water pumped from Lake Granby is effected through Grand Lake and Alva B. Adams tunnel, for power and irrigation in South Platte River basin.

Cooperation.--Records furnished by Bureau of Reclamation.

Month-end elevation and contents, water year October 1961 to September 1962

Date	Elevation (feet)†	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	8,366.70	17,310	-
Oct. 31.....	8,366.53	17,000	-310
Nov. 30.....	8,366.59	17,110	+110
Dec. 31.....	8,366.72	17,350	+240
Calendar year 1961.....	-	-	+150
Jan. 31.....	8,366.71	17,330	-20
Feb. 28.....	8,366.64	17,200	-130
Mar. 31.....	8,366.48	16,910	-290
Apr. 30.....	8,366.75	17,400	+490
May 31.....	8,366.49	16,930	-470
June 30.....	8,366.57	17,070	+140
July 31.....	8,366.57	17,070	0
Aug. 31.....	8,366.58	17,090	+20
Sept. 30.....	8,366.75	17,400	+310
Water year 1961-62.....	-	-	+90

† Elevation at 2400.

## ARAPAHO CREEK BASIN

9-165. Arapaho Creek at Monarch Lake Outlet, Colo.

Location.--Lat 40°06'45", long 105°44'57", in SW¼SW¼ sec.24, T.2 N., R.75 W., on left bank a quarter of a mile downstream from Monarch Lake Outlet and 10 miles east of Granby. Prior to Aug. 17, 1962, gage on right bank.

Drainage area.--47.1 sq mi.

Records available.--October 1944 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 8,310 ft (from topographic map). Staff gage read twice daily at site 1 mile downstream at different datum, used for winter records.

Average discharge.--18 years, 83.9 cfs (60,740 acre-ft per year).

Extremes.--Maximum discharge during year, 854 cfs July 1 (gage height, 3.96 ft); minimum daily, 7.7 cfs Oct. 30.

1944-62: Maximum discharge, 1,300 cfs June 11, 1952 (gage height, 4.71 ft); minimum daily, 0.2 cfs Nov. 5, 1956 (spillway at Monarch Lake blocked for construction).

Remarks.--Records good except those Jan. 18 to Mar. 24, and those for periods of ice effect or no gage-height record, which are fair. Natural flow regulated by Monarch Lake. No diversion 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. 8-16)

Oct. 1 to Jan. 17, Mar. 25 to Aug. 16				Jan. 18 to Mar. 24		Aug. 17 to Sept. 30	
1.1	5.0	2.0	106	1.5	8.8	1.3	6.0
1.2	8.0	2.5	232	1.7	16	1.5	17
1.3	13	3.0	400			1.7	37
1.5	31	4.0	860			2.0	84
1.7	54						

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	141	24	10	b14	*12	15	14	123	230	727	98	27
2	136	47	10	b13	12	14	15	106	270	537	109	26
3	127	42	10	b13	11	14	15	*100	300	491	193	26
4	123	40	10	b13	12	15	14	100	300	*487	162	25
5	123	36	12	b13	12	15	14	110	250	432	36	24
6	45	35	14	b13	12	15	14	140	270	376	19	24
7	92	*35	20	b12	13	*15	*14	150	300	355	19	22
8	137	36	*37	b12	12	14	14	170	298	384	18	18
9	158	35	64	13	13	14	14	190	125	330	52	18
10	153	38	57	b14	13	14	14	200	244	326	77	18
11	106	38	31	b15	12	14	14	200	323	312	67	18
12	*88	39	11	15	12	14	14	200	458	326	64	18
13	88	38	11	*13	13	15	15	200	475	348	64	15
14	88	38	12	12	14	15	16	200	*503	247	68	*13
15	88	35	12	12	14	14	19	190	510	193	*57	13
16	88	34	12	12	15	14	25	180	406	193	50	12
17	90	34	12	12	14	14	33	170	278	158	56	10
18	98	34	12	12	14	14	50	170	253	184	56	10
19	102	34	12	12	14	14	77	170	355	190	56	10
20	100	34	12	12	14	14	119	170	519	*158	56	20
21	96	33	12	12	13	14	381	170	539	148	70	25
22	94	33	12	12	14	14	193	160	578	168	53	10
23	90	33	13	12	14	14	116	160	578	155	23	25
24	84	34	13	11	14	15	141	170	527	163	52	29
25	81	18	13	11	15	16	182	190	428	143	46	20
26	73	9.0	14	11	16	16	215	210	479	136	25	9.0
27	67	9.0	14	11	15	15	193	210	582	114	27	9.5
28	62	9.0	b14	11	15	14	166	200	551	125	41	40
29	29	9.5	b14	11	-	14	160	190	544	123	25	51
30	7.7	9.5	b14	11	-----	14	145	200	557	106	29	20
31	8.0	-----	b14	12	-----	14	-----	210	-----	100	27	-----
Total	2862.7	923.0	528	382	374	447	2416	5,309	12,030	8,235	1,795	594.5
Mean	92.3	30.8	17.0	12.3	13.4	14.4	80.5	171	401	266	57.9	19.8
Ac-ft	5,680	1,830	1,050	758	742	887	4,790	10,530	23,860	16,330	3,560	1,180

Calendar year 1961: Max 600 Min 4.5 Mean 84.8 Ac-ft 61,420  
Water year 1961-62: Max 727 Min 7.7 Mean 98.3 Ac-ft 71,200

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Mar. 25 to Apr. 7, May 3 to June 7. Discharge computed from twice-daily staff gage readings Jan. 18 to Mar. 24.

## 9-185. Lake Granby near Granby, Colo.

Location.--Lat 40°11'00", long 105°52'10", in NW¼NE¼ sec.35, T.3 N., R.76 W., in Granby pumping plant at north shore of lake, 2½ miles north of Granby Dam on Colorado River and 7½ miles northeast of Granby.

Drainage area.--311 sq mi.

Records available.--October 1949 to September 1962. Prior to October 1955 published as Granby Reservoir near Granby.

Gage.--Water-stage recorder. Datum of gage is at mean sea level (Bureau of Reclamation bench mark). Prior to Apr. 9, 1951, staff gage at Granby Dam at same datum.

Extremes.--Maximum contents during year, 465,900 acre-ft July 13 (elevation, 8,280.05 ft); minimum, 319,100 acre-ft Apr. 19 (elevation, 8,258.33 ft).

1949-62: Maximum contents, that of July 13, 1962; minimum since appreciable storage was first attained, 22,940 acre-ft Apr. 21, 1956 (elevation, 8,194.37 ft).

Remarks.--Lake is formed by earth-fill dam and dikes. Regulation began Sept. 13, 1949, and usable storage began June 14, 1950, while dam was under construction. Usable capacity, 465,600 acre-ft between elevations 8,186.00 (trashrack sills at outlet structures) and 8,280.00 ft (top of radial spillway gates). Dead storage, 74,190 acre-ft. Lake is used to store water for pumping to Shadow Mountain Lake and transmountain diversion through Alva B. Adams tunnel for power and irrigation in South Platte River basin. Figures given herein represent usable contents.

Cooperation.--Records furnished by Bureau of Reclamation.

Month-end elevation and contents, water year October 1961 to September 1962

Date	Elevation (feet)†	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	8,268.25	383,200	-
Oct. 31.....	8,271.28	403,900	+20,700
Nov. 30.....	8,270.68	399,800	-4,100
Dec. 31.....	8,268.76	386,700	-13,100
Calendar year 1961.....	-	-	+95,100
Jan. 31.....	8,266.32	370,300	-16,400
Feb. 28.....	8,263.85	354,100	-16,200
Mar. 31.....	8,260.78	334,400	-19,700
Apr. 30.....	8,260.08	330,000	-4,400
May 31.....	8,266.87	374,000	+44,000
June 30.....	8,279.66	463,100	+89,100
July 31.....	8,279.94	465,100	+2,000
Aug. 31.....	8,278.37	453,800	-11,300
Sept. 30.....	8,275.11	430,600	-23,200
Water year 1961-62.....	-	-	+47,400

† Elevation at 2400.



## COLORADO RIVER MAIN STEM

9-190. Colorado River below Lake Granby, Colo.

Location.--Lat 40°08'39", long 105°52'00", in SE¼SE¼ sec.11, T.2 N., R.76 W., on right bank 0.3 mile downstream from Granby Dam, 1 mile upstream from Walden Hollow, and 5 miles northeast of Granby.

Drainage area.--311 sq mi.

Records available.--October 1950 to September 1962. Prior to October 1955 published as "below Granby Reservoir."

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 8,050 ft (from topographic map).

Extremes.--Maximum daily discharge during year, 1,400 cfs (estimated) July 3, 4; minimum, 13 cfs Sept. 15-30.  
1950-62: Maximum daily discharge, that of July 3, 4, 1962; minimum, 5.6 cfs Sept. 23-28, 1961.

Remarks.--Records excellent Oct. 1 to Mar. 28, fair Mar. 29 to June 30, July 7 to Sept. 30, and poor July 1-6. Seepage from Lake Granby, which varies from 2-8 cfs, depending on elevation of Lake Granby, is not included in record. Flow completely regulated by Lake Granby (see preceding page). Several diversions for irrigation of hay meadows above station. Transmountain diversions by Eureka and Grand River ditches and Alva B. Adams tunnel (see elsewhere in this report).

Rating table, except period of indefinite stage-discharge relation (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Mar. 30 to June 24)

0.3	5.6	2.0	119
.6	17	3.0	228
1.0	39	5.0	517
1.5	75		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	19	19	19	19	*17	18	322	418	81	970	81	20
2	19	19	19	19	17	18	341	423	81	1,270	82	26
3	19	19	19	19	17	18	*352	423	81	1,400	82	26
4	19	19	19	19	17	18	*383	*423	81	1,400	82	20
5	19	19	19	19	17	18	409	423	81	1,270	82	18
6	19	19	19	19	17	18	408	423	83	930	82	34
7	19	*19	19	19	*17	*21	408	423	85	640	82	34
8	19	19	19	19	17	*25	408	423	86	470	82	34
9	19	19	19	19	17	31	406	423	87	390	82	32
10	19	19	19	19	17	38	406	423	88	360	82	32
11	19	19	19	19	17	38	406	423	89	380	82	32
12	*19	19	19	19	17	46	406	423	90	380	82	16
13	19	19	19	*19	17	53	406	423	90	430	82	*33
14	19	19	19	19	17	66	406	421	92	610	82	27
15	19	19	19	19	17	72	406	366	93	440	82	13
16	19	19	19	19	17	86	406	161	94	220	84	13
17	19	19	19	19	17	97	406	60	95	220	54	13
18	19	19	19	19	17	97	406	74	96	100	38	13
19	19	19	19	19	17	120	406	74	96	91	38	13
20	19	19	19	19	17	132	408	74	97	90	38	13
21	19	19	19	19	17	160	408	74	98	88	38	13
22	19	19	19	19	17	*169	408	74	99	87	38	13
23	19	19	19	18	17	201	408	74	*100	87	38	13
24	19	19	19	18	17	215	409	74	100	87	38	13
25	19	19	19	18	17	215	*409	73	210	*87	38	13
26	19	19	19	18	17	231	412	72	410	87	38	13
27	19	19	19	18	17	*241	412	71	510	88	38	13
28	19	19	19	18	18	*261	412	76	720	88	40	13
29	19	19	19	18	-	271	414	*77	850	89	38	13
30	19	19	19	18	-----	304	414	81	840	86	38	13
31	19	-----	19	18	-----	322	-----	81	-----	81	38	-----
Total	589	570	589	579	477	3,620	12,011	7,551	5,703	13,016	1,901	612
Mean	19.0	19.0	19.0	18.7	17.0	117	400	244	190	420	61.3	20.4
Ac-ft	1,170	1,130	1,170	1,150	946	7,180	23,820	14,980	11,310	25,820	3,770	1,210

Calendar year 1961: Max 96 Min 5.6 Mean 33.2 Ac-ft 24,010  
Water year 1961-62: Max 1,400 Min 13 Mean 129 Ac-ft 93,660

\* Discharge measurement made on this day.

Note.--No gage-height record July 1-6, Aug. 7 to Sept. 11. Stage-discharge relation indefinite June 25 to July 18.

COLORADO RIVER MAIN STEM

143

9-195. Colorado River near Granby, Colo.

Location--Lat 40°07'15", long 105°54'00", in SW1/4 sec.22, T.2 N., R.76 W., on right bank 0.3 mile upstream from bridge on U. S. Highway 34, 1.3 miles upstream from Willow Creek, and 3.2 miles northeast of Granby.

Drainage area--322 sq mi.

Records available--October 1907 to September 1911 (published as Grand River near Granby), October 1933 to September 1953, May 1961 to September 1962 (seasonal records only). Monthly discharge only for some periods, published in WSP 1313.

Gage--Water-stage recorder. Altitude of gage is 7,960 ft (from topographic map). June 10, 1908, to Sept. 30, 1911, staff gage and May 12 to June 10, 1934, chain gage, at site 300 ft upstream at different datums. June 11, 1934, to Sept. 30, 1953, water-stage recorder at same site and datum.

Extremes--Maximum discharge observed during season, 1,420 cfs July 3 (gage height, 3.44 ft); minimum daily, 20 cfs Sept. 15-19, 22-26, 28, 30.

1907-11, 1933-53, 1961-62: Maximum discharge observed, 4,100 cfs June 20, 1909 (gage height, 5.5 ft, site and datum then in use); minimum daily, 6.6 cfs Jan. 29, 1950; minimum observed prior to starting construction of Shadow Mountain Lake, 20 cfs Apr. 6, 1936 (discharge measurement).

Remarks--Records good except those for period of no gage-height record, which are fair. Flow regulated by Lake Granby since Sept. 13, 1949 (see elsewhere in this report). Several diversions for irrigation of hay meadows above station. Transmountain diversions above station by Eureka and Grand River ditches and Alva B. Adams tunnel (see elsewhere in this report).

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

0.3	16	1.7	195
.5	26	2.0	340
.7	40	2.5	630
1.0	71	3.0	1,000
1.4	128	3.5	1,480

Discharge, in cubic feet per second, May to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1								428	75	*968	75	27
2								422	75	*a 1.270	75	33
3								*422	71	a 1.400	79	33
4								422	68	*a 1.400	81	27
5								422	68	*a 1.270	79	29
6								416	69	928	78	39
7								416	79	642	76	40
8								416	81	472	75	39
9								422	77	388	76	39
10								422	76	363	76	39
11								422	75	*376	76	39
12								416	76	376	76	41
13								416	75	428	76	*43
14								416	75	612	76	36
15								364	75	438	*76	20
16								170	77	223	79	20
17								76	76	216	67	20
18								87	75	103	37	20
19								84	77	*78	38	20
20								87	79	75	38	21
21								81	79	75	37	21
22								73	81	75	37	20
23								73	*83	76	38	20
24								72	83	72	39	20
25								63	206	72	36	20
26								62	406	72	36	20
27								75	*510	73	36	21
28								76	*718	75	36	20
29								*69	*848	75	36	21
30								77	840	81	35	20
31		-----			-----		-----	78	-----	75	38	-----
Total								7,545	5,353	12,847	1,813	828
Mean								243	178	414	58.5	27.6
Ac-ft								14,970	10,620	25,480	3,600	1,640

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

\* Discharge measurement made on this day.

a No gage-height record.

## WILLOW CREEK BASIN

9-207. Willow Creek Reservoir near Granby, Colo.

Location.--Lat 40°08'40", long 105°56'30", in SE¼ sec.7, T.2 N., R.76 W., in shaft house near right end of Willow Creek Dam on Willow Creek, 3¼ miles upstream from mouth, and 4 miles north of Granby.

Drainage area.--134 sq mi.

Records available.--May 1953 to September 1962.

Gage.--Water-stage recorder. Datum of gage is 8,077.00 ft above mean sea level, datum of 1929 (levels by Bureau of Reclamation); gage readings have been reduced to elevations above mean sea level.

Extremes.--Maximum contents during year, 8,960 acre-ft June 21, July 27 (elevation, 8,129.64 ft); minimum, 2,380 acre-ft Apr. 2 (elevation, 8,097.15 ft).

1953-62: Maximum contents observed, 9,060 acre-ft Aug. 3, 1953 (elevation, 8,129.99 ft); minimum since first filling to spillway level, that of Apr. 2, 1962.

Remarks.--Reservoir is formed by earth- and rock-fill dam. Storage began in March 1953 and dead storage pool filled May 3, 1953. Usable capacity, 9,060 acre-ft between elevations 8,077.00 (trashrack sill at Willow Creek Outlet) and 8,130.00 ft (crest of spillway). Dead storage, 1,490 acre-ft. Reservoir is used to store water for pumping to Lake Granby, Shadow Mountain Lake, and transmountain diversion through Alva B. Adams tunnel for power and irrigation in the South Platte River basin. It is part of the Colorado-Big Thompson project. Figures given herein represent usable contents.

Cooperation.--Records furnished by Bureau of Reclamation.

Month-end elevation and contents, water year October 1961 to September 1962

Date	Elevation (feet)†	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	8,123.10	7,150	-
Oct. 31.....	8,119.26	6,230	-920
Nov. 30.....	8,123.25	7,190	+970
Dec. 31.....	8,119.09	6,190	-1,000
Calendar year 1961.....	-	-	+500
Jan. 31.....	8,119.22	6,220	+30
Feb. 28.....	8,113.14	4,960	-1,260
Mar. 31.....	8,097.20	2,390	-2,570
Apr. 30.....	8,103.42	3,300	+910
May 31.....	8,127.68	8,380	+5,080
June 30.....	8,129.36	8,870	+490
July 31.....	8,129.33	8,870	0
Aug. 31.....	8,128.75	8,690	-180
Sept. 30.....	8,129.05	8,780	+90
Water year 1961-62.....	-	-	+1,630

† Elevation at 2400.

## WILLOW CREEK BASIN

145

9-210. Willow Creek below Willow Creek Reservoir, Colo.

Location.--Lat 40°08'45", long 105°56'22", in SE¼ sec.7, T.2 N., R.76 W., on left bank 1,000 ft downstream from Willow Creek Dam, three-quarters of a mile upstream from Bunte Highline Canal diversion, 3 miles upstream from mouth, and 4 miles north of Granby.

Drainage area.--134 sq mi.

Records available.--August 1953 to September 1962.

Gage.--Water-stage recorder and 10-ft Parshall flume with overflow weirs. Datum of gage is 8,023.64 ft above mean sea level (Bureau of Reclamation bench mark). Supplementary water-stage recorder and Parshall flume on McQueary ditch 500 ft downstream from point of diversion at Willow Creek Dam. Datum of gage is 8,031.68 ft above mean sea level (Bureau of Reclamation bench mark).

Average discharge (combined flow).--9 years, 31.7 cfs (22,950 acre-ft per year).

Extremes (combined flow).--Maximum discharge during year, 725 cfs May 13-15 (gage height, 4.66 ft); minimum daily, 6.0 cfs Nov. 1-21, Nov. 23 to Dec. 4.

1953-62: Maximum discharge, 867 cfs June 7, 1957 (gage height, 4.84 ft); minimum daily, 0.1 cfs May 1-10, Aug. 9-11, 1961.

Remarks.--Records good. Records show combined flow of creek, McQueary ditch, and waste from pump canal. Flow completely regulated by Willow Creek Reservoir (see preceding page). Diversions above station for irrigation of hay meadows. McQueary ditch diverts at Willow Creek Dam for irrigation below station. Record of diversion from Willow Creek Reservoir by Willow Creek Pump Canal to Lake Granby as part of the Colorado-Big Thompson project is given below:

Month	Diversion in acre-feet	Month	Diversion in acre-feet
October.....	7,840	April.....	0
November.....	1,520	May.....	3,090
December.....	0	June.....	10,380
	- - - - -	July.....	0
Calendar year 1961....	40,660	August.....	0
	- - - - -	September.....	0
January.....	0		
February.....	0	Water year 1961-62....	22,830
March.....	0		

Cooperation.--Records of diversions to Lake Granby and waste from Willow Creek Pump Canal furnished by Bureau of Reclamation.

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7.1	6.0	6.0	3.0	*23	80	30	598	51	228	59	28
2	7.1	6.0	6.0	24	22	80	30	591	51	228	58	28
3	7.1	6.0	6.0	20	22	80	*30	577	52	228	53	28
4	7.1	6.0	6.0	20	22	80	30	*563	50	*228	49	23
5	7.1	6.0	10	20	22	80	30	556	51	185	49	17
6	7.1	6.0	20	20	21	80	30	556	49	104	35	17
7	7.1	*6.0	30	20	21	*80	31	563	52	104	27	17
8	7.1	6.0	*30	20	20	80	31	584	51	104	27	17
9	7.1	6.0	30	20	20	82	31	549	51	104	27	17
10	7.1	6.0	30	20	18	84	43	521	49	104	28	17
11	7.0	6.0	30	20	18	84	69	605	38	104	28	17
12	*7.0	6.0	30	20	18	84	79	702	35	104	28	17
13	7.0	6.0	30	*20	22	86	93	718	46	85	29	*17
14	7.0	6.0	30	23	28	86	105	725	*45	76	29	17
15	7.0	6.0	36	23	32	88	105	680	259	76	*29	17
16	7.0	6.0	45	23	44	80	126	612	405	77	29	17
17	7.0	6.0	45	23	46	76	195	591	405	68	25	12
18	7.0	6.0	54	23	46	76	226	549	291	58	22	9.9
19	7.0	6.0	69	23	52	68	290	521	168	58	22	9.5
20	7.0	6.0	81	23	54	62	429	528	100	*57	22	9.5
21	6.5	6.0	85	23	54	40	500	441	212	57	22	9.5
22	6.5	28	85	25	54	30	500	375	329	58	22	9.5
23	6.5	6.0	85	29	56	30	493	399	*347	57	24	9.5
24	6.5	6.0	85	29	66	30	493	369	302	58	27	9.9
25	6.5	6.0	85	27	66	30	563	446	291	58	28	9.9
26	6.5	6.0	85	25	68	30	605	427	286	58	28	9.9
27	6.5	6.0	85	25	72	30	605	492	271	58	28	9.9
28	6.5	6.0	85	25	78	30	605	186	261	58	28	9.5
29	6.5	6.0	49	24	-	30	605	12	237	58	28	9.5
30	6.5	6.0	30	24	-----	30	605	35	232	58	28	9.5
31	6.5	-----	30	24	-----	30	-----	46	-----	58	28	-----
Total	212.5	202.0	1,413.0	715	1,085	1,936	7,607	15,117	5,067	3,016	966	448.5
Mean	6.85	6.73	45.6	23.1	38.8	62.5	254	488	169	97.3	31.2	15.0
Ac-ft	421	401	2,800	1,420	2,150	3,840	15,090	29,980	10,050	5,980	1,920	890

Calendar year 1961: Max 51 Min 0.1 Mean 14.7 Ac-ft 10,600  
 Water year 1961-62: Max 725 Min 6.0 Mean 104 Ac-ft 74,940

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 10 to Apr. 3.



## FRASER RIVER BASIN

9-240. Fraser River near Winter Park, Colo.

Location.--Lat 39°54'00", long 105°46'35", in NE¼ sec. 4, T. 2 S., R. 75 W., on left bank 500 ft downstream from bridge on U. S. Highway 40, 1.1 miles northwest of Winter Park, 2 miles upstream from Vasquez Creek, 3½ miles downstream from point of diversion for Moffat water tunnel, and 4 miles southeast of Fraser.

Drainage area.--27.6 sq mi.

Records available.--September 1910 to September 1962. Monthly discharge only for some periods, published in WSP 1313. Published as "near Arrow" 1910-23 and as "near West Portal" 1924-39. Records since June 9, 1936, equivalent to earlier records if transmountain diversions are added to flow past station.

Gage.--Water-stage recorder. Datum of gage is 8,906.23 ft above mean sea level (State Highway bench mark). Sept. 23, 1910, to May 12, 1916, staff gage at trail bridge 1 mile upstream at different datum.

Average discharge.--52 years, 40.9 cfs (29,610 acre-ft per year) including diversions to Berthoud Pass ditch and Moffat water tunnel.

Extremes.--Maximum discharge recorded during year, 170 cfs June 15 (gage height, 1.25 ft); maximum gage height, 2.32 ft Nov. 8 (backwater from ice); minimum daily discharge, 2.3 cfs Sept. 25.  
1910-62: Maximum discharge, 820 cfs June 13, 1918 (gage height, 2.9 ft); minimum, 2 cfs Mar. 30, 1912.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Transmountain diversions above station through Berthoud Pass ditch (see elsewhere in this report) and to Moffat water tunnel (see adjustment figures below).

Cooperation.--Record of flow diverted to Berthoud Pass ditch and Moffat water tunnel furnished by State engineer.

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	36	20	11	9.2	*7.6	7.0	10	44	16	116	7.0	2.5
2	32	19	9.4	8.6	7.8	8.0	10	41	16	104	6.6	2.5
3	33	18	10	9.0	7.8	9.0	10	45	16	99	6.2	2.5
4	33	17	11	9.8	7.4	10	10	*46	16	85	6.2	2.5
5	33	15	10	9.4	7.6	*11	10	50	16	85	5.6	2.5
6	33	15	11	9.2	7.2	11	11	52	16	82	5.6	2.8
7	34	16	10	9.0	7.0	10	11	60	20	*76	4.8	2.6
8	35	16	9.8	9.6	7.0	10	*9.8	74	34	65	3.5	2.5
9	38	16	*10	10	7.0	10	9.0	90	45	82	3.5	2.5
10	35	17	9.8	11	7.4	10	8.6	99	45	67	*3.5	*2.7
11	35	16	9.4	10	7.4	11	8.6	106	60	8.6	3.5	2.7
12	33	16	9.0	10	7.4	10	9.0	116	78	9.0	3.4	2.7
13	*33	15	8.6	10	7.4	10	9.8	122	100	14	3.4	2.5
14	33	14	8.2	*9.4	7.0	11	12	106	120	38	3.2	2.5
15	32	14	7.4	8.6	7.0	11	17	74	*140	14	3.2	2.5
16	32	16	8.2	9.0	7.0	11	19	33	143	7.0	3.0	2.5
17	31	*17	9.0	9.0	7.0	10	20	27	*114	6.6	3.0	2.5
18	36	16	9.0	9.0	7.0	10	30	26	94	6.2	3.0	2.5
19	38	14	9.4	8.2	7.0	9.0	38	26	99	6.2	3.7	3.3
20	27	13	9.8	8.2	7.0	9.5	45	25	108	6.2	3.5	2.7
21	27	13	9.6	7.8	7.0	9.5	45	25	104	*6.6	3.5	2.8
22	27	13	9.8	7.8	7.8	9.5	41	24	106	11	3.5	2.8
23	25	13	9.8	7.8	7.0	9.5	42	23	97	11	3.5	2.5
24	24	12	9.6	7.8	7.0	9.5	*49	23	90	10	3.7	2.5
25	24	12	9.8	7.8	7.0	9.5	51	23	85	9.0	3.5	2.2
26	23	11	10	7.8	6.8	9.8	47	23	88	7.0	3.0	2.5
27	23	11	9.6	7.6	6.6	10	45	25	90	5.6	2.7	3.2
28	22	10	9.4	7.4	6.4	11	49	26	87	5.8	2.7	3.5
29	20	10	9.8	7.2	7.2	11	46	23	88	6.6	2.7	3.0
30	22	10	9.4	7.4	7.4	11	44	21	90	20	2.7	2.8
31	21	9.6	7.6	7.6	7.6	11	17	17	35	2.5	2.5	
Total	930	435	296.4	270.2	200.6	308.8	766.8	1,515	2,221	1,104.4	119.4	79.9
Mean	30.0	14.5	9.56	8.72	7.16	9.96	25.6	48.9	74.0	35.6	3.85	2.66
Ac-ft	1,840	863	588	536	398	612	1,520	3,000	4,410	2,190	237	158

Adjusted for diversions to Berthoud Pass ditch and Moffat water tunnel

Mean	30.0	14.5	9.56	8.72	7.16	9.96	25.6	80.4	140	93.9	28.5	14.9
Ac-ft	1,840	836	588	536	398	612	1,520	4,940	8,350	5,770	1,750	882

## Observed

Calendar year 1961: Max	128	Min	-	Mean	13.1	Ac-ft	9,450
Water year 1961-62: Max	143	Min	2.3	Mean	22.6	Ac-ft	16,350

## Adjusted

Calendar year 1961: Max	-	Min	-	Mean	31.9	Ac-ft	23,080
Water year 1961-62: Max	-	Min	-	Mean	38.8	Ac-ft	28,050

\* Discharge measurement made on this day.

Note.--No gage-height record Dec. 21 to Jan. 14, Jan. 25 to Feb. 1, Feb. 28 to Apr. 9 (stage-discharge relation affected by ice during most of periods), May 28 to June 15, Aug. 22 to Sept. 10. Stage-discharge relation affected by ice Nov. 3-11, 13-24, 29, 30, Dec. 3-13, Jan. 17, 23, 24, Feb. 5, 6, 19, 22, 26, 27.

9-250. Vasquez Creek near Winter Park, Colo.

Location.--Lat 39°55'13", long 105°47'05", in NE¼ sec.33, T.1 S., R.75 W., on right bank 40 ft downstream from bridge on U. S. Highway 40, a quarter of a mile upstream from mouth, 2½ miles northwest of Winter Park, 2½ miles southeast of Fraser, and 4½ miles downstream from Moffat water tunnel diversion.

Drainage area.--27.8 sq mi.

Records available.--June 1907 to October 1909 (irrigation seasons only), October 1933 to September 1962. Published as Vasquez River at lower station, near Fraser 1907-9 and as "near West Portal" 1934-39. Records for May 26, 1937, to September 1959 (corrected), equivalent to earlier records if diversion to Moffat water tunnel is added to flow past station.

Gage.--Water-stage recorder and concrete control. Datum of gage is 8,768.48 ft above mean sea level, unadjusted. June 1, 1907, to Oct. 31, 1909, staff gage at site three-quarters of a mile upstream at different datum.

Extremes.--Maximum discharge during year, 211 cfs June 30 (gage height, 2.32 ft); minimum daily, 0.4 cfs Sept. 9-16. 1933-62: Maximum discharge, 470 cfs June 10, 1952 (gage height, 3.13 ft), from rating curve extended above 340 cfs; no flow at times in 1944, 1946, 1956, 1960.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Transmountain diversions above station to Moffat water tunnel not known since 1959.

Revisions.--Revised figures of discharge, in cubic feet per second, for period Sept. 26-30, 1961, superseding those previously published, are given herewith:

1961		1961-Con.	
Sept. 26.....	36	Sept. 29.....	33
27.....	32	30.....	31
28.....	32		

Month	Cfs-days	Maximum	Minimum	Mean	Runoff in acre-feet
September 1961.....	220.6	36	0.6	7.35	438
Water year 1960-61.....	-	104	.5	5.31	3,850

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	33	39	17	11	(*)		2.3	27	42	146	1.6	0.9
2	32	36	16	12			2.4	19	42	127	1.3	1.3
3	33	28	17	11			2.4	19	42	121	1.1	.6
4	33	26	18	11			2.3	*22	42	109	1.3	.6
5	31	25	18	11		(*)	2.3	27	42	74	1.0	.5
6	32	24	19	10			2.4	33	42	46	1.0	2.2
7	31	25	18	5.0			2.4	39	42	31	1.0	1.7
8	32	26	18	4.5			2.4	42	43	*23	1.0	.7
9	32	28	*19	4.4			*2.4	45	43	101	1.0	.4
10	32	32	17	4.4			2.4	52	41	77	.8	.4
11	31	33	14	4.2			2.4	54	52	4.9	.6	.4
12	32	30	14	4.2			2.5	60	68	4.9	.6	.4
13	*34	24	13	4.2			2.9	64	89	4.5	.6	.4
14	33	16	13	*4.2			3.5	62	97	3.2	.6	*.4
15	34	17	13	4.2			4.0	56	*87	3.2	.6	.4
16	34	18	13	8.0	3	2	6.0	52	68	3.5	.6	.4
17	34	*19	12	10			8.0	48	56	3.5	.6	.5
18	36	18	12	10			10	46	62	3.5	.6	.5
19	36	17	12	10			14	43	80	2.5	.9	.5
20	36	16	11	9.8			17	41	99	1.6	.9	.6
21	36	16	11	9.8			18	41	121	*1.4	.7	.9
22	39	16	10	9.8			17	38	117	1.4	.7	.7
23	34	17	10	9.8			18	37	107	1.4	.7	.6
24	38	16	10	9.8			22	36	103	1.8	.7	.6
25	38	16	10	9.0			24	36	103	1.4	.6	.6
26	40	16	10	5.4			23	34	107	1.4	.5	.5
27	41	16	10	4.2			22	34	*109	1.6	.5	.6
28	41	15	10	3.8			23	37	109	1.3	.5	.7
29	40	15	10	3.8			25	38	111	1.3	.5	.7
30	39	16	10	3.8			22	38	123	1.3	.5	.6
31	40	-----	11	3.6	-----		-----	37	-----	28	.6	-----
Total	1,087	656	416	225.9	84	62	308.0	1,257	2,289	944.3	24.2	35.6
Mean	35.1	21.9	13.4	7.29	3	2	10.3	40.5	76.3	30.5	0.78	1.19
Ac-ft	2,160	1,300	825	448	167	123	611	2,490	4,540	1,870	48	71

Calendar year 1961: Max 104 Min 0.5 Mean 10.6 Ac-ft 7,690  
 Water year 1961-62: Max 146 Min 0.4 Mean 20.2 Ac-ft 14,650

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 3-9, 13-22, Jan. 15-29, Apr. 10-11. No gage-height record Oct. 1-12, Nov. 23 to Jan. 14, Jan. 30 to Apr. 9, Apr. 12-22 (stage-discharge relation affected by ice during most of periods), May 8 to June 11, July 6-8, Aug. 9-14.

9-265. St. Louis Creek near Fraser, Colo.

Location.--Lat 39°54'30", long 105°52'45", in sec.34, T.1 S., R.76 W., on left bank 300 ft downstream from West St. Louis Creek and 4 miles southwest of Fraser.

Drainage area.--32.8 sq mi.

Records available.--October 1933 to September 1962. Records for May 1956 to September 1959, equivalent to earlier records if diversion to Moffat water tunnel is added to flow past station.

Gage.--Water-stage recorder. Datum of gage is 8,980.17 ft above mean sea level, unadjusted.

Extremes.--Maximum discharge during year, 254 cfs June 30 (gage height, 2.25 ft); maximum gage height, 2.67 ft Nov. 6 (backwater from ice); minimum daily discharge, 2.5 cfs Jan. 27 to Feb. 7, Feb. 21.  
1933-62: Maximum discharge, 470 cfs June 15, 1952 (gage height, 2.89 ft); maximum gage height, 3.21 ft June 10, 1952 (backwater from log on control); minimum discharge not determined, probably occurred during January or February 1961.

Remarks.--Records good except those for periods of ice effect, which are fair. Transmountain diversion above station to Moffat water tunnel not known since 1959.

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

Oct. 1 to Nov. 10

Nov. 11 to Sept. 30

0.7	5.8	0.5	1.4	1.3	38
.9	12	.7	4.2	1.6	76
1.1	24	.8	6.5	1.9	135
1.3	40	.9	10	2.2	220
		1.0	15		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7.9	28	14	11	*2.5	2.8	2.9	15	25	199	34	4.2
2	9.8	27	14	10	2.5	2.7	2.9	13	26	175	36	4.1
3	24	21	15	9.8	2.5	2.7	2.9	14	26	158	37	4.1
4	34	19	14	9.3	2.5	2.7	2.8	*18	26	140	36	4.1
5	34	18	13	9.3	2.5	*2.7	2.8	21	26	126	29	3.9
6	34	18	14	9.3	2.5	2.7	2.9	24	26	117	27	7.9
7	34	19	14	9.0	2.5	2.7	2.9	27	26	*110	26	16
8	35	*20	*14	8.2	2.7	2.7	2.9	30	27	106	20	4.1
9	36	21	14	8.0	2.7	2.8	*2.9	34	26	181	18	4.1
10	35	21	14	7.4	2.7	2.8	2.9	37	35	128	*17	3.9
11	34	22	14	7.3	2.8	2.7	2.9	40	39	52	17	4.1
12	34	23	14	8.0	2.8	2.7	3.1	45	62	47	17	3.9
13	*34	16	15	10	2.8	2.7	3.4	44	58	43	16	4.1
14	34	13	15	*9.3	2.8	2.7	3.8	38	*55	37	16	*4.1
15	34	14	14	6.3	2.7	2.7	4.7	35	65	34	16	4.1
16	34	14	14	2.7	2.7	2.7	5.8	34	121	35	18	4.1
17	34	15	13	2.7	2.7	2.7	6.3	32	117	34	18	3.9
18	34	14	13	2.7	2.7	2.7	7.6	30	121	34	18	3.9
19	34	14	13	2.7	2.7	2.7	9.3	28	133	34	23	3.9
20	34	14	12	2.7	2.7	2.7	12	28	178	33	15	4.2
21	33	14	12	2.7	2.5	2.7	12	27	169	*32	12	4.7
22	33	15	12	2.7	2.7	2.7	11	26	130	37	9.3	4.7
23	34	15	12	2.7	2.8	2.9	12	25	121	37	5.8	4.1
24	32	16	12	2.7	2.8	2.7	15	25	*119	37	5.6	4.1
25	33	16	12	2.7	2.8	2.7	16	24	121	35	5.1	3.9
26	34	16	12	2.7	2.8	2.7	16	23	126	37	4.9	3.9
27	30	15	12	2.5	2.8	2.9	15	26	126	35	4.7	4.2
28	30	14	12	2.5	2.8	2.9	18	26	126	34	4.7	4.4
29	30	16	12	2.5	-	2.8	18	27	128	34	4.4	4.7
30	32	16	12	2.5	-----	2.8	14	26	150	44	4.4	4.4
31	29	-----	12	2.5	-----	2.8	-----	26	-----	52	4.2	-----
Total	973.7	524	409	174.4	75.0	84.9	234.7	868	2534	2237	519.1	1398
Mean	31.4	17.5	13.2	5.63	2.68	2.74	7.82	28.0	84.5	72.2	16.7	4.66
Ac-ft	1,930	1,040	811	346	149	168	466	1,720	5,030	4,440	1,030	277

Calendar year 1961: Max 58 Min - Mean 16.3 Ac-ft 11,800  
Water year 1961-62: Max 199 Min 2.5 Mean 24.0 Ac-ft 17,410

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 3-23, Dec. 5, 6, Jan. 1-3, 9-12, Mar. 29, Apr. 2.

9-320. Ranch Creek near Fraser, Colo.

Location.--Lat 39°57'00", long 105°45'54", in NW¼NE¼ sec.22, T.1 S., R.75 W., on right bank 450 ft downstream from Middle Fork and 2.7 miles east of Fraser.

Drainage area.--19.9 sq mi.

Records available.--August 1934 to September 1962. Records since May 15, 1949, equivalent to earlier records if diversion to Moffat water tunnel is added to flow past station.

Gage.--Water-stage recorder. Altitude of gage is 8,685 ft (from topographic map).

Average discharge.--28 years, 21.1 cfs (15,280 acre-ft per year), including diversion to Moffat water tunnel.

Extremes.--Maximum discharge during year, 211 cfs June 30 (gage height, 2.70 ft); maximum gage height, 3.01 ft Nov. 8 (backwater from ice); minimum daily discharge, 0.7 cfs Sept. 11.  
1934-62: Maximum discharge, 402 cfs June 28, 1957 (gage height, 3.72 ft); minimum daily, 0.4 cfs Sept. 21, Oct. 6, 1960.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor. Diversion above station for irrigation of hay meadows along Fraser River. Transmountain diversion above station to Moffat water tunnel was 5,360 acre-ft during water year 1962.

Cooperation.--Records of flow diverted to Moffat water tunnel furnished by State engineer.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Aug. 16 to Sept. 30)

0.2	0.7	0.5	2.7	1.4	38
.3	1.0	.7	5.9	1.9	87
.4	1.7	1.0	16	2.4	150

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.2	22	11	6.6	*3.8	3.0	4.2	35	14	134	3.0	1.2
2	4.2	20	10	6.6	3.8	3.1	4.2	33	14	119	4.4	1.0
3	3.8	b19	10	6.4	3.6	3.2	4.2	33	14	110	5.7	1.2
4	3.9	b18	10	6.8	3.4	3.4	4.2	*35	14	101	5.1	1.3
5	3.9	b16	10	6.4	3.3	*3.4	4.4	39	14	90	2.0	1.4
6	4.1	b17	10	6.4	3.3	3.4	4.4	43	14	80	1.9	1.2
7	4.1	b18	9.8	6.1	3.3	3.3	4.4	50	14	*74	1.8	1.0
8	13	*b18	*9.6	6.4	3.3	3.4	4.5	59	20	72	1.7	1.0
9	22	b18	9.4	6.8	3.3	3.4	*4.5	71	44	76	1.7	1.0
10	25	b18	9.0	6.2	3.3	3.4	4.7	80	42	60	*1.7	.8
11	26	b18	8.7	5.6	3.4	3.4	4.9	80	44	54	1.6	.7
12	26	b17	8.7	5.6	3.4	3.6	5.1	81	64	49	1.5	.8
13	*26	b15	9.0	5.6	3.3	3.6	5.5	86	89	45	1.5	.8
14	27	b11	9.4	*5.8	3.3	3.8	7.1	75	*101	40	1.6	*.8
15	26	b12	8.7	5.9	3.3	3.6	11	61	118	32	*1.6	.9
16	26	b13	7.7	5.7	3.4	3.8	12	41	119	20	1.7	.9
17	26	13	7.4	5.5	3.4	3.6	12	26	105	20	1.7	.9
18	26	13	7.1	5.5	3.6	3.6	16	23	98	20	1.7	1.0
19	26	13	6.8	5.5	3.6	3.4	21	22	106	19	2.4	1.0
20	25	12	6.8	5.5	3.6	3.6	27	21	116	15	2.2	1.4
21	25	12	6.8	5.7	3.6	3.4	28	20	118	*5.2	1.9	1.7
22	25	12	6.6	5.5	3.4	3.4	27	19	122	4.4	1.9	1.6
23	24	12	6.6	5.5	3.4	3.4	30	18	121	4.7	1.9	1.4
24	24	12	6.6	5.5	3.4	3.6	34	17	*119	4.9	2.3	1.4
25	23	12	6.6	5.3	3.4	3.8	39	16	121	4.1	1.7	1.4
26	24	12	6.6	4.7	3.3	3.9	37	16	122	3.9	1.7	1.2
27	23	11	6.4	4.5	3.1	4.1	37	18	127	3.9	1.4	1.0
28	22	11	6.4	4.4	3.0	4.2	39	18	121	3.6	1.4	1.5
29	21	11	6.6	4.4	-	4.2	40	17	118	3.6	1.3	1.2
30	26	11	6.6	4.1	-----	4.1	35	16	127	5.1	*1.2	1.1
31	22	-----	6.6	4.1	-----	4.1	-----	14	-----	11	1.1	-----
Total	607.2	437	251.5	174.6	95.3	111.2	511.3	1,183	2,380	1,284.4	64.3	33.8
Mean	19.6	14.6	8.11	5.63	3.40	3.59	17.0	38.2	79.3	41.4	2.07	1.13
Ac-ft	1,200	867	499	346	189	221	1,010	2,350	4,720	2,550	128	67

Calendar year 1961: Max 40 Min - Mean 7.05 Ac-ft 5,100  
Water year 1961-62: Max 134 Min 0.7 Mean 19.5 Ac-ft 14,150

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 5-8, Jan. 10-14, Feb. 27 to Mar. 5 (stage-discharge relation affected by ice during part of periods), July 4-21, Aug. 14-15.



## 9-345. Colorado River at Hot Sulphur Springs, Colo.

Location.--Lat 40°05'00", long 106°05'15", in NE¼NE¼ sec.2, T.1 N., R.78 W., on left bank about 1,000 ft north of U. S. Highway 40, 1 mile northeast of Hot Sulphur Springs, and 4½ miles upstream from Beaver Creek.

Drainage area.--782 sq mi.

Records available.--July 1904 to September 1962. Monthly discharge only for some periods, published in WSP 1313. Prior to 1907 and 1914-18, published as Grand River at Hot Sulphur Springs and as Grand River at Sulphur Springs 1907-13.

Gage.--Water-stage recorder. Altitude of gage is 7,670 ft (from railroad elevations). July 28, 1904, to Apr. 16, 1906, staff gage on bridge 1.7 miles downstream at different datum. Apr. 17, 1906, to Sept. 18, 1930, chain gage at bridge 1.4 miles downstream at datum 7,651.26 ft above mean sea level, unadjusted. Supplemental staff gage at different datum read twice daily at site 1.7 miles downstream, used for winter records some years.

Extremes.--Maximum discharge during year, 2,720 cfs May 13 (gage height, 3.15 ft); maximum gage height recorded, 5.52 ft Nov. 22 (backwater from ice); minimum daily discharge, 62 cfs Sept. 19. 1904-62: Maximum discharge observed, 10,300 cfs June 15, 1921 (gage height, 8.7 ft, site and datum then in use); minimum daily, 33 cfs Sept. 27, 1956.

Remarks.--Records excellent except those for periods of ice effect or no gage-height record, which are fair. Flow affected by transmountain diversions, storage reservoirs, and diversions above station for irrigation of about 13,000 acres.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used July 1-5)

0.2	44	2.0	1,020
.4	85	2.5	1,620
.7	180	3.0	2,450
1.0	320	3.3	3,000
1.5	610		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	342	230	120	100	76	140	414	1,660	586	*2,170	305	100
2	295	170	120	100	82	130	442	*1,620	598	2,320	266	100
3	280	194	110	90	*82	120	502	1,560	604	2,400	270	100
4	290	202	110	96	82	130	*550	1,580	617	2,320	285	94
5	295	198	100	100	76	140	631	1,650	592	*2,070	261	88
6	290	207	130	100	80	*140	652	1,790	556	1,560	234	96
7	295	212	*130	*100	84	160	638	1,900	*598	1,220	198	96
8	305	207	120	86	80	160	598	2,070	736	1,010	194	96
9	336	202	110	80	76	160	586	2,150	680	993	194	90
10	353	194	110	80	74	150	631	2,220	638	1,040	189	*92
11	326	189	110	80	78	150	736	2,380	688	808	176	93
12	*331	189	120	84	84	160	800	2,500	736	768	173	101
13	315	173	120	84	96	180	939	2,580	832	885	173	98
14	305	162	120	76	110	190	1,210	2,400	930	957	*166	93
15	305	160	120	74	120	200	1,480	2,020	1,090	849	162	74
16	305	160	120	74	130	220	1,550	1,540	1,400	538	162	71
17	305	*140	125	80	120	250	1,480	1,400	1,340	538	162	69
18	305	140	130	84	130	270	1,620	1,330	1,120	370	140	64
19	300	140	140	80	130	260	1,650	1,150	957	*310	130	62
20	285	140	150	80	130	280	1,870	1,130	1,020	280	120	67
21	285	130	160	80	120	280	1,930	1,030	1,190	261	120	76
22	280	140	160	76	120	280	1,740	939	1,290	252	130	78
23	270	160	160	76	120	300	1,700	939	1,290	270	130	71
24	256	150	160	74	120	330	1,740	824	1,150	342	120	69
25	252	140	160	74	120	360	*1,880	894	1,230	300	120	69
26	270	130	160	76	130	370	1,960	840	1,440	290	120	67
27	261	130	150	78	140	404	1,930	975	1,510	300	120	69
28	252	130	150	80	140	370	1,850	903	1,660	300	110	71
29	230	130	150	82	-	370	2,100	598	*1,830	290	110	74
30	261	120	130	80	-----	392	1,800	592	*1,870	290	110	74
31	238	-----	100	84	-----	414	-----	574	-----	331	110	-----
Total	9,018	4,969	4,055	2,588	2,930	7,460	37,609	45,738	30,778	26,632	5,260	2,462
Mean	291	166	131	83.5	105	241	1,254	1,475	1,026	859	170	82.1
Ac-ft	17,890	9,860	8,040	5,130	5,810	14,800	74,600	90,720	61,050	52,820	10,430	4,880

Calendar year 1961: Max 496 Min 43 Mean 172 Ac-ft 124,400  
Water year 1961-62: Max 2,580 Min 62 Mean 492 Ac-ft 356,000

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 15 to Dec. 6. No gage-height record Dec. 7 to Mar. 28 (stage-discharge relation affected by ice during part of period), Aug. 18 to Sept. 10.

## LITTLE MUDDY CREEK BASIN

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9-348. Little Muddy Creek near Parshall, Colo.

Location--Lat 39°57'47", long 106°04'08", in NW¼ sec.13, T.1 S., R.78 W., on left bank at bridge 0.4 mile upstream from Sylvian Lake ditch headgate and 11.1 miles southeast of Parshall.

Drainage area--6.50 sq mi.

Records available--October 1958 to September 1962.

Gage--Water-stage recorder. Altitude of gage is 8,580 ft (from topographic map).

Extremes--Maximum discharge during year, 93 cfs May 12 (gage height, 3.71 ft), from rating curve extended above 54 cfs; minimum daily, 0.1 cfs Aug. 30 to Sept. 20.

1958-62: Maximum discharge, that of May 12, 1962; maximum gage-height recorded, 4.89 ft Oct. 10, 1960 (backwater from beaver dam); minimum discharge not determined.

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

Rating table, except periods of ice effect or backwater from beaver dam  
(gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 1-8, May 3-9)

2.3	0	2.7	11
2.4	.5	2.9	22
2.5	3.0	3.2	42
2.6	6.5	3.6	75

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.0	2.2						15	30	4.0	1.5	0.1
2	3.7							15	30	3.4	1.0	.1
3	3.7							*19	29	2.8	1.2	.1
4	3.7				(*)			23	29	2.5	1.8	.1
5	4.0							29	28	*2.5	1.0	.1
6												
7	4.4							34	*26	2.2	.8	.1
8	5.4							41	27	2.0	.5	.1
9	6.2							50	27	1.8	.4	.1
10	*6.5							60	26	1.5	*.5	.1
11	6.2							66	23	1.2	.5	.1
12							2.5					
13	5.4							66	20	1.0	.4	*.1
14	5.4							68	19	1.0	.4	.1
15	5.1							61	17	1.5	.3	.1
16	5.1							*52	16	1.5	.3	.1
17	5.1	(*)						45	14	1.2	.2	.1
18	4.8	1.8	1.0	0.6	0.7	0.9						
19	4.8							45	14	c1.2	.1	.1
20	4.4							47	*14	c1.1	.1	.1
21	4.4							39	11	c1.1	.2	.1
22	4.4							38	10	c1.1	.4	.1
23	b3.7							36	9.6	c1.0	.3	.1
24	b3.7											
25	b3.0							32	8.8	*c1.0	.2	.4
26	b3.0							31	8.8	.8	.2	.4
27	3.0							29	8.3	1.2	.2	.3
28	2.8							29	7.4	2.0	.3	.2
29	2.5							27	6.5	1.5	.3	.2
30	2.5							26	5.8	1.5	.2	.2
31	b2.5							29	5.1	1.5	.2	.2
								29	4.8	1.5	.2	.5
								29	4.8	1.2	.2	.8
								29	5.1	1.0	.1	.8
								30	-----	1.0	.1	-----
Total	132.6	54.4	31.0	18.6	19.6	27.9	250.0	1,169	485.0	49.8	14.1	6.0
Mean	4.28	1.81	1.0	0.6	0.7	0.9	8.3	37.7	16.2	1.61	0.45	0.20
Ac-ft	263	108	61	37	39	55	496	2,320	962	99	28	12

Calendar year 1961: Max 20 Min - Mean 2.44 Ac-ft 1,770

Water year 1961-62: Max 68 Min 0.1 Mean 6.19 Ac-ft 4,480

Peak discharge (base, 15 cfs)--May 12 (1800) 93 cfs (3.71 ft).

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

c Backwater from beaver dam.

Note.--No gage-height record Nov. 2 to May 2 (stage-discharge relation affected by ice during part of period), Sept. 6-11.

## WILLIAMS FORK BASIN

9-360. Williams Fork near Leal, Colo.

Location.--Lat 39°49'55", long 106°03'20", in sec.31, T.2 S., R.77 W., on right bank at downstream side of private bridge, 100 ft downstream from Kinney Creek and 1.7 miles northwest of Leal.

Drainage area.--89.5 sq mi.

Records available.--July 1933 to September 1962. Records since May 10, 1940, equivalent to earlier records if diversion to Jones Pass tunnel is added to flow past station. Prior to October 1958, published as Williams River near Leal.

Gage.--Water-stage recorder. Altitude of gage is 8,790 ft (from topographic map). Prior to Aug. 16, 1953, at site 15 ft downstream at same datum.

Average discharge.--29 years, 104 cfs (75,290 acre-ft per year), including diversions to Jones Pass tunnel.

Extremes.--Maximum discharge during year, 1,100 cfs June 30 (gage height, 3.17 ft); minimum daily, 23 cfs Mar. 14-27, Apr. 2, & 1933-62: Maximum discharge, 1,720 cfs June 10, 1952 (gage height, 4.23 ft); minimum daily, 13 cfs Dec. 28, 29, 1939.

Remarks.--Records good except those for periods of ice effect, which are fair. Transmountain diversion above station from tributaries of Williams Fork through Jones Pass tunnel, then by way of Vasquez and Moffat water tunnels to South Boulder Creek in South Platte River basin (see table below). Diversions above station for irrigation of about 200 acres of hay meadows above station and about 40 acres below.

Month	Diversion in acre-feet	Month	Diversion in acre-feet
October.....	0	April.....	0
November.....	0	May.....	0
December.....	0	June.....	0
	- - - - -	July.....	465
Calendar year 1961....	4,170	August.....	837
	- - - - -	September.....	344
January.....	0		
February.....	0	Water year 1961-62....	1,650
March.....	0		

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used June 21-30)

0.2	17	1.5	256
.4	34	2.0	450
.7	73	2.5	730
1.0	126	3.0	1,070

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	120	73	41	b 28	26	26	24	115	272	811	109	41
2	111	63	40	b 27	26	b 26	23	113	306	718	98	39
3	113	58	39	b 26	* 26	25	24	* 113	339	670	98	34
4	113	65	38	27	26	24	24	122	396	610	105	31
5	113	58	38	* 27	26	b 24	24	139	427	543	95	31
6	115	59	39	27	27	24	24	158	455	* 495	90	30
7	116	60	* 38	26	26	24	25	195	465	455	87	36
8	118	60	38	25	26	* 24	* 23	235	436	436	82	33
9	122	59	36	b 25	26	24	25	278	383	413	* 78	32
10	116	58	35	b 25	26	24	26	324	404	379	78	31
11	111	56	b 34	b 25	27	24	25	347	490	354	65	* 31
12	111	55	b 33	b 25	27	24	26	391	* 582	362	58	31
13	107	55	b 34	b 26	27	b 24	28	409	676	347	58	30
14	105	56	34	26	27	b 23	35	354	754	310	58	30
15	105	* 55	33	26	26	b 23	50	310	772	278	56	29
16	107	52	33	26	27	b 23	62	306	682	256	51	28
17	105	51	b 32	b 26	26	23	63	285	560	235	51	29
18	* 105	49	32	26	26	23	75	269	543	218	51	29
19	102	47	32	26	b 26	23	102	253	640	204	69	28
20	100	49	32	26	27	23	128	285	766	193	69	30
21	97	49	31	26	27	23	137	288	816	188	60	33
22	98	47	30	b 25	27	23	122	* 253	797	* 180	60	35
23	90	46	31	b 26	27	23	122	238	* 748	180	59	30
24	90	45	b 30	b 26	26	23	153	247	742	155	62	29
25	82	45	30	b 26	26	23	172	275	730	135	56	29
26	85	44	30	27	26	23	170	275	* 724	128	54	29
27	85	42	b 29	28	b 26	23	150	306	754	130	52	30
28	83	41	b 29	26	b 26	25	155	272	736	116	51	36
29	73	40	29	26	-	25	158	262	736	102	47	34
30	80	42	29	26	-----	25	133	253	784	109	46	33
31	78	-----	30	26	-----	24	-----	259	-----	124	44	-----
Total	3,156	1,579	1,039	809	738	738	2,308	7,929	17,915	9,834	2,097	951
Mean	102	52.6	33.5	26.1	26.4	23.8	76.9	256	597	317	67.6	31.7
Ac-ft	6,260	3,130	2,060	1,600	1,460	1,460	4,580	15,730	35,530	19,510	4,160	1,890

Calendar year 1961: Max 560 Min 14 Mean 88.0 Ac-ft 63,740  
Water year 1961-62: Max 816 Min 23 Mean 135 Ac-ft 97,370

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

9-372. Skylark Creek near Parshall, Colo.

Location.--Lat 39°54'20", long 106°10'10", in NW¼ sec.6, T.2 S., R.78 W., on left bank 4.3 miles upstream from mouth and 10.8 miles south of Parshall.

Drainage area.--2.41 sq mi.

Records available.--October 1958 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 8,640 ft (from topographic map).

Extremes.--Maximum discharge during year, 8.0 cfs June 14 (gage height, 1.69 ft); minimum daily, 0.1 cfs Sept. 24-28, 30.  
1958-62: Maximum discharge not determined, occurred July 20, 1959 (gage height, 1.70 ft); minimum not determined.

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)

Oct. 1 to Apr. 30

May 1 to Sept. 30

0.4	0.2	0.85	0.1	1.4	4.7
.5	.7	.9	.3	1.6	7.2
.6	1.3	1.0	1.0	1.7	8.4
.7	2.3	1.2	2.6		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.6							1.6	4.2	4.7	1.2	0.4
2	b.6							*1.5	4.5	4.2	1.1	.4
3	b.6				(*)			1.6	5.0	4.0	1.0	.4
4	b.6							1.8	5.8	3.5	1.0	.4
5	.6			(*)				2.4	6.5	3.4	.9	.4
6	.6						0.5	2.8	6.8	*3.2	.8	.4
7	.7		(*)				(*)	3.8	7.2	3.3	.8	.5
8	.7							4.1	6.9	2.9	.8	.4
9	.8							4.2	6.5	2.6	*.7	.4
10	.7							4.8	6.3	2.4	.7	.4
11	b.7							5.5	7.0	2.4	.7	*.4
12	.7							6.4	*7.4	2.2	.7	.4
13	.7							7.3	7.6	2.2	.7	.4
14	.7							6.5	7.8	2.1	.7	.4
15	.7	(*)		0.4	0.5	0.5	1.1	5.1	7.8	2.0	.7	.4
16	.7	0.5	0.5					4.3	7.4	1.9	.7	.4
17	.7							4.9	6.9	1.7	.7	.4
18	*.7							4.6	6.8	1.6	.7	.3
19	b.7							4.1	6.8	1.6	1.0	.3
20	.7							4.1	7.2	1.5	.7	.3
21	b.7							4.1	7.2	1.5	.6	.2
22	b.7							*4.2	6.9	*1.6	.5	.2
23	b.6							3.8	*6.5	1.6	.6	.2
24	b.6							3.7	6.1	1.6	.6	.1
25	b.6						1.8	3.8	6.1	1.5	.6	.1
26	b.6							3.8	6.0	1.5	.6	.1
27	.6							4.3	5.9	1.4	.5	.1
28	.6							4.6	5.7	1.3	.5	.1
29	b.6							4.5	5.3	1.2	.4	.2
30	b.6							4.3	5.2	1.2	.4	.1
31	b.5							4.2		1.3	.4	
Total	20.2	15.0	15.5	12.4	14.0	15.5	34.0	126.7	193.3	69.1	22.0	9.2
Mean	0.65	0.5	0.5	0.4	0.5	0.5	1.13	4.09	6.44	2.23	0.71	0.31
Ac-ft	40	30	31	25	28	31	67	251	383	137	44	18

Calendar year 1961: Max 4.0 Min - Mean 0.73 Ac-ft 533

Water year 1961-62: Max 7.8 Min 0.1 Mean 1.50 Ac-ft 1,080

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Oct. 12-18, Nov. 2 to May 2 (stage-discharge relation affected by ice during part of period), May 28 to June 12.



## WILLIAMS FORK BASIN

9-375. Williams Fork near Parshall, Colo.

Location.--Lat 40°00'01", long 106°10'45", in SW¼ sec.31, T.1 N., R.78 W., on right bank 150 ft downstream from bridge on State Highway 286, 2½ miles upstream from Battle Creek, and 4 miles south of Parshall.

Drainage area.--186 sq mi.

Records available.--July 1904 to September 1924, June 1933 to September 1962. Records since May 10, 1940, equivalent to earlier records if diversion to Jones Pass tunnel is added to flow past station. Published as "near (Hot) Sulphur Springs" 1904-12, and as "Williams River" June 1933 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 7,808.95 ft above mean sea level (datum of Denver Board of Water Commissioners). Prior to Oct. 18, 1919, staff gage and Oct. 18, 1919, to Sept. 30, 1924, water-stage recorder, at site 1½ miles downstream at different datum. June 19, 1933, to Aug. 8, 1938, water-stage recorder at bridge 150 ft upstream at datum 1.00 ft higher.

Average discharge.--49 years, 148 cfs (107,100 acre-ft per year), including diversion to Jones Pass tunnel.

Extremes.--Maximum discharge during year, 1,120 cfs June 15 (gage height, 4.32 ft); minimum daily, 11 cfs Sept. 9.

1904-24, 1933-62: Maximum discharge observed, 2,620 cfs June 14, 1918 (gage height, 6.05 ft, site and datum then in use), from rating curve extended above 1,400 cfs; minimum daily, 10 cfs Sept. 15-17, 1934, Sept. 22, 23, 1959.

Remarks.--Records poor. Transmountain diversion above station from tributaries of Williams Fork through Jones Pass tunnel (see record of diversion published with records for Williams Fork near Leal), then by way of Vasquez and Moffat water tunnels to South Boulder Creek in South Platte River basin. Diversions above station for irrigation of about 1,300 acres above station and about 2,500 acres below. About 150 acres above station irrigated by diversions into the drainage area.

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 Nov. 6, Apr. 1-12)

Oct. 1 to Mar. 31

Apr. 1 to Sept. 30

1.6	31	1.3	10	3.0	280
2.0	81	1.4	15	3.5	540
2.5	178	1.6	31	4.0	870
3.0	300	2.0	78	4.4	1,180
		2.5	148		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	178	114	70	45	36	33	45	304	335	786	145	13
2	160	105	68	43	36	35	45	292	355	665	134	13
3	160	75	63	42	36	33	45	*262	386	588	133	12
4	160	b 72	62	43	38	33	48	288	528	546	144	12
5	163	73	64	45	38	35	50	335	528	474	138	12
6	165	78	63	46	40	40	50	398	540	*564	127	12
7	167	b 80	*59	47	*44	*44	46	480	582	498	122	12
8	171	b 83	55	45	45	46	*44	582	652	414	122	12
9	180	b 85	51	41	47	46	46	646	646	381	116	11
10	176	b 90	50	40	47	45	52	744	639	320	116	38
11	165	b 90	50	40	47	42	58	800	704	292	108	*58
12	165	b 80	50	40	46	41	66	915	737	236	95	58
13	160	b 75	52	*45	47	40	83	938	737	242	65	55
14	158	66	54	45	47	40	118	772	878	209	*60	55
15	158	*64	55	40	45	41	160	639	938	177	59	53
16	156	66	56	39	43	42	191	588	892	156	55	53
17	156	66	56	40	40	45	200	582	751	162	49	52
18	*154	65	54	42	37	50	236	558	639	158	60	51
19	150	64	52	45	35	50	284	480	704	156	92	50
20	148	62	53	45	35	50	355	486	821	145	101	53
21	144	64	56	40	37	50	360	492	786	139	58	59
22	146	70	56	39	39	48	300	*430	908	*142	41	61
23	134	72	56	38	40	47	308	360	930	146	46	54
24	140	73	56	38	40	45	360	300	*952	160	69	51
25	124	74	53	38	36	50	414	330	908	138	41	51
26	126	74	52	37	34	52	436	452	863	139	38	50
27	132	75	52	36	33	52	386	540	779	133	35	50
28	128	75	50	36	32	48	386	492	737	146	31	59
29	118	74	50	36	-	45	442	492	704	138	14	61
30	118	72	49	36	-----	45	355	469	710	133	14	61
31	120	-----	49	36	-----	45	-----	425	-----	140	13	-----
Total	4,680	2,276	1,716	1,268	1,120	1,358	5,969	15,871	21,269	9,723	2,441	1,242
Mean	151	75.9	55.4	40.9	40.0	43.8	199	512	709	281	78.7	41.4
Ac-ft	9,280	4,510	3,400	2,520	2,220	2,690	11,840	31,480	42,190	17,300	4,840	2,460

Calendar year 1961: Max 592 Min 20 Mean 94.0 Ac-ft 68,040

Water year 1961-62: Max 952 Min 11 Mean 186 Ac-ft 134,700

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 14 to Apr. 8 (stage-discharge relation affected by ice during most of period).

## 9-380. Williams Fork Reservoir near Parshall, Colo.

Location--Lat 40°02'06", long 106°12'17", in SE¼ sec.23, T.1 N., R.79 W., at dam on Williams River, 2.1 miles upstream from mouth and 2.2 miles southwest of Parshall.

Drainage area--234 sq mi.

Records available--April 1939 to September 1962. Prior to October 1948, published in WSP 1313.

Gage--Mercury manometer gage read once daily. Datum of gage is at mean sea level (levels by city engineer of Denver). Prior to Sept. 2, 1959, tape-weight gage at same site and datum.

Extremes--Maximum contents observed during year, 97,130 acre-ft July 9 (elevation, 7,811.19 ft); minimum observed, 27,170 acre-ft Apr. 11 (elevation, 7,747.12 ft).

1939-62: Maximum contents observed, that of July 9, 1962; no contents Oct. 14 to Dec. 2, 1958, caused by construction operations at dam.

Remarks--Reservoir is formed by concrete-arch dam. Dam completed in October 1938; storage began in April 1939; dam was enlarged Dec. 5, 1956, to Apr. 22, 1959. Enlarged capacity of reservoir, 96,820 acre-ft between elevations 7,634 (invert of outlet pipes) and 7,811 ft (top of radial gates on spillway). No dead storage. Figures given herein represent usable contents. Reservoir is used for power development and storage for replacement of water diverted through Jones Pass tunnel (see records of diversion published with records for Williams Fork near Leal) during periods when flow of Colorado River is insufficient to supply decreed prior water rights below Williams Fork.

Cooperation--Records furnished by Denver Board of Water Commissioners.

Month-end elevation and contents, water year October 1961 to September 1962

Date	Elevation (feet)†	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	7,792.20	69,970	-
Oct. 31.....	7,795.60	74,370	+4,400
Nov. 30.....	7,793.97	72,240	-2,130
Dec. 31.....	7,786.58	63,120	-9,120
Calendar year 1961.....	-	-	-5,220
Jan. 31.....	7,774.54	50,130	-12,990
Feb. 28.....	7,761.80	38,370	-11,760
Mar. 31.....	7,748.40	28,060	-10,310
Apr. 30.....	7,760.15	36,990	+8,930
May 31.....	7,788.87	65,840	+28,850
June 30.....	7,810.55	96,100	+30,260
July 31.....	7,810.32	95,720	-380
Aug. 31.....	7,807.30	90,980	-4,740
Sept. 30.....	7,803.87	85,830	-5,150
Water year 1961-62.....	-	-	+15,860

† Elevation at 0800.

9-385. Williams Fork below Williams Fork Reservoir, Colo.

Location.--Lat 40°02'07", long 106°12'17", in SE¼ sec.23, T.1 N., R.79 W., on left bank 400 ft downstream from Williams Fork Reservoir, 2.1 miles upstream from mouth, and 2.1 miles southwest of Parshall.

Drainage area.--234 sq mi.

Records available.--October 1948 to September 1954, August 1958 to September 1962. Prior to October 1958, published as "Williams River."

Gage.--Water-stage recorder and concrete control. Datum of gage is 7,615.0 ft above mean sea level (datum of Denver Board of Water Commissioners). Oct. 1, 1948, to Sept. 30, 1954, at site a quarter of a mile downstream at different datum. Aug. 1, 1958, to Oct. 20, 1959, at site half a mile downstream at different datum.

Average discharge.--10 years, 134 cfs (97,010 acre-ft per year), adjusted for storage in Williams Fork Reservoir.

Extremes.--Maximum discharge during year, 891 cfs July 6 (gage height, 4.98 ft), caused by temporary release from reservoir; minimum daily, 2.7 cfs May 3, 6.

1948-54, 1958-62: Maximum discharge, 2,640 cfs June 20, 1953 (gage height, 8.50 ft, site and datum then in use), from rating curve extended above 1,500 cfs; minimum daily recorded, 0.5 cfs Apr. 30 to May 3, 1959.

Remarks.--Records excellent. Flow regulated by Williams Fork Reservoir (see preceding page). Transmountain diversion above station from tributaries of Williams Fork through Jones Pass tunnel, then by way of Vasquez and Moffat water tunnels to South Boulder Creek in South Platte River basin (see records of diversion published with records for Williams Fork near Leal). Diversions above station for irrigation of about 3,200 acres above station and about 100 acres below. About 450 acres above station irrigated by diversion into the drainage area.

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.8	134	134	254	272	258	126	114	8.6	488	244	129
2	137	134	134	256	274	258	126	114	8.9	504	240	129
3	137	134	134	258	276	262	126	112	10	583	242	129
4	137	3.6	134	258	276	262	126	112	14	618	230	129
5	137	3.6	134	258	276	263	127	2.7	143	580	240	130
6	136	134	134	258	276	267	127	2.7	142	595	240	131
7	4.0	133	134	258	276	*267	126	118	141	*602	240	131
8	3.8	133	134	258	276	267	127	161	138	*404	240	131
9	136	133	134	258	272	267	127	161	140	390	*242	131
10	135	133	134	258	236	271	127	110	140	390	242	132
11	134	133	165	256	238	271	126	112	140	*374	242	*130
12	134	133	247	256	240	272	126	8.3	139	334	242	129
13	136	133	247	256	242	272	126	9.0	138	296	64	129
14	4.0	133	247	256	244	274	126	*108	136	278	*4.2	130
15	3.8	*134	247	258	244	276	126	109	165	252	123	130
16	134	134	247	260	242	271	125	109	240	235	124	131
17	132	134	247	262	244	227	124	108	240	235	124	131
18	*134	134	249	262	244	229	123	108	238	237	124	131
19	134	134	249	263	245	229	122	6.4	238	237	124	130
20	134	134	249	263	245	229	121	7.9	238	235	124	129
21	3.4	134	249	263	245	231	121	8.9	238	235	124	128
22	3.6	134	251	265	247	233	120	10	238	*235	124	128
23	134	134	251	235	251	204	118	*9.6	228	237	124	127
24	134	134	253	267	253	128	118	7.9	240	237	124	127
25	134	134	253	267	254	127	118	8.3	236	237	125	127
26	134	134	253	267	254	126	118	8.6	*301	235	125	127
27	134	134	253	271	254	127	117	8.6	238	239	124	127
28	3.6	134	253	271	256	126	116	8.6	378	239	126	127
29	3.6	134	254	272	-	126	114	8.6	470	240	127	127
30	134	134	254	271	-----	126	114	8.6	484	240	127	126
31	134	-----	254	271	-----	126	-----	8.6	-----	242	128	-----
Total	2,998.6	3,751.2	6,512	8,086	7,152	6,872	3,684	1,789.3	5,848.5	10,483	5,073.2	3,873
Mean	96.7	125	210	261	255	222	123	57.7	195	338	164	129
Ac-ft	5,950	7,440	12,920	16,040	14,190	13,630	7,310	3,550	11,600	20,790	10,060	7,680

Calendar year 1961: Max 272 Min 1.4 Mean 119 Ac-ft 86,020  
 Water year 1961-62: Max 618 Min 2.7 Mean 181 Ac-ft 131,200

\* Discharge measurement made on this day.

9-390. Troublesome Creek near Pearmont, Colo.

Location.--Lat 40°13'03", long 106°18'45", in SE¼ sec.14, T.3 N., R.80 W., on left bank 45 ft downstream from small tributary, 3 miles north of Pearmont, 4 miles downstream from Rabbit Ear Creek, 5½ miles upstream from East Fork, and 12 miles northeast of Kremmling.

Drainage area.--44.6 sq mi.

Records available.--October 1953 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 8,049 ft (from topographic map).

Average discharge.--9 years, 29.6 cfs (21,430 acre-ft per year).

Extremes.--Maximum discharge during year, 382 cfs May 11 (gage height, 2.78 ft); maximum gage height, 3.72 ft Mar. 26 (backwater from ice); minimum discharge not determined.  
1953-62: Maximum discharge, 503 cfs June 7, 1957 (gage height, 3.48 ft); maximum gage height, that of Mar. 26, 1962; minimum daily discharge, 6.1 cfs Sept. 8, 1956.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. One diversion above station for irrigation of about 250 acres below. Flow partly regulated during irrigation season by one reservoir (capacity, 1,070 acre-ft) 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. 17-21, May 9-14, June 23 to July 9)

Oct. 1 to Apr. 20

Apr. 21 to Sept. 30

0.7	7.5	0.7	16
.8	10	.9	35
1.0	21	1.3	85
1.2	37	1.9	196
1.5	70	2.4	318

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	26	20	15	10	13	10	13	91	120	104	35	19
2	25	19	15	10	13	10	13	*85	127	93	35	19
3	24	18	15	10	13	10	13	85	143	87	36	18
4	24	17	14	10	13	10	14	93	166	79	36	17
5	25	16	14	11	12	10	15	106	183	75	34	16
6	26	17	12	*11	*12	*10	14	116	185	*70	34	14
7	27	17	*10	12	12	10	14	127	183	67	34	15
8	30	18	10	10	12	10	*14	143	164	63	*33	16
9	32	18	10	8.8	14	10	16	145	145	58	33	18
10	32	18	10	7.8	14	10	17	152	141	54	32	17
11	*31	18	10	6.9	13	9.8	18	266	145	51	31	16
12	30	17	10	6.8	14	9.5	19	295	154	51	31	15
13	28	16	10	8.0	13	9.0	22	242	*168	48	31	15
14	27	16		9.4	12	9.8	27	198	178	45	31	16
15	25	17		10	12	9.2	35	*196	181	45	31	16
16	25	*18		10	11	9.5	42	178	170	43	31	16
17	25	17		10	11	9.2	44	162	154	43	31	14
18	25	17		10	10	9.0	50	147	134	42	31	15
19	25	17		10	10	9.5	62	138	122	43	30	15
20	25	16		10	10	9.8	69	141	122	42	28	18
21	24	17		10	10	9.8	85	*141	129	39	26	23
22	24	16		10	9.8	10	90	138	136	38	26	26
23	22	17		10	9.6	10	93	127	131	*38	27	24
24	23	16		11	9.4	10	*108	122	125	38	25	21
25	22	16		12	9.4	10	108	120	122	36	25	17
26	21	16		12	9.2	10	108	116	122	38	24	16
27	22	16		12	9.0	11	104	125	120	37	23	16
28	22	15		12	9.0	12	110	122	116	34	22	17
29	20	15		12	-	12	108	122	116	34	19	18
30	20	15		12	-----	12	99	115	116	35	19	17
31	20	-----		12	-----	13	-----	111	-----	36	19	-----
Total	777	506	335	316.7	319.4	314.1	1,544	4,465	4,318	1,606	903	520
Mean	25.1	16.9	10.8	10.2	11.4	10.1	51.5	144	144	51.8	29.1	17.3
Ac-ft	1,540	1,000	664	628	634	623	3,060	8,860	8,560	3,190	1,790	1,030

Calendar year 1961: Max 118 Min - Mean 22.7 Ac-ft 16,450  
Water year 1961-62: Max 295 Min - Mean 43.6 Ac-ft 31,580

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 3-11, 13-24, 27-29, Dec. 2, 4-13, Jan. 10-14, Feb. 14-15, 18-20, 22-27, Mar. 20-22, 24-31, Apr. 2-4. No gage-height record Dec. 14 to Jan. 6 (stage-discharge relation affected by ice during part of period), Aug. 24 to Sept. 25.



## TROUBLESOME CREEK BASIN

9-400. East Fork Troublesome Creek near Troublesome, Colo.

Location.--Lat 40°09'27", long 106°16'58", in NW¼ sec.7, T.2 N., R.79 W., on right bank 300 ft upstream from mouth and 6½ miles north of Troublesome.

Drainage area.--81.4 sq mi.

Records available.--April 1937 to September 1943, October 1953 to September 1962. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Altitude of gage is 7,670 ft (from topographic map). Apr. 18, 1937, to May 13, 1941, staff gage at site 100 ft upstream at different datum. May 13 to Aug. 8, 1941, staff gage and Aug. 8, 1941, to Sept. 30, 1943, chain gage, at same site at different datum. Datum differences for all sites not more than 0.4 ft.

Average discharge.--15 years, 28.5 cfs (20,630 acre-ft per year).

Extremes.--Maximum discharge during year, 720 cfs May 9 (gage height, 5.11 ft); minimum not determined.

1937-43, 1953-62: Maximum discharge, that of May 9, 1962; maximum gage height, 5.19 ft June 6, 1957; minimum daily discharge, 0.2 cfs Oct. 3, 1941, Sept. 2, 3, 26, 27, 1942.

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

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Mar. 28 to Apr. 9, Apr. 25 to May 8, June 13-27, Sept. 7-12)

1.7	2.6	2.7	76
1.8	4.2	3.0	118
2.0	10	3.5	201
2.1	15	4.0	305
2.2	22	5.0	640
2.4	41		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	32	14	7.1				14	218	155	63	10	5.2
2	25	13	7.1				15	*196	164	56	10	5.2
3	23	11	6.8				16	187	166	52	9.4	5.0
4	24	9.0	6.8				23	197	171	46	9.7	4.7
5	26	8.4					27	228	171	41	9.0	4.5
6	30	8.8		(*)	(*)	(*)	26	278	173	*38	9.0	4.0
7	34	9.6					26	342	158	37	8.1	4.2
8	38	10	(*)				*18	500	150	35	*8.1	4.7
9	39	9.4					16	518	134	33	7.8	5.2
10	41	10					24	636	121	28	7.8	5.0
11	*38	10					28	514	123	25	7.8	4.7
12	35	9.8				6.4	35	514	124	26	7.8	4.5
13	30	9.0					59	480	*124	33	7.8	*4.2
14	27	8.4					93	399	126	32	7.8	4.2
15	26	8.8		5.2	6.8		126	336	121	26	7.1	4.5
16	26	*9.4					160	298	120	21	6.8	4.5
17	26	9.0	5.8				*180	287	114	21	6.8	4.0
18	27	9.0					210	258	100	17	7.1	4.2
19	26	8.0					210	220	95	16	7.1	4.2
20	26	7.6					250	216	95	16	6.8	5.0
21	25	7.8					242	*214	97	16	6.8	6.5
22	26	7.2					226	212	95	16	6.8	8.7
23	19	7.1					207	187	90	*16	7.1	7.1
24	21	7.8					226	164	81	16	7.1	6.0
25	18	6.8					303	160	79	16	7.1	6.0
26	17	6.8				7.4	315	158	74	14	6.5	5.8
27	18	7.4				8.0	296	185	70	14	6.3	5.8
28	17	6.8				10	278	171	65	12	6.0	6.3
29	16	6.8				10	294	164	62	12	5.2	6.5
30	14	6.8				9.0	246	150	69	11	5.2	6.8
31	16	-----				10	-----	148	-----	11	5.2	-----
Total	806	263.5	184.4	161.2	190.4	214.4	4,189	8,735	3,487	816	231.1	157.2
Mean	26.0	8.78	5.95	5.2	6.8	6.92	140	282	116	26.3	7.45	5.24
Ac-ft	1,600	523	366	320	378	425	8,310	17,330	6,920	1,620	458	312

Calendar year 1961: Max 140 Min - Mean 20.0 Ac-ft 14,480  
Water year 1961-62: Max 636 Min - Mean 53.2 Ac-ft 38,560

Peak discharge (base, 170 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-20	2100	4.07	342	5-9	2230	5.11	720
4-25	2330	4.09	363	5-27	2100	3.55	210

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 2-7, 13-17, 19-22, 29, Dec. 5-12, Feb. 10-28. No gage-height record Dec. 13 to Feb. 9, Mar. 1-27 (stage-discharge relation affected by ice during most of periods).

9-410. Muddy Creek near Kremmling, Colo.

Location--Lat 40°17'37", long 106°28'59", in SE¼ sec.20, T.4 N., R.81 W., on left bank a quarter of a mile upstream from Lindsey Creek, half a mile upstream from bridge on U. S. Highway 40, 3 miles downstream from Albert Creek, and 17 miles northwest of Kremmling.

Drainage area--74.2 sq mi.

Records available--September 1937 to September 1943, October 1955 to September 1962. Monthly discharge only for some periods, published in WSP 1313.

Gage--Water-stage recorder. Altitude of gage is 7,856 ft (from topographic map). September 1937 to Sept. 30, 1943, staff gage at site 3 miles upstream at different datum.

Average discharge--13 years, 54.5 cfs (39,460 acre-ft per year).

Extremes--Maximum discharge during year, 816 cfs May 13 (gage height, 5.68 ft); maximum gage height, 6.72 ft Apr. 17 (backwater from ice); minimum daily discharge, 1.9 cfs Sept. 3, 4, 7.  
1937-43, 1955-62: Maximum discharge, 992 cfs May 9, 1957 (gage height, 6.46 ft); maximum gage height, that of Apr. 17, 1962; minimum daily discharge, 0.1 cfs Aug. 19, 24, 1940.

Remarks--Records good except those for periods of ice effect or no gage-height record, which are poor. Some regulation by Barber Reservoir (capacity, 4,290 acre-ft). Diversions for irrigation of about 900 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 Oct. 1 to Nov. 2, Nov. 17 to Dec. 5, May 1-17)

Oct. 1 to Apr. 6

Apr. 7 to Sept. 30

2.8	6.8	2.4	1.1	3.3	51
2.9	10	2.5	2.7	3.8	140
3.0	16	2.6	5.0	4.3	270
3.2	32	2.8	12	4.9	460
3.4	56	3.0	23	5.6	730

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	42	25	13				16	330	318	96	17	2.2
2	25	22	13				* 345	354	85	16	2.2	
3	23	b20	12		(*)		17	* 363	400	76	14	1.9
4	24	b17	15				18	428	363	67	15	1.9
5	26	b15	13	(*)			19	506	360	60	12	2.2
6	30	b15	(*)				20	586	330	* 54	* 8.5	2.1
7	38	b16				(*)	* 21	598	* 303	46	6.2	1.9
8	47	b18					b20	646	252	48	5.0	2.1
9	43	b17					b20	658	252	46	4.8	2.2
10	* 43	17					b21	694	267	40	4.8	2.4
11	31	18					b21	678	261	35	4.5	* 2.4
12	35	17					b22	718	243	33	4.1	2.4
13	30	17					b25	718	255	36	4.3	2.4
14	33	16					b36	558	252	35	4.3	2.4
15	35	16					b80	453	230	29	3.8	2.4
16	42	* 16		9	10		b150	400	210	30	3.6	2.5
17	38	15					b240	384	182	29	3.4	2.5
18	33	14					315	348	* 160	26	3.6	2.5
19	28	18	11				390	321	155	25	4.5	2.5
20	28	14					408	357	160	23	5.9	3.8
21	26	14					408	372	152	21	5.6	5.0
22	26	14					470	324	148	* 20	4.8	7.2
23	22	15					460	303	145	20	4.5	6.6
24	22	13					* 554	300	132	21	5.9	5.3
25	20	13					* 598	303	124	19	4.8	4.8
26	21	13					* 570	306	114	20	3.4	4.5
27	25	13					546	327	100	22	2.9	4.5
28	25	12					590	291	96	19	2.7	4.8
29	18	12					546	294	92	17	2.5	4.8
30	24	12					363	279	120	15	2.4	5.3
31	24	-----					-----	285	-----	16	2.4	-----
Total	927	474	352	279	280	365	6,982	13,473	6,530	1,129	187.2	99.7
Mean	29.9	15.8	11.4	9	10	11.8	233	435	218	36.4	6.04	3.32
Ac-ft	1,840	940	698	553	555	724	13,850	26,720	12,950	2,240	371	198

Calendar year 1961: Max 392 Min - Mean 41.7 Ac-ft 30,190  
Water year 1961-62: Max 718 Min 1.9 Mean 85.1 Ac-ft 61,640

Peak discharge (base, 300 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-28	2400	5.78	811	6- 3	0500	4.83	456
5-13	0330	5.68	816				

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 10-16, Dec. 6 to Apr. 7 (stage-discharge relation affected by ice during most of periods).

## MUDDY CREEK BASIN

9-411. Antelope Creek near Kremmling, Colo.

Location.--Lat 40°14'26", long 106°22'23", in N½ sec.8, T.3 N., R.80 W., on right bank 5.8 miles upstream from mouth and 12½ miles north of Kremmling.

Drainage area.--10.6 sq mi.

Records available.--October 1955 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 7,933 ft (from topographic map).

Average discharge.--7 years, 2.30 cfs (1,670 acre-ft per year).

Extremes.--Maximum discharge during year, 57 cfs Apr. 23 (gage height, 1.67 ft), from rating curve extended above 5.1 cfs on basis of slope-area measurement at gage height of 2.70 ft; maximum gage height, 3.32 ft Apr. 10 (backwater from plugged culvert); minimum discharge not determined.

1955-62: Maximum discharge, 148 cfs Mar. 27, 1960 (gage height, 2.70 ft, from floodmarks), by slope-area measurement of peak flow; maximum gage height, that of Apr. 10, 1962; minimum daily discharge determined, 0.1 cfs Aug. 11, 12, 14, 1956.

Remarks.--Records fair except those for period of backwater from plugged culvert and those for periods of ice effect or no gage-height record, which are poor. No diversion or regulation above station.

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.1	0.6	(*)	(*)	0.5		1.6	15	10	3.8	1.4	0.4
2	.9						1.7	*14	8.8	3.2	.6	.4
3	.9						1.8	15	8.8	3.0	.6	.4
4	1.0						1.7	18	7.9	3.0	1.4	.4
5	1.0						*1.7	20	7.6	3.0	.8	.4
6	1.0	0.6	(*)	(*)	0.5		1.9	20	7.3	*1.4	.6	.4
7	1.1						1.8	21	*6.8	1.3	.5	.4
8	1.2						2.1	21	7.0	1.0	*.5	.4
9	1.2						2.4	20	6.3	1.0	.4	.4
10	*1.1						3.1	20	5.7	.9	*.4	.4
11	1.0	0.5	0.5	0.5	1.0	0.6	3.6	20	5.5	.9	.4	*.4
12	1.0						4.6	19	5.2	1.0	.4	.4
13	.9						6.6	16	4.6	1.6	.4	.4
14	.9						7.6	13	4.4	3.0	.4	.4
15	.9						7.8	12	4.2	2.1	.4	.4
16	.9	(*)	0.5	0.5	1.0	0.6	8.6	12	4.4	1.4	.4	.4
17	.8						12	11	5.2	1.4	.4	.4
18	.8						17	11	*4.2	2.0	.4	.4
19	.8						23	9.7	3.4	1.4	.5	.4
20	.8						28	10	3.2	1.0	.4	.4
21	.8	.5			.6	1.0	3.2	9.1	3.0	1.0	.4	.5
22	.8						26	*9.1	3.0	*.8	.4	.5
23	.7						27	8.5	3.8	.6	.4	.5
24	.7						29	8.2	3.4	.8	.6	.5
25	.7						29	8.2	2.7	.7	.4	.5
26	.6						20	7.9	2.4	1.5	.4	.6
27	.8						18	8.8	2.1	1.8	.4	.6
28	.8						22	8.8	2.1	.8	.4	.6
29	.6						20	9.7	2.8	.7	.4	.6
30	.6						16	8.8	4.8	.6	.4	.5
31	.6	-----	-----	-----	-----	-----	-----	8.5	-----	.8	.4	-----
Total	27.0	16.0	15.5	15.5	21.1	23.0	377.6	413.3	150.6	47.5	15.9	13.5
Mean	0.87	0.53	0.5	0.5	0.75	0.74	12.6	13.3	5.02	1.53	0.51	0.45
Ac-ft	54	32	31	31	42	46	749	820	299	94	32	27

Calendar year 1961: Max 9.4 Min - Mean 1.15 Ac-ft 835

Water year 1961-62: Max 32 Min - Mean 3.11 Ac-ft 2,260

Peak discharge (base, 15 cfs)--Apr. 23 (1830) 57 cfs (1.67 ft); May 7 (2100) 31 cfs (1.42 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 23-26, Oct. 29 to Nov. 13, and backwater from plugged culvert Apr. 6-20. No gage-height record Nov. 14 to Apr. 5 (stage-discharge relation affected by ice during most of period), July 9-12, 20-22, Aug. 6-9.

MUDDY CREEK BASIN

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9-412. Red Dirt Creek near Kremmling, Colo.

Location.--Lat 40°09'41", long 106°33'32", in NE¼NE¼ sec.10, T.2 N., R.82 W., on left bank three-quarters of a mile upstream from Snow Shoe Ranch, 2 miles downstream from McMahon (Red Dirt) Reservoir, 9½ miles upstream from mouth, and 11½ miles northwest of Kremmling.

Drainage area.--18.3 sq mi.

Records available.--October 1955 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 8,961 ft (from topographic map).

Average discharge.--7 years, 21.6 cfs (15,640 acre-ft per year).

Extremes.--Maximum discharge during year, 166 cfs June 4 (gage height, 2.37 ft); maximum gage height, 2.76 ft Dec. 11 (backwater from ice); minimum discharge not determined.

1955-62: Maximum discharge, 343 cfs June 13, 1957 (gage height, 3.01 ft); minimum not determined.

Remarks.--Records good except those for periods of ice effect, which are fair, and those for periods of no gage-height record, which are poor. No diversion above station. Flow regulated by McMahon (Red Dirt) Reservoir (capacity, about 4,500 acre-ft). A small amount of water is imported from the Yampa River basin to McMahon Reservoir.

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

Oct. 1 to Feb. 28

Mar. 1 to Sept. 30

0.6	3.2	0.9	8.4	2.0	94
.8	5.9	1.1	15	2.4	176
1.0	10	1.4	30		
1.2	17	1.7	56		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	11	12	9.8				8.0	51	116	52	40	9.0
2	11	12	9.8				7.8	50	126	50	33	9.0
3	11	12	9.8				8.0	47	145	46	9.9	9.0
4	11	12	9.8				8.0	48	157	45	9.9	14
5	11	12	9.8		(*)		8.0	52	154	44	9.9	20
6	11	12	9.8				8.0	60	*145	44	*9.9	20
7	11	12	9.5				8.0	68	139	44	9.6	20
8	11	12	9.8				7.6	77	124	*45	9.3	20
9	12	12	9.5				7.6	84	110	45	9.3	20
10	*12	11	9.5				8.2	91	105	45	9.3	*20
11	12	11					8.3	97	100	46	9.0	20
12	12	11					8.3	102	100	46	9.0	20
13	12	11					8.5	97	99	46	9.0	19
14	12	11					9.4	86	96	46	9.0	19
15	12	11					12	*84	94	46	9.0	19
16	12	*11		3	2.5	4	18	80	90	46	9.0	19
17	12	10					20	75	82	46	8.7	19
18	12	10					22	74	75	46	9.0	19
19	12	9.8					28	74	72	46	9.3	19
20	12	9.8					38	78	68	46	9.0	19
21	12	9.8					46	78	64	46	9.0	19
22	12	9.5					45	77	*63	*46	9.0	19
23	12	9.5					45	75	62	46	9.0	18
24	12	9.5					53	77	59	46	9.6	17
25	12	9.8					*58	84	58	46	9.6	9.6
26	12	9.8					53	99	55	45	9.6	9.6
27	12	9.8					52	112	54	45	9.3	9.6
28	12	9.8					55	108	54	43	9.3	9.9
29	12	9.8					55	108	55	42	9.0	9.9
30	12	9.8					52	104	55	41	9.0	9.6
31	12	-----			-----		-----	104	-----	41	9.0	-----
Total	364	321.7	223.1	93	70.0	124	765.7	2,501	2,776	1,407	341.5	484.2
Mean	11.7	10.7	7.20	3	2.5	4	25.5	80.7	92.5	45.4	11.0	16.1
Ac-ft	722	638	443	184	139	246	1,520	4,960	5,510	2,790	677	960

Calendar year 1961: Max 150 Min - Mean 16.1 Ac-ft 11,640  
Water year 1961-62: Max 157 Min - Mean 25.9 Ac-ft 18,790

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 2-10, 13-15, 19, 20, 22, 27, 29, Dec. 4-7, 9, 10. No gage-height record Dec. 11 to Apr. 25 (stage-discharge relation affected by ice during part of period).



## MUDDY CREEK BASIN

9-413. Pass Creek near Kremmling, Colo.

Location.--Lat 40°08'00", long 106°29'20", in NW¼NE¼ sec.20, T.2 N., R.81 W., on left bank half a mile downstream from Burke Spring Creek, 6 miles upstream from mouth, and 7½ miles northwest of Kremmling.

Drainage area.--17.8 sq mi.

Records available.--October 1957 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 7,840 ft (from topographic map).

Average discharge.--5 years, 9.96 cfs (7,210 acre-ft per year).

Extremes.--Maximum discharge during year, 204 cfs May 11 (gage height, 3.63 ft), from rating curve extended above 75 cfs; minimum daily, 1.7 cfs Sept. 13.  
1957-62: Maximum discharge, that of May 11, 1962; minimum daily, 0.6 cfs Aug. 2, 8, 12-14, 1958.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor. Some regulation by small reservoir on Spring Creek above station. Several small diversions above station for irrigation.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Apr. 30, May 1)

2.0	1.3	2.5	13
2.1	2.2	2.7	29
2.2	3.4	2.9	57
2.3	5.4	3.2	115
2.4	8.6	3.5	187

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	12	9.5	4.8				6.0	70	50	13	5.0	2.6
2	11	8.0	4.6				7.0	*57	41	12	4.8	1.9
3	11	8.3	4.8		(*)		7.4	*57	39	8.6	4.6	1.8
4	11	8.6	4.6	(*)			7.2	68	38	7.6	5.0	1.8
5	11	7.5	4.2				*7.3	77	37	7.3	3.8	1.8
6	11	7.0	*4.5				7.6	89	37	*7.0	3.3	1.8
7	11	6.0	4.5			(*)	10	99	*37	6.7	3.0	1.8
8	11	6.2	4.6			3	5.4	128	34	6.7	*3.0	1.9
9	11	6.4	4.7				6.4	139	30	6.7	2.9	1.9
10	11	6.8	4.8				9.9	144	27	6.0	2.9	*1.9
11	*11	6.6	4.6				11	164	26	5.2	2.8	2.0
12	11	6.4					12	151	24	5.0	2.9	2.1
13	11	5.0					17	137	21	5.4	2.9	1.7
14	11	5.4					23	111	19	5.4	2.9	1.8
15	11	5.6					29	95	16	5.2	3.0	1.8
16	11	5.8		4	3.5		26	85	17	5.4	3.0	1.8
17	11	*6.0					25	75	18	5.4	3.2	1.9
18	10	6.4					29	71	16	5.2	3.6	2.0
19	9.9	6.2					62	64	14	5.0	5.2	2.3
20	9.9	6.2					89	62	15	6.4	4.2	3.0
21	9.9	6.4	4.2			4	73	57	16	6.0	3.6	3.4
22	11	6.6					68	*56	14	*5.7	3.4	3.8
23	9.5	7.0					75	46	13	5.7	3.3	3.3
24	9.0	6.7					*91	42	13	7.0	3.6	2.8
25	8.6	6.7					*91	39	11	6.0	3.0	3.3
26	8.6	5.7				4.2	83	38	11	8.0	2.9	3.6
27	9.9	5.4				4.8	79	41	11	8.0	2.8	3.6
28	9.9	5.0				6.2	95	39	11	5.7	2.8	3.6
29	8.6	5.2				6.2	89	44	11	4.8	2.7	3.6
30	9.0	5.4				5.6	79	38	14	4.6	2.7	3.6
31	9.5	-----				5.8	-----	38	-----	4.8	2.7	-----
Total	321.3	194.0	134.7	124	98.0	117.8	1,220.2	2,421	681	201.5	105.5	742
Mean	10.4	6.47	4.35	4	3.5	3.80	40.7	78.1	22.7	6.50	3.40	2.47
Ac-ft	637	385	267	246	194	234	2,420	4,800	1,350	400	209	147

Calendar year 1961: Max 61 Min 1.1 Mean 8.08 Ac-ft 5,850

Water year 1961-62: Max 164 Min 1.7 Mean 15.6 Ac-ft 11,290

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 2, 3, 5-11, 13-22, 29, Dec. 5-9. No gage-height record Dec. 12 to Apr. 5 (stage-discharge relation affected by ice during most of period).

## BLUE RIVER BASIN

163

9-429. Monte Cristo diversion near Hoosier Pass, Colo.

Location.--Lat 39°22'50", long 106°04'10", in NE¼SE¼ sec.2, T.8 S., R.78 W., on left bank at entrance to Hoosier Pass tunnel, 2,000 ft downstream from diversion point, 1½ miles northwest of Hoosier Pass, and 7 miles southwest of Breckenridge.

Records available.--October 1957 to September 1962.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 10,986 ft (from State engineer).

Extremes.--1957-62: Maximum daily discharge, 66 cfs June 15, 1959; no flow for most of each year.

Remarks.--Records good. This is a transmountain diversion from Monte Cristo Creek in Blue River basin through Hoosier Pass tunnel to South Platte River basin whence it is again diverted to South Catamount Creek in the Arkansas River basin. Water is for municipal use by city of Colorado Springs. Diversion point is in SW¼NE¼ sec.2, T.8 S., R.78 W. The entire flow is regulated by diversion gates.

Cooperation.--Gage-height record furnished by city of Colorado Springs.

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.4	2.4						0	8.9	47	12	3.6
2	5.2	2.3						0	13	*45	10	3.2
3	4.9	2.2						0	18	38	10	3.0
4	4.4	2.2						0	21	33	10	2.8
5	4.3	1.3						0	22	32	9.8	2.6
6	4.3	0						5.1	23	32	8.9	1.0
7	4.0	0						9.1	22	35	*8.3	0
8	4.0	0						11	16	48	7.9	0
9	4.3	0						14	13	*40	7.7	0
10	4.0	0						16	14	32	8.1	0
11	4.2	0						18	27	9	8.3	0
12	*3.7	0						19	34	35	8.5	*0
13	3.6	0						16	40	24	8.1	0
14	3.6	0						12	41	22	*7.5	0
15	3.6	0						8.9	33	19	6.9	0
16	3.6	0						7.5	25	17	6.7	0
17	3.6	0						6.3	15	17	6.1	0
18	3.6	0						5.7	14	18	6.3	0
19	3.6	0						6.1	28	*20	7.7	0
20	3.6	0						7.5	40	19	9.5	0
21	3.4	0						*7.7	*40	17	9.1	0
22	3.2	0						6.5	36	17	9.3	0
23	3.2	0						6.1	27	16	8.3	0
24	3.1	0						7.5	29	17	7.3	0
25	2.8	0						9.5	27	14	6.1	0
26	3.0	0						10	28	14	5.4	0
27	2.6	0						11	40	14	4.9	0
28	2.5	0						9.1	43	14	4.6	0
29	2.5	0						7.9	49	14	4.3	0
30	2.8	0						7.3	49	13	4.2	0
31	2.6	-----			-----		-----	7.7	-----	13	3.7	-----
Total	113.2	10.4	0	0	0	0	0	252.5	835.9	745	235.5	16.2
Mean	3.65	0.35	0	0	0	0	0	8.15	27.9	24.0	7.60	0.54
Ac-ft	225	21	0	0	0	0	0	501	1,660	1,480	467	32

Calendar year 1961: Max 41 Min 0 Mean 4.32 Ac-ft 3,130  
 Water year 1961-62: Max 49 Min 0 Mean 6.05 Ac-ft 4,390

\* Discharge measurement or observation of no flow made on this day.

Note.--No gage-height record Nov. 6 to May 5, Sept. 7-30.

## BLUE RIVER BASIN

9-443. Bemrose-Hoosier diversion near Hoosier Pass, Colo.

Location.--Lat 39°22'50", long 106°04'10", in NE½SE¼ sec.2, T.8 S., R.78 W., on right bank at entrance to Hoosier Pass tunnel, 1½ miles northwest of Hoosier Pass, about 2 miles downstream from diversion point on Bemrose Creek, and 7 miles southwest of Breckenridge.

Records available.--October 1957 to September 1962.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 10,986 ft (from State engineer).

Extremes.--1957-62: Maximum daily discharge, 40 cfs May 27, 1958; no flow for most of each year.

Remarks.--Records good. This is a transmountain diversion from Bemrose and Hoosier Creeks in Blue River basin through Hoosier Pass tunnel to South Platte River basin whence it is again diverted to South Catamount Creek in the Arkansas River basin. Water is for municipal use by city of Colorado Springs. Diversion points are in SW¼SW¼ sec.6, T.8 S., R.77 W., and in sec.12, T.8 S., R.78 W. The entire flow is regulated by diversion gates.

Cooperation.--Gage-height record furnished by city of Colorado Springs.

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.0	2.2						0	9.1	12	3.2	1.2
2	4.0	2.1						0	13	*11	3.0	1.2
3	4.0	2.0						0	17	10	2.9	1.2
4	3.8	2.1						0	17	9.5	2.9	1.2
5	3.7	1.2						0	16	9.1	2.7	1.2
6	3.5	0						3.6	16	8.6	2.6	4
7	3.3	0						5.4	15	8.6	*2.5	0
8	3.3	0						5.9	13	10	2.5	0
9	3.3	0						8.4	12	*9.1	2.5	0
10	2.9	0						10	13	8.2	2.3	0
11	3.2	0						11	14	7.6	2.1	0
12	*3.2	0						12	16	8.2	2.2	*0
13	3.2	0						9.7	17	7.6	2.1	0
14	3.2	0						7.2	18	6.7	*1.9	0
15	3.0	0						7.4	16	6.3	1.7	0
16	2.9	0						6.3	14	5.9	1.7	0
17	2.7	0						6.1	12	5.7	1.6	0
18	2.6	0						5.7	12	6.1	1.6	0
19	2.6	0						7.6	14	*5.7	1.7	0
20	2.6	0						9.1	14	5.2	1.9	0
21	2.6	0						*7.6	*14	4.8	2.1	0
22	2.5	0						5.9	13	4.7	1.9	0
23	2.2	0						7.0	13	5.0	1.7	0
24	2.5	0						9.3	12	5.4	1.7	0
25	2.2	0						9.5	12	4.7	1.6	0
26	2.2	0						9.5	12	4.3	1.5	0
27	2.2	0						9.1	12	4.0	1.4	0
28	2.2	0						7.8	12	3.7	1.4	0
29	2.1	0						7.6	13	3.5	1.4	0
30	2.2	0						8.2	13	3.3	1.4	0
31	2.2	-----			-----		-----	8.6	-----	3.2	1.3	-----
Total	90.1	9.6	0	0	0	0	0	205.5	414.1	207.7	63.0	6.5
Mean	2.91	0.32	0	0	0	0	0	6.63	13.8	6.70	2.03	0.22
Ac-ft	179	19	0	0	0	0	0	408	821	412	125	13

Calendar year 1961: Max 16 Min 0 Mean 1.95 Ac-ft 1,420

Water year 1961-62: Max 18 Min 0 Mean 2.73 Ac-ft 1,980

\* Discharge measurement or observation of no flow made on this day.

Note.--No gage-height record Nov. 6 to May 5, Sept. 7-30.

9-448. McCullough-Spruce-Crystal diversion near Hoosier Pass, Colo.  
(Formerly published as McCullough diversion near Hoosier Pass)

Location.--Lat 39°22'50", long 106°04'10", in NE¼SE¼ sec.2, T.8 S., R.78 W., on left bank at entrance to Hoosier Pass tunnel, 1½ miles northwest of Hoosier Pass, about 2 miles downstream from diversion point on McCullough Gulch, and 7 miles southwest of Breckenridge.

Records available.--October 1957 to September 1962. Prior to October 1961, published as McCullough diversion near Hoosier Pass.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 10,986 ft (from State engineer).

Extremes.--1957-62: Maximum daily discharge, 64 cfs June 30, 1962; no flow for most of each year.

Remarks.--Records good. This is a transmountain diversion from McCullough Gulch, Spruce and Crystal Creeks in Blue River basin through Hoosier Pass tunnel to South Platte River basin whence it is again diverted to South Catamount Creek in the Arkansas River basin. Water is for municipal use by city of Colorado Springs. Diversion points are in secs.14, 23, 26, T.7 S., R.78 W. The entire flow is regulated by diversion gates. No water was diverted from Crystal Creek during water year 1962.

Cooperation.--Gage-height record furnished by city of Colorado Springs.

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.4	1.6						0	11	6.3	9.8	6.5
2	2.2	1.6						0	20	*6.0	9.0	6.1
3	.3	1.5						0	28	5.6	9.5	6.1
4	.3	1.5						0	34	5.0	10	5.9
5	.3	.8						0	32	4.7	8.3	5.6
6	.3	0						0	33	4.5	*7.6	2.2
7	.3	0						0	29	4.6	7.6	0
8	.4	0						5	23	5.4	7.8	0
9	.4	0						11	18	*4.7	12	0
10	1.2	0						19	25	4.0	14	0
11	1.4	0						23	38	3.7	14	0
12	*1.4	0						22	45	3.7	13	*0
13	3.2	0						19	53	.8	13	0
14	3.2	0						14	52	.8	*12	0
15	3.2	0						11	44	1.7	10	0
16	3.0	0						9	31	5.0	10	0
17	3.2	0						9	20	4.9	11	0
18	3.4	0						8	22	4.0	15	0
19	3.3	0						9	35	*.7	24	0
20	4.0	0						13	47	.6	20	0
21	4.7	0						13	*51	1.3	25	0
22	4.5	0						10	44	6.1	22	0
23	3.9	0						9	39	5.6	17	0
24	4.2	0						13	42	7.4	14	0
25	4.0	0						14	39	12	12	0
26	3.9	0						13	41	12	10	0
27	2.7	0						13	52	12	8.8	0
28	1.6	0						9	56	11	8.3	0
29	1.7	0						8	60	11	7.4	0
30	1.9	0						8	64	11	7.4	0
31	1.7	-----			-----		-----	10	-----	11	6.7	-----
Total	74.2	7.0	0	0	0	0	0	292	1128	700.9	376.2	32.4
Mean	2.39	0.23	0	0	0	0	0	9.4	37.6	22.6	12.1	1.08
Ac-ft	147	14	0	0	0	0	0	579	2,240	1,390	746	64

Calendar year 1961: Max 32 Min 0 Mean 3.30 Ac-ft 2,390  
Water year 1961-62: Max 64 Min 0 Mean 7.15 Ac-ft 5,180

\* Discharge measurement or observation of no flow made on this day.

Note.--No gage-height record Nov. 6 to May 31, June 5-13, Sept. 7-30.



## BLUE RIVER BASIN

9-466. Blue River near Dillon, Colo.

Location.--Lat 39°32'58", long 106°02'22", in NW¼NE¼ sec.7, T.6 S., R.77 W., on right bank 0.3 mile downstream from Swan River and 4½ miles south of Dillon.

Drainage area.--120 sq mi, approximately.

Records available.--October 1957 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 9,120 ft (from topographic map).

Average discharge.--5 years, 98.3 cfs (71,170 acre-ft per year) including diversion to Hoosier Pass tunnel.

Extremes.--Maximum discharge during year, 427 cfs May 13 (gage height, 3.90 ft); minimum daily, 24 cfs for many days.  
1957-62: Maximum discharge, 782 cfs June 8, 1958 (gage height, 4.73 ft); minimum daily, 17 cfs Mar. 21, 1961.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Transmountain diversion above station by Boreas Pass ditch and Hoosier Pass tunnel (see elsewhere in this report).

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Jan. 29 to Feb. 18)

2.5	21	3.3	160
2.7	36	3.6	270
2.9	64	4.0	445
3.1	105		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	103	54	41	31	32	b 25	24	*133	234	262	92	42
2	98	54	40	30	32	b 25	24	120	238	254	92	42
3	94	53	40	*30	32	26	24	120	262	*242	87	42
4	94	50	38	29	32	25	24	133	286	234	81	42
5	98	48	36	29	31	b 24	24	154	294	226	81	41
6	96	48	36	28	*30	24	*24	184	294	216	77	40
7	92	46	35	28	29	24	24	212	306	209	*74	40
8	90	47	*35	28	29	24	25	230	298	206	70	40
9	87	48	34	27	28	*25	24	250	282	206	64	40
10	87	51	34	27	27	25	24	282	274	195	64	41
11	85	51	34	26	28	25	24	290	278	188	59	42
12	81	51	33	25	29	b 25	25	350	282	181	56	*42
13	79	51	32	26	29	b 24	26	396	290	206	56	41
14	77	*48	32	27	28	b 24	27	337	314	223	56	41
15	74	47	32	27	28	b 24	32	290	324	202	54	40
16	74	47	32	27	28	b 25	40	274	319	181	51	38
17	*68	47	32	27	28	25	51	266	302	167	50	38
18	66	47	31	27	28	25	61	262	282	157	51	38
19	64	44	31	28	b 27	25	81	242	274	164	53	37
20	62	43	31	28	26	25	112	246	282	*170	56	37
21	61	44	31	30	26	25	130	*266	*282	154	58	37
22	61	42	31	30	27	24	130	262	282	148	56	38
23	59	43	31	*31	26	25	133	234	282	136	56	42
24	58	42	31	b 31	26	24	145	230	274	136	56	42
25	56	43	31	b 30	26	b 24	164	246	274	133	53	42
26	54	43	31	30	b 25	25	174	250	266	118	51	42
27	54	42	31	31	b 26	25	174	262	266	110	48	42
28	54	41	31	32	b 25	25	164	258	270	103	48	41
29	53	41	30	32	-	25	160	242	266	98	44	42
30	53	40	30	32	-----	25	157	238	266	96	44	42
31	53	-----	30	32	-----	25	-----	234	-----	94	42	-----
Total	2,285	1,396	1,027	896	788	766	2,251	7,493	8,443	5,415	1,881	1,214
Mean	73.7	46.5	33.1	28.9	28.1	24.7	75.0	242	281	175	60.7	40.5
Ac-ft	4,530	2,770	2,040	1,780	1,560	1,520	4,460	14,860	16,750	10,740	3,730	2,410

Calendar year 1961: Max 262 Min 17 Mean 76.8 Ac-ft 55,620

Water year 1961-62: Max 396 Min 24 Mean 92.8 Ac-ft 67,150

Peak discharge (base, 500 cfs).--No peak above base.

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Jan. 9-23 (stage-discharge relation affected by ice during most of period).

## BLUE RIVER BASIN

167

9-475. Snake River near Montezuma, Colo.

Location.--Lat 39°36'20", long 105°56'33", in NW¼ sec.19, T.5 S., R.76 W. (projected), on right bank 200 ft downstream from North Fork and 4½ miles northwest of Montezuma.

Drainage area.--58.9 sq mi.

Records available.--July 1942 to September 1946, October 1951 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 9,320 ft (from topographic map). Prior to Oct. 14, 1943, staff gage at same site and datum.

Average discharge.--15 years, 61.9 cfs (44,810 acre-ft per year).

Extremes.--Maximum discharge during year, 485 cfs June 14 (gage height, 3.07 ft); minimum not determined.

1942-46, 1951-62: Maximum discharge, 1,250 cfs June 10, 1952 (gage height, 3.51 ft); minimum not determined.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Small diversions above station for irrigation and domestic use.

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

0.9	8.0	2.0	140
1.1	17	2.5	275
1.3	32	3.0	480
1.6	67		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	72	42	30				10	* 48	146	260	67	28
2	69	42	28		(*)		10	48	194	239	60	27
3	69	38	29	(*)			10	48	242	227	60	27
4	69	41	29				11	54	254	* 215	61	26
5	69	39	* 25				11	62	260	203	54	26
6	69	37					* 12	79	260	190	* 51	26
7	70	37					12	95	239	180	50	26
8	70	38					12	109	206	190	47	26
9	74	38				(*)	13	134	188	170	46	26
10	70	39					13	162	233	160	45	25
11	70	37					13	182	248	150	44	24
12	68	36					14	206	* 278	160	44	* 23
13	66	35					16	194	334	160	44	23
14	66	* 34					19	154	377	160	40	22
15	66	33					26	136	349	120	38	22
16	66	33		15	11	10	31	132	296	110	38	23
17	* 65	32					31	124	242	110	39	22
18	64	32	21				37	120	260	110	44	21
19	62	31					46	134	296	105	44	20
20	61	32					52	165	338	* 95	41	24
21	60	34					52	152	345	91	42	27
22	61	32					46	* 126	* 328	86	39	30
23	54	34					52	122	300	93	38	25
24	55	32					67	146	300	88	38	23
25	51	32					79	162	289	82	35	23
26	50	31					74	160	286	82	34	23
27	52	29					61	158	296	76	33	26
28	51	29					62	138	278	72	32	30
29	44	28					66	132	257	67	31	26
30	46	29					51	130	263	66	31	24
31	46	---					---	136	---	69	29	---
Total	1,925	1,036	687	465	308	310	1,009	3,948	8,182	4,186	1,339	744
Mean	62.1	34.5	22.2	15	11	10	33.6	127	273	135	43.2	24.8
Ac-ft	3,820	2,050	1,360	922	611	615	2,000	7,830	16,230	8,300	2,660	1,480

Calendar year 1961: Max 266 Min 7.6 Mean 59.9 Ac-ft 43,400  
 Water year 1961-62: Max 377 Min - Mean 66.1 Ac-ft 47,880

Peak discharge (base, 500 cfs).--No peak above base.

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 12-17, Dec. 6 to Mar. 6 (stage-discharge relation affected by ice during part of period), July 4-20. Stage-discharge relation affected by ice Nov. 3-9, 13-20, 22, 24, 25, 27-30, Dec. 2, Apr. 7, 8.

## BLUE RIVER BASIN

9-477. Keystone Gulch near Dillon, Colo.

Location.--Lat 39°35'40", long 105°58'19", in NE¼ sec. 26, T.5 S., R.77 W., on right bank 0.7 mile upstream from mouth and 4.7 miles southeast of Dillon.

Drainage area.--8.80 sq mi.

Records available.--October 1957 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 9,350 ft (from topographic map).

Average discharge.--5 years, 5.70 cfs (4,130 acre-ft per year).

Extremes.--Maximum discharge during year, 42 cfs May 12 (gage height, 2.26 ft); minimum not determined.  
1957-62: Maximum discharge, 90 cfs June 5, 1958 (gage height, 2.75 ft), from rating curve extended above 28 cfs; minimum not determined.

Remarks.--Records good except those for periods of no gage-height record, which are poor. No known diversion above station.

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

Oct. 1 to Mar. 31

Apr. 1 to Sept. 30

1.5 1.7  
1.6 3.0  
1.7 6.0  
1.8 11

1.5 1.6  
1.6 2.7  
1.7 4.8  
1.8 9.0  
2.0 22  
2.2 38

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6.6	4.7					1.8	*7.0	22	17	6.2	3.9
2	6.6	4.4			(*)		1.8	7.4	25	16	5.4	3.7
3	6.5	4.3		(*)			1.8	7.9	27	14	5.8	3.7
4	6.6	4.3					1.8	9.0	29	*13	6.6	3.7
5	6.6	4.2	(*)				1.9	11	*29	12	5.4	3.5
6	6.5	4.0					*1.9	13	32	11	*4.8	3.5
7	6.4	4.0					2.0	14	31	11	5.1	3.9
8	6.4	4.0					1.9	18	30	11	4.8	3.9
9	6.4	4.1				(*)	1.9	21	28	11	4.8	3.9
10	6.2	4.1					1.9	24	28	10	4.8	3.9
11	6.0	4.1					2.0	28	27	9.6	4.8	3.7
12	6.0	4.0					2.1	34	*27	11	4.8	*3.7
13	6.0	3.9					2.3	36	24	11	4.8	3.5
14	5.8	*3.7					3.0	32	25	9.6	4.2	3.2
15	5.8	3.6					4.0	32	23	9.6	4.2	3.2
16	5.8	3.6	2.5	1.8	2.0	2.2	4.5	29	22	9.0	3.9	3.2
17	*5.8	3.5					7.0	29	21	7.9	4.2	3.2
18	5.7	3.4					6.8	24	22	9.0	4.8	2.8
19	5.4	3.4					7.4	25	23	9.0	5.1	2.8
20	5.4	3.4					8.6	28	23	*8.4	4.8	3.0
21	5.1	3.4					8.2	26	23	7.9	4.8	3.2
22	5.0	3.3					7.6	*23	24	7.4	4.5	3.3
23	5.0	3.4					8.2	24	24	7.4	4.8	3.0
24	5.0	3.3					*9.0	24	24	7.9	4.8	3.0
25	5.2	3.3					1.0	23	23	7.4	4.2	3.0
26	5.1	3.2					9.0	22	21	7.4	3.9	3.0
27	5.4	3.1					7.9	22	21	6.6	3.9	3.0
28	5.1	3.1					8.4	22	19	6.2	3.9	3.2
29	5.1	3.0					8.4	21	19	6.2	3.9	3.0
30	5.4	3.0					7.4	23	18	5.8	3.9	2.8
31	5.4	-----			-----			21	-----	6.2	3.9	-----
Total	179.3	110.8	77.5	55.8	56.0	68.2	150.5	680.3	734	296.5	145.8	100.4
Mean	5.78	3.69	2.5	1.8	2.0	2.2	5.02	21.9	24.5	9.56	4.70	3.35
Ac-ft	356	220	154	111	111	135	299	1,350	1,460	588	289	199

Calendar year 1961: Max 13 Min - Mean 4.27 Ac-ft 3,090

Water year 1961-62: Max 36 Min - Mean 7.27 Ac-ft 5,270

Peak discharge (base, 35 cfs).--May 12 (1900) 42 cfs (2.26 ft); June 6 (1930) 35 cfs (2.21 ft).

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 1-17, 22-25, Nov. 2 to Apr. 24, Apr. 30, May 1 (stage-discharge relation affected by ice during most of periods).

9-480. Snake River at Dillon, Colo.

Location.--Lat 39°36'45", long 106°02'30", in SW¼ sec.17, T.5 S., R.77 W., on left bank 0.6 mile upstream from mouth and 1 mile east of Dillon.

Drainage area.--92 sq mi, approximately.

Records available.--October 1910 to September 1919, October 1929 to September 1962. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Altitude of gage is 8,870 ft (from topographic map). Oct. 15, 1910, to Sept. 30, 1919, staff gage and Oct. 1, 1929, to Apr. 22, 1953, water-stage recorder, at site 0.6 mile downstream at different datums; datum lowered 1.54 ft Oct. 1, 1929.

Average discharge.--42 years, 64.5 cfs (46,700 acre-ft per year).

Extremes.--Maximum discharge during year, 479 cfs June 14 (gage height, 3.89 ft); maximum gage height recorded, 5.16 ft Dec. 17 (backwater from ice); minimum discharge not determined.  
1910-19, 1929-62: Maximum discharge, 1,200 cfs June 13, 1935 (gage height, 4.25 ft, site and datum then in use), from rating curve extended above 700 cfs; maximum gage height recorded, that of Dec. 17, 1961; minimum daily discharge, 3 cfs Nov. 9, 1912.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 350 acres above station. Diversion for power 6 miles above station in sec.19, T.5 S., R.76 W., prior to Dec. 15, 1959; water returned to Blue River just above mouth of Straight Creek.

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. 4)

2.1	15	3.0	135
2.3	32	3.5	280
2.6	68	4.0	550

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	78	49	29				20	75	178	276	74	41
2	69	43	29				20	*78	221	259	67	32
3	72	40	29				20	81	256	*242	67	27
4	74	43	30	(*)			21	85	280	227	68	28
5	74	41	*27				21	95	280	215	62	29
6	74	39			(*)		*22	113	288	203	*59	23
7	74	39					22	135	288	188	58	22
8	74	40					21	160	252	194	55	24
9	76	41				(*)	21	185	227	182	59	24
10	74	41					21	209	252	165	59	23
11	74	42					22	230	280	155	62	24
12	71	42					23	252	*242	170	64	*25
13	68	39					30	245	335	168	65	25
14	68	*37					44	203	376	145	62	25
15	67	36					75	172	350	125	56	26
16	67	36		20	17	17	98	172	296	113	55	26
17	*67	35					103	180	252	112	56	26
18	65	35	25				101	170	262	112	65	25
19	63	34					115	170	304	106	63	25
20	62	34					129	206	330	*105	60	26
21	60	34					110	178	340	96	59	27
22	62	33					93	*150	*325	90	56	32
23	53	34					101	142	296	95	55	28
24	56	33					121	162	292	93	56	28
25	53	33					131	185	292	88	50	27
26	53	32					115	172	292	85	47	27
27	54	31					96	185	292	76	45	30
28	54	31					100	160	280	72	44	33
29	49	30					101	168	270	69	43	36
30	53	30					84	155	270	68	43	38
31	50	-----			-----		-----	162	-----	69	43	-----
Total	2,008	1,107	794	620	476	527	2,001	5,035	8,498	4,363	1,777	832
Mean	64.8	36.9	25.6	20	17	17	66.7	162	283	141	57.3	27.7
Ac-ft	3,980	2,200	1,570	1,230	944	1,050	3,970	9,990	16,860	8,650	3,520	1,650

Calendar year 1961: Max 280 Min 8.5 Mean 65.5 Ac-ft 47,420

Water year 1961-62: Max 376 Min - Mean 76.8 Ac-ft 55,610

Peak discharge (base, 450 cfs).--June 14 (2000) 479 cfs (3.89 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 6-10, 14-17, 19, 20, 22, 24, 25, 27-30, Dec. 2, 5-15. No gage-height record Dec. 16 to Apr. 6 (stage-discharge relation affected by ice during part of periods).



## BLUE RIVER BASIN

9-501. Tenmile Creek below North Fork, at Frisco, Colo.

Location.--Lat 39°34'35", long 106°06'30", in SW¼ sec.34, T.5 S., R.78 W., on left bank 500 ft downstream from North Fork, 800 ft downstream from bridge on U. S. Highway 6, and 0.6 mile west of Frisco.

Drainage area.--93.3 sq mi.

Records available.--October 1957 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 9,090 ft (from topographic map).

Extremes.--Maximum discharge during year, 848 cfs June 13 (gage height, 5.02 ft); minimum not determined.

1957-62: Maximum discharge, 1,260 cfs May 28, 1958; maximum gage height, 5.70 ft May 24, 1958; minimum daily discharge, 7 cfs Mar. 8, 14, 1960.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Natural flow of stream affected by a few small diversions above station for irrigation and municipal use and transbasin diversion from Robinson Reservoir (capacity, 2,520 acre-ft) in Eagle River basin.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used May 12 to June 18, June 30 to July 2)

2.4	18	3.3	82	4.4	370
2.7	31	3.6	137	4.7	510
3.0	50	4.0	244	5.2	880

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	95	59					26	*142	362	540	93	48
2	85	56					27	140	445	*510	88	47
3	82	51					29	150	516	480	90	46
4	84	b 53		(*)			28	175	552	425	105	45
5	85	50					27	208	*591	390	90	44
6	85	48			(*)		*26	269	605	382	81	41
7	87	b 48					26	303	558	366	*75	40
8	90	b 48	(*)				25	342	490	362	76	39
9	93	b 49				(*)	28	402	440	334	81	37
10	92	b 49					28	470	516	312	80	35
11	87	49					27	510	564	289	80	34
12	78	b 49					26	546	577	278	80	*32
13	76	45					28	534	612	255	80	32
14	77	*42					32	420	680	216	75	32
15	77	b 41					38	362	612	199	68	30
16	78	b 41	30	22	19	19	48	358	495	194	63	30
17	*78	40					56	366	425	185	62	29
18	76	40					71	354	430	183	60	28
19	75	40					114	346	516	183	62	28
20	74	40					162	415	546	*162	58	30
21	67	40					178	406	*570	144	59	31
22	68	39					165	*334	564	133	59	36
23	60	40					175	312	528	129	59	31
24	64	39					213	342	522	129	61	30
25	60	39					255	386	490	124	53	30
26	62	38					252	394	495	122	47	30
27	63	38					196	394	505	111	44	30
28	61	38					185	334	534	103	45	34
29	54	37					196	327	564	98	44	31
30	59	37					162	312	564	92	47	30
31	59	-----			-----		-----	321	-----	95	47	-----
Total	2,331	1,323	930	682	532	589	2,849	10,674	15,868	7,525	2,112	1,040
Mean	75.2	44.1	30	22	19	19	95.0	344	529	243	68.1	34.7
Ac-ft	4,620	2,620	1,840	1,350	1,060	1,170	5,650	21,170	31,470	14,930	4,190	2,060

Calendar year 1961: Max 455 Min 9.2 Mean 74.1 Ac-ft 53,640  
Water year 1961-62: Max 680 Min - Mean 127 Ac-ft 92,130

Peak discharge (base, 700 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-12	2200	4.89	720	6-13	2100	5.02	848
6-4	2100	4.81	704	6-21	1900	5.00	752

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 5, 6, 11, 13, 14, Nov. 17 to Apr. 6 (stage-discharge relation affected by ice during most of periods).

9-507. Blue River below Dillon, Colo.

Location.--Lat 39°37'30", long 106°04'05", in SE¼ sec.12, T.5 S., R.78 W., on right bank 0.5 mile upstream from Straight Creek, 1.1 miles northwest of Dillon, and 1.2 miles downstream from Tenmile Creek.

Drainage area.--335 sq mi.

Records available.--January 1960 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 8,760 ft (from topographic map).

Extremes.--Maximum discharge during year, 1,660 cfs June 14 (gage height, 3.60 ft); minimum not determined.

1960-62: Maximum discharge, 1,720 cfs June 17, 1960; maximum gage height, that of June 14, 1962; minimum daily discharge, 45 cfs Mar. 9, 22, 27-30, 1961.

Remarks.--Records good except those for period of no gage-height record, which are fair. Transmountain diversions above station (see elsewhere in this report). Diversions for irrigation of about 700 acres of hay meadows above station. Natural flow of stream affected by transbasin diversion from Robinson Reservoir (capacity, 2,520 acre-ft) in Eagle River basin.

Rating tables (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used May 21 to June 4)

Oct. 1 to June 4

June 5 to Sept. 30

0.9	58	1.6	340	1.0	82	2.6	860
1.0	83	2.0	570	1.4	215	3.0	1,160
1.3	198	3.0	1,320	1.8	385	3.5	1,570
				2.2	600		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	335	194	117				80	408	808	1,160	308	157
2	310	186	110				90	*402	960	1,100	291	147
3	300	173	110	(*)	(*)		90	402	1,100	*1,060	287	137
4	300	173	107				86	450	1,190	972	300	133
5	310	165	93				83	504	*1,270	895	275	133
6	315	161	107				*80	647	1,300	853	263	127
7	310	149	97				80	738	1,300	818	*247	124
8	310	145	*103				76	829	1,180	825	243	124
9	320	145	107			(*)	78	968	1,040	790	247	121
10	315	145	103				78	1,130	1,130	738	247	121
11	305	145	103			62	80	1,220	1,250	692	243	121
12	285	149					83	1,270	*1,310	686	247	*117
13	266	145					103	1,280	1,400	699	247	117
14	266	*141					145	1,110	1,510	660	235	114
15	266	141					190	920	1,390	594	219	111
16	262	129		75	68		234	885	1,310	552	211	108
17	*257	125					271	885	1,120	524	208	108
18	257	129					315	850	1,080	507	215	108
19	248	117					408	822	1,210	512	223	105
20	248	133					504	944	1,300	*485	219	111
21	234	141	85				534	944	1,340	450	211	111
22	238	129				*70	492	*822	*1,310	425	211	127
23	212	141				68	504	752	1,210	410	208	121
24	220	129				70	584	787	1,190	405	219	117
25	207	133				66	668	871	1,160	390	197	117
26	202	133				70	682	885	1,160	380	183	114
27	212	117				78	570	928	1,170	349	172	117
28	207	114				83	528	808	1,170	326	168	127
29	190	107				83	570	801	1,180	313	161	127
30	202	114				76	480	759	1,180	304	161	127
31	198	-----				73	-----	766	-----	304	157	-----
Total	8,107	4,248	2,857	2,325	1,904	2,039	8,766	25,787	36,228	19,178	7,023	3,649
Mean	262	142	92.2	75	68	65.8	292	832	1,208	619	227	122
Ac-Ft	16,080	8,430	5,670	4,610	3,780	4,040	17,390	51,150	71,860	38,040	13,930	7,240

Calendar year 1961: Max 1,080 Min 45 Mean 237 Ac-ft 171,400  
Water year 1961-62: Max 1,510 Min - Mean 335 Ac-ft 242,200

\* Discharge measurement made on this day.

Note.--No gage-height record Dec. 12 to Mar. 22.



9-570. Green Mountain Reservoir near Kremmling, Colo.

Location.--Lat 39°52'45", long 106°19'45", in NE¼ sec.15, T.2 S., R.80 W., in hoist house at right end of Green Mountain Dam on Blue River, 0.6 mile upstream from Elliott Creek and 13 miles southeast of Kremmling.

Drainage area.--599 sq mi (includes 15.4 sq mi of Elliott Creek above diversion for Elliott Creek feeder canal).

Records available.--November 1942 to September 1962.

Gage.--Water-stage recorder. Datum of gage is 7,800 ft above mean sea level (Bureau of Reclamation bench mark). Gage heights have been reduced to elevations above mean sea level. Prior to Sept. 25, 1951, mercury gage in powerhouse at same datum. Sept. 25, 1951, to Oct. 1, 1953, electric-tape gage at present site and datum.

Extremes.--Maximum contents observed during year, 146,000 acre-ft Oct. 15 (elevation, 7,949.58 ft); minimum, 22,640 acre-ft May 7 (elevation, 7,854.06 ft).

1942-62: Maximum contents observed, 148,900 acre-ft July 10, 1947 (elevation, 7,950.95 ft); minimum (since appreciable storage was attained), 19,600 acre-ft May 24, 1957 (elevation 7,849.06 ft).

Remarks.--Reservoir is formed by an earth- and rock-fill dam. Dam completed and storage began in November 1942. Capacity of reservoir, 146,900 acre-ft between elevations 7,800 (sill of outlet gate) and 7,950 ft (top of radial spillway gates). Dead storage, 7,760 acre-ft. Reservoir is used for power development and storage for replacement of water diverted to South Platte River basin during late irrigation season. Figures given herein represent usable contents.

Cooperation.--Records furnished by Bureau of Reclamation.

Month-end elevation and contents, water year October 1961 to September 1962

Date	Elevation (feet)†	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	7,949.04	144,900	-
Oct. 31.....	7,949.41	145,600	+700
Nov. 30.....	7,947.02	140,600	-5,000
Dec. 31.....	7,938.92	124,500	-16,100
Calendar year 1961.....	-	-	+32,070
Jan. 31.....	7,928.54	105,600	-18,900
Feb. 28.....	7,913.85	82,420	-23,180
Mar. 31.....	7,875.71	38,830	-43,590
Apr. 30.....	7,863.01	28,700	-10,130
May 31.....	7,867.91	32,380	+3,680
June 30.....	7,936.22	119,400	+87,020
July 31.....	7,949.01	144,800	+25,400
Aug. 31.....	7,946.91	140,400	-4,400
Sept. 30.....	7,938.74	124,200	-16,200
Water year 1961-62.....	-	-	-20,700

† Elevation at 2400.



## 9-575. Blue River below Green Mountain Reservoir, Colo.

Location.--Lat 39°52'50", long 106°20'00", in NE¼ sec.15, T.2 S., R.80 W., on left bank 0.3 mile upstream from Elliott Creek, 0.3 mile downstream from Green Mountain Dam, and 13 miles southeast of Kremmling.

Drainage area.--599 sq mi (includes 15.4 sq mi of Elliott Creek above diversion for Elliott Creek feeder canal).

Records available.--October 1937 to September 1962.

Gage.--Water-stage recorder. Datum of gage is 7,682.66 ft above mean sea level (Bureau of Reclamation bench mark). Prior to Oct. 1, 1951, at site 3.7 miles downstream at different datum.

Average discharge.--25 years, 507 cfs (367,100 acre-ft per year).

Extremes.--Maximum discharge during year, 1,790 cfs Mar. 14 (gage height, 7.41 ft); minimum daily, 246 cfs Nov. 5.  
1937-62: Maximum discharge, 4,000 cfs June 4, 1938 (gage height, 5.93 ft, site and datum then in use), from rating curve extended above 3,000 cfs; minimum daily (prior to construction of Green Mountain Reservoir), 80 cfs Feb. 18-24, 1938, Feb. 18, 19, 1940; no flow at times in 1943.

Remarks.--Records good. Flow regulated by Green Mountain Reservoir (see preceding page). Diversions for irrigation of about 5,000 acres above station. Transmountain diversions above station (see elsewhere in this report).

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	403	472	300	460	481	732	635	1,520	1,260	478	613	466
2	671	423	416	478	481	748	841	*1,410	716	577	613	457
3	652	297	365	478	481	752	851	1,280	704	644	613	451
4	596	247	420	478	481	752	855	1,460	696	644	610	469
5	548	246	415	478	481	760	*894	1,380	680	967	604	475
6	532	301	*410	481	*493	784	427	1,360	664	*961	731	463
7	298	321	*418	484	532	881	420	1,370	599	948	648	460
8	291	391	422	481	598	1,080	434	1,360	644	619	654	463
9	486	348	403	466	652	1,320	428	1,420	502	955	613	463
10	406	338	393	496	487	1,090	772	1,520	487	961	642	454
11	*402	338	419	379	490	800	624	1,520	725	957	544	451
12	502	340	457	328	589	1,410	480	1,540	793	959	544	*463
13	653	345	454	338	558	1,430	437	1,560	*793	1,000	573	472
14	325	296	457	355	586	1,370	431	1,570	757	967	*544	475
15	285	294	454	382	574	1,310	435	1,580	730	977	544	475
16	529	340	460	418	540	1,270	758	1,570	633	992	541	475
17	448	359	460	460	583	556	778	1,310	668	1,270	469	475
18	469	352	457	475	493	572	790	1,290	620	1,270	456	475
19	479	363	460	475	591	747	790	1,300	451	1,040	469	478
20	476	395	448	475	595	598	787	1,280	448	1,010	472	475
21	329	371	460	475	607	810	783	1,300	442	*1,030	475	478
22	347	366	460	478	603	728	745	1,290	442	872	475	475
23	477	296	409	475	605	715	634	1,300	436	768	475	475
24	438	357	430	478	600	600	631	1,300	442	763	472	475
25	383	289	398	475	505	569	924	1,300	445	747	475	490
26	389	288	411	481	600	761	1,550	1,270	445	752	466	478
27	391	288	418	481	643	758	1,560	1,260	439	756	475	478
28	296	294	380	481	728	777	1,470	1,260	442	511	478	548
29	300	296	409	478	-	782	1,440	1,230	430	502	478	472
30	359	299	409	481	-----	777	1,470	1,250	427	716	481	518
31	313	-----	424	484	-----	542	-----	1,260	-----	586	481	-----
Total	13,473	9,950	13,096	14,132	15,657	26,781	24,074	42,620	17,960	26,199	16,728	14,222
Mean	435	332	422	456	559	864	802	1,375	599	845	540	474
Ac-ft	26,720	19,740	25,980	28,030	31,060	53,120	47,750	84,540	35,620	51,960	33,180	28,210

Calendar year 1961: Max 1,070 Min 87 Mean 390 Ac-ft 282,000  
 Water year 1961-62: Max 1,580 Min 246 Mean 644 Ac-ft 465,900

\* Discharge measurement made on this day.

9-580. Colorado River near Kremmling, Colo.

Location.--Lat 40°02'12", long 106°26'22", in NE¼SW¼ sec.23, T.1 N., R.81 W., on right bank at upstream end of Gore Canyon, 3 miles southwest of Kremmling and 3.8 miles downstream from Blue River.

Drainage area.--2,360 sq mi, approximately.

Records available.--July 1904 to September 1918 (published as Grand River near Kremmling), October 1961 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 7,320 ft (from topographic map). Prior to July 28, 1910, wire-weight, chain, and staff gages and July 28, 1910, to Sept. 30, 1918, water-stage recorder supplemented in winter by staff gage, all within a few hundred feet, at datum of 7,301.32 ft above mean sea level (Denver Northwestern and Pacific Railway bench mark) except prior to Oct. 18, 1906, at datum 0.80 ft lower.

Extremes.--Maximum discharge during year, 6,310 cfs May 13 (gage height, 12.59 ft); minimum daily, 506 cfs Nov. 5.

1904-18, 1961-62: Maximum discharge observed, 21,500 cfs June 7, 1912 (gage height, 21.8 ft, datum then in use), from rating curve extended above 14,000 cfs; minimum observed, 166 cfs Dec. 19, 1907.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Natural flow of stream affected by trans-mountain diversions, storage reservoirs, diversions for irrigation of about 40,000 acres above station, and return flow from irrigated areas.

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1160	979	710	920	950	1260	1460	4740	2680	3310	1380	786
2	1110	970	740	940	950	1260	1730	*4440	2420	3690	1330	768
3	1270	698	760	950	940	1240	1950	4150	2290	3890	1320	758
4	1170	716	770	940	950	1230	2240	4220	2370	3900	1320	754
5	1180	506	780	950	*970	1230	2520	4360	2410	*3910	1290	754
6	1140	513	*780	960	1000	1270	2110	4510	2400	3560	1280	733
7	980	804	786	959	1020	1290	1730	4820	2290	3090	1300	747
8	853	822	769	966	1030	*1470	1400	5100	2500	2580	*1240	761
9	973	866	674	934	1150	1590	1450	5430	2360	2390	1230	758
10	1090	851	660	764	972	1600	1870	5700	2160	2540	1190	736
11	*1130	783	805	782	930	1370	2200	5840	2260	2520	1160	736
12	1140	823	880	727	1020	1580	2190	6070	2340	2250	1080	730
13	1220	745	910	750	1070	1780	2400	6210	2460	2360	1050	*747
14	1080	672	920	800	1080	1770	2890	6160	2480	2320	862	750
15	805	652	910	840	1060	1700	3430	5660	2500	2490	873	747
16	984	*756	910	860	1040	1700	3900	4900	2740	2120	946	740
17	*1110	813	910	900	1070	1200	3750	4250	2950	2200	904	744
18	1100	794	920	920	1010	1070	3900	4130	*2750	2150	852	740
19	1060	742	915	940	1010	1130	3960	3770	2250	1880	894	736
20	1060	731	900	940	1040	1230	4180	3440	2080	1760	859	740
21	916	785	900	950	1050	1200	4400	3440	2180	*1690	848	775
22	766	755	900	930	1070	1310	4280	3280	2330	1640	831	792
23	962	772	890	920	1060	1300	4090	3210	2460	1510	848	782
24	957	740	890	940	1060	1170	*4050	3020	2380	1580	852	775
25	955	770	870	950	1010	1130	4340	2950	2270	1590	842	789
26	907	728	880	960	1050	1200	5280	2920	2490	1450	820	786
27	922	705	890	950	1060	1360	5410	3000	2520	1620	810	778
28	910	710	860	960	1080	1600	5160	3340	2660	1380	677	831
29	656	710	850	960	-	1810	5330	2800	3020	1300	880	800
30	793	710	860	960	-----	1660	5310	2750	3160	1390	792	789
31	794	-----	900	960	-----	1500	-----	2570	-----	1380	792	-----
Total	31153	22621	26099	28182	28702	43210	98910	131180	74160	71440	31352	22862
Mean	1,005	754	842	909	1,025	1,394	3,297	4,232	2,472	2,300	1,010	762
Ac-ft	61,790	44,870	51,770	55,900	56,930	85,710	196,200	260,200	147,100	141,700	62,190	45,350

Calendar year 1961: Max - Min - Mean - Ac-ft -  
 Water year 1961-62: Max 6,210 Min 506 Mean 1,671 Ac-ft 1,210,000

\* Discharge measurement made on this day.

Note.--No gage-height record Nov. 28 to Dec. 6, Dec. 10 to Jan. 6, Jan. 13 to Feb. 5.

## PINEY RIVER BASIN

9-595. Piney River near State Bridge, Colo.

Location.--Lat 39°48', long 106°35', in sec.16, T.3 S., R.82 W., on left bank at downstream side of private bridge at Perry Olsen Ranch just downstream from Rock Creek, 6 miles southeast of State Bridge.

Drainage area.--82.6 sq mi.

Records available.--May 1944 to September 1962.

Gage.--Water-stage recorder. Datum of gage is 7,272.35 ft above mean sea level, unadjusted. Prior to July 29, 1944, staff gage and July 29, 1944, to Oct. 24, 1947, water-stage recorder, at datum 2.38 ft higher.

Average discharge.--18 years, 75.7 cfs (54,800 acre-ft per year).

Extremes.--Maximum discharge during year, 754 cfs May 12 (gage height, 5.06 ft); minimum daily, 9 cfs Feb. 28.  
1944-62: Maximum discharge, 1,110 cfs June 8, 1952 (gage height, 5.61 ft); minimum daily, 1.9 cfs Sept. 1, 18, 19, 1954.

Remarks.--Records good except those for period of no gage-height record, which are poor. Diversions above station for irrigation of about 400 acres of hay meadows above and below station.

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

(Stage-discharge relation affected by ice Nov. 3, 4)

2.3	8.0	3.0	48	4.0	260
2.5	16	3.3	89	4.5	460
2.7	26	3.6	150	5.0	730

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	59	43	32	20	16	10	26	225	354	394	61	18
2	52	39	30	17	16	12	28	211	386	354	*53	17
3	54	36	30	17	15	14	30	*203	425	320	53	16
4	56	34	30	20	15	18	*30	228	460	309	61	15
5	62	34	26	22	15	20	28	292	470	274	53	15
6	71	*34	28	22	15	18	26	386	*470	257	47	15
7	75	36	28	22	15	*16	26	465	480	241	44	15
8	79	38	28	22	*14	18	26	535	450	222	41	16
9	82	38	26	14	16	17	26	600	382	228	39	15
10	84	38	24	10	20	16	26	658	378	208	37	14
11	72	38	22	11	26	14	28	658	455	192	36	14
12	71	36	18	12	36	12	30	688	540	*187	35	13
13	64	34	18	13	34	11	40	658	580	187	35	13
14	64	32	20	14	26	11	60	535	600	152	32	13
15	66	32	22	15	22	12	80	*430	570	130	30	12
16	72	34	24	*16	22	14	120	398	495	118	28	13
17	*75	34	26	16	20	15	170	382	386	111	27	13
18	77	32	26	15	18	17	220	342	342	113	27	12
19	74	32	24	14	17	20	278	312	*402	103	29	12
20	71	30	24	15	17	20	338	338	505	100	32	11
21	65	30	24	16	17	18	362	338	535	94	30	12
22	65	30	22	16	16	18	312	302	545	89	28	14
23	58	32	22	15	16	17	309	281	480	86	27	13
24	55	32	20	14	16	18	358	281	470	82	27	12
25	50	32	22	13	16	22	415	295	435	79	24	12
26	48	34	24	15	16	26	386	298	430	77	22	11
27	50	32	24	17	15	34	316	346	435	69	20	12
28	48	30	22	17	9	36	326	302	394	66	*20	14
29	44	28	24	17	-	30	334	288	402	62	20	15
30	44	30	24	16	-----	26	267	281	415	58	20	15
31	44	-----	22	16	-----	24	-----	298	-----	56	18	-----
Total	1,951	1,014	756	499	516	574	5,021	11,854	13,671	5,018	1,056	412
Mean	62.9	33.8	24.4	16.1	18.4	18.5	167	382	456	162	34.1	13.7
Ac-ft	3,870	2,010	1,500	990	1,020	1,140	9,960	23,510	27,120	9,950	2,090	817

Calendar year 1961: Max 440 Min 8 Mean 55.3 Ac-ft 40,060  
Water year 1961-62: Max 688 Min 9 Mean 116 Ac-ft 83,980

Peak discharge (base, 520 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-12	2100	5.06	754	6-22	0500	4.79	590
6-14	0600	4.86	622				

\* Discharge measurement made on this day.  
Note.--No gage-height record Nov. 5 to Apr. 18 (stage-discharge relation affected by ice during most of period).

ROCK CREEK BASIN

177

9-605, Rock Creek near Toponas, Colo.

Location.--Lat 40°02'28", long 106°39'19", in NW¼ sec.24, T.1 N., R.83 W., on right bank 0.1 mile upstream from Horse Creek, three-quarters of a mile downstream from Shoe and Stocking Creek, and 8 miles east of Toponas.

Drainage area.--48 sq mi, approximately.

Records available.--October 1952 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 8,544 ft (from topographic map).

Average discharge.--10 years, 33.1 cfs (23,960 acre-ft per year).

Extremes.--Maximum discharge during year, 482 cfs May 12 (gage height, 4.80 ft); maximum gage height, 5.49 ft Apr. 18 (backwater from ice); minimum daily discharge, 6.5 cfs Aug. 29, Sept. 2, 3, 1952-62; Maximum discharge, that of May 12, 1962; minimum daily, 2.2 cfs Aug. 30, 31, Sept. 2, 1954.

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

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

Oct. 1 to Mar. 21

2.1 13  
2.3 28  
2.6 60

Mar. 22 to Sept. 30

1.8 5.0 3.0 125  
1.9 8.0 3.5 212  
2.0 14 4.0 314  
2.3 39 4.6 440  
2.7 83

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	33	20					20	175	246	58	13	6.8
2	28	18					22	179	214	52	* 12	6.5
3	31	16					26	206	232	49	12	6.5
4	35	17					36	262	240	44	14	6.8
5	38	16					38	293	* 232	38	12	6.8
6	38	16					40	339	220	35	10	6.8
7	39	18					46	364	210	34	9.8	6.8
8	40	20					50	381	191	35	9.2	7.1
9	*41	*22					46	398	175	*30	9.2	7.4
10	38	20				10	55	379	162	27	10	7.4
11	35	20					70	396	157	24	8.6	7.4
12	37	20					90	430	150	24	8.0	7.1
13	31	18					100	423	148	28	8.6	7.1
14	32	16					140	381	142	26	8.0	7.4
15	32	18					200	335	132	24	7.4	7.1
16	31	18	12	10	11		240	* 306	131	22	7.1	7.4
17	30	16					240	278	131	22	7.7	7.1
18	29	16					270	262	107	20	9.8	7.1
19	26	16					290	232	95	20	20	7.4
20	26	14					300	252	*94	18	13	9.2
21	24	16				11	280	242	100	16	10	13
22	22	14				* 11	240	232	87	14	9.2	14
23	22	16				11	230	212	82	15	9.2	9.8
24	20	16				11	260	202	77	21	9.8	7.7
25	20	16				12	278	202	71	16	8.0	7.7
26	20	16				12	276	206	64	23	7.7	7.7
27	24	16				16	262	216	59	31	* 7.4	7.7
28	25	14				21	250	202	58	19	6.8	9.8
29	20	14				22	220	218	59	15	6.5	10
30	20	16				24	199	186	69	13	7.1	11
31	20					22		180		13	7.1	
Total	907	509	372	310	308	373	4,814	8,569	4,135	826	298.2	241.6
Mean	29.3	17.0	12	10	11	12.0	160	276	138	26.6	9.62	8.05
Ac-ft	1,800	1,010	738	615	611	740	9,550	17,000	8,200	1,640	591	479

Calendar year 1961: Max 204 Min 5.4 Mean 30.2 Ac-ft 21,860  
Water year 1961-62: Max 430 Min 6.5 Mean 59.4 Ac-ft 42,970

Peak discharge (base, 200 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-27	2100	4.02	318	6-1	0300	4.05	324
5-12	2100	4.80	482				

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 22-26, Oct. 29 to Jan. 6, Mar. 31 to Apr. 24, Apr. 28, 29. No gage-height record Jan. 7 to Mar. 22 (stage-discharge relation affected by ice during most of period).



## BIG ALKALI CREEK BASIN

9-608. Big Alkali Creek near Burns, Colo.

Location.--Lat 39°51', long 106°48', in NE¼ sec.28, T.2 S., R.84 W., on right bank half a mile upstream from Catamount Creek and 5 miles southeast of Burns.

Drainage area.--16 sq mi, approximately.

Records available.--October 1958 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 7,200 ft, revised (from topographic map).

Extremes.--1960-61: Maximum discharge during water year, 48 cfs Sept. 21 (gage height, 2.35 ft), from rating curve extended above 3 cfs as explained below; no flow for many days.

1961-62: Maximum discharge during water year, 42 cfs May 8 (gage height, 2.16 ft), from rating curve extended above 2 cfs as explained below; no flow for many days.

1958-62: Maximum discharge, 715 cfs Aug. 2, 1959 (gage height, 7.00 ft, from floodmarks), from rating curve extended above 3 cfs on basis of slope-area measurement of peak flow; no flow for many days in each year.

Remarks.--Records poor. Water is stored in Hurt Reservoir (capacity, about 100 acre-ft) for use in Catamount Creek drainage. One small diversion above station for irrigation.

Discharge, in cubic feet per second, water year October 1960 to September 1961

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1						0	0.4	0.8	1.0	0.4	0.2	0
2		(*)				0	.6	1.0	.9	.3	.2	0
3				(*)		0	.6	1.3	1.1	.4	.2	0
4						0	.4	*1.4	1.0	.4	.2	0
5	(*)		(*)			0	*.3	1.3	.8	.3	.1	2
6						0	.3	1.1	*.8	.3	.1	0
7						0	.3	1.0	1.0	.3	.1	0
8						0	.3	.9	.8	.3	.1	0
9						0	.1	1.1	.8	.3	.1	0
10						0	.1	1.2	.9	.3	.1	0
11						0	.1	1.6	.9	.3	.1	*.1
12						0	.1	2.1	.8	.2	.1	.1
13						0		2.2	.8	.2	.1	.1
14						.1	0	1.6	.8	.2	*.1	.1
15						.4	0	1.4	.8	.2	.1	.1
16						.5	0	1.6	.8	.1	.1	.1
17						.4	*0	1.7	.8	*.1	.1	.1
18						.4	.1	2.1	.8	.1	.1	.1
19						.3	.1	2.9	.7	.1	.2	1.3
20						.3	.2	4.4	.8	.1	.2	.3
21						.2	.2	3.3	*.7	.2	.2	3.0
22						.2	.3	3.6	.6	.2	.1	1.7
23				(*)		.3	.4	3.1	.5	.1	.1	2.0
24						.3	.4	3.6	.5	.2	.1	1.0
25						.4	.5	*2.6	.5	.1	.2	1.0
26						.5	.4	2.0	.6	.1	0	.8
27					(*)	.4	.5	2.4	.5	.1	0	.8
28						.4	.5	1.8	.5	.1	0	.9
29						*.4	.6	1.4	.5	.1	0	.8
30					-----	.4	.7	1.3	.4	.1	0	.8
31					-----	.4	-----	1.1	-----	.1	0	-----
Total	0	0	0	0	0	6.3	8.5	58.9	22.4	6.3	3.3	15.6
Mean	0	0	0	0	0	0.20	0.28	1.90	0.75	0.20	0.11	0.52
Ac-ft	0	0	0	0	0	12	17	117	44	12	6.5	31

Calendar year 1961: Max 6.2 Min 0 Mean 0.68 Ac-ft 496

Water year 1960-61: Max 4.4 Min 0 Mean 0.33 Ac-ft 239

Peak discharge (base, 30 cfs).--Sept. 21 (2200) 48 cfs (2.35 ft).

\* Discharge measurement or observation of no flow made on this day.

Note.--Stage-discharge relation affected by ice Mar. 15 to Apr. 1. No gage-height record Mar. 14, Sept. 23-30.

## BIG ALKALI CREEK BASIN

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9-608. Big Alkali Creek near Burns, Colo.--Continued

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.8	0.8					4	*8.0	12	1.5	0.6	0.2
2	.8	.8					5	8.6	12	1.4	.6	.2
3	*.9	b .7			0.2		8	9.8	11	1.3	*.6	.2
4	.9	.7					*12	11	9.0	1.2	.5	.2
5	.8	b .7				(*)	6.4	16	*8.2	1.1	.5	.2
6	.7	.7					5.8	19	8.0	1.1	.5	.2
7	.7	.7				0.3	2.9	21	8.2	1.0	.5	.2
8	.7	.8					2.6	21	8.4	1.0	.5	.1
9	.7	*.8			3		5.0	21	7.7	*1.0	.5	.1
10	.8	.9					6.0	21	6.5	1.0	.5	.1
11	.8	1.0					5.6	20	6.2	.9	.4	.1
12	*.8	1.0			(*)		6.5	23	5.8	1.0	.4	.1
13	.8	1.0					6.8	22	4.7	1.0	.4	.1
14	.8	1.0					6	17	5.0	.9	.4	.1
15	.9	1.0	0.2				6	14	4.1	.8	.4	.1
16	.9	1.2		(*)			4	*13	4.1	.9	.4	.2
17	.9	1.2					4	14	4.4	.9	.4	.2
18	1.1	1.2					4	16	4.0	.8	.3	.1
19	1.0	1.0					*9.5	15	3.5	.8	.3	.2
20	.8	.9					11	15	*3.2	.8	.3	.2
21	.8	.9					10	15	2.8	.8	.3	.2
22	.9	.9					8.8	12	2.6	.8	.3	.2
23	.9	.8			1	1.6	9.6	9.6	2.3	.7	.3	.2
24	.8	.6					11	10	1.7	.7	.3	.2
25	.8	.4					14	10	1.4	.6	.3	.2
26	.8	.4					13	9.8	1.3	.6	.2	.2
27	.8	.4					10	11	1.3	.7	*.2	.2
28	.9	.4					12	10	1.4	.7	.2	.2
29	.8	.3					12	9.6	1.4	.6	.2	.3
30	.8	.3					9.2	8.6	1.5	.6	.2	.3
31	.8	-----			-----		-----	9.0	-----	.6	.2	-----
Total	25.7	23.5	6.2	0	44.0	30.1	230.7	440.0	153.7	27.8	11.7	5.3
Mean	0.83	0.78	0.2	0	1.57	0.97	7.69	14.2	5.12	0.90	0.38	0.18
Ac-ft	51	47	12	0	87	60	458	873	305	55	23	11

Calendar year 1961: Max 4.4 Min 0 Mean 0.48 Ac-ft 349  
 Water year 1961-62: Max 23 Min 0 Mean 2.74 Ac-ft 1,980

Peak discharge (base, 30 cfs).--May 8 (0330) 42 cfs (2.16 ft).

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Oct. 1-3, Nov. 6 to Dec. 31, Feb. 1 to Apr. 4 (stage-discharge relation affected by ice most of periods), Apr. 14-19.

## EAGLE RIVER BASIN

9-630. Eagle River at Red Cliff, Colo.

Location.--Lat 39°30'35", long 106°22'00", in SE¼ sec.19, T.6 S., R.80 W., on left bank at Red Cliff, 0.3 mile upstream from Turkey Creek.

Drainage area.--72.2 sq mi.

Records available.--October 1910 to September 1925, May 1944 to September 1962. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 8,648.48 ft above mean sea level, datum of 1929. Jan. 8, 1911, to Sept. 30, 1925, chain gage at bridge a quarter of a mile downstream at different datum. May 25, 1944, to Oct. 12, 1952, water-stage recorder at site 200 ft upstream at datum 3.54 ft higher.

Average discharge.--33 years, 54.9 cfs (39,750 acre-ft per year).

Extremes.--Maximum discharge during year, 362 cfs May 12 (gage height, 3.98 ft); minimum daily, 3 cfs Feb. 28. 1910-25, 1944-62: Maximum discharge observed, 1,010 cfs June 5, 1912 (gage height, 4.0 ft, site and datum then in use), from rating curve extended above 500 cfs; minimum daily, 1 cfs Oct. 15, 1917.

Remarks.--Records good except those for period of ice effect, which are poor. Transmountain diversions above station by Columbine, Ewing, and Wurts ditches (see elsewhere in this report). Transbasin diversion above station from Robinson Reservoir (capacity, 2,520 acre-ft) to Tenmile Creek for mining development. Small diversions for irrigation of about 400 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 10 to June 22)

2.4	6.0	3.3	102
2.5	9.0	3.6	170
2.7	21	4.0	290
3.0	53		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	40	28	22	11	11	6	7	112	185	112	28	15
2	38	26	22	9	10	8	7	*102	201	104	*27	14
3	33	22	20	8	11	10	7	108	222	102	27	13
4	30	24	18	9	10	8	7.5	118	*231	102	31	13
5	29	22	16	11	9	8	7.8	138	234	97	27	12
6	29	20	16	13	8	10	8.1	170	243	84	24	12
7	27	*20	18	14	10	16	7.8	182	240	82	24	12
8	29	22	16	13	*11	*18	8.7	195	213	84	23	14
9	36	24	14	11	12	14	10	210	201	76	23	14
10	*38	24	14	4	16	10	9.5	201	201	69	21	13
11	33	24	12	5	22	9	10	231	201	63	21	12
12	38	26	10	7	26	11	11	269	207	63	20	12
13	41	24	8	9	22	8	14	283	210	*61	20	12
14	36	20	8	12	20	9	19	272	213	59	20	12
15	31	22	10	14	16	10	27	*266	204	54	18	12
16	30	24	16	*14	15	12	32	276	195	52	16	12
17	29	24	14	13	14	14	40	252	188	48	18	12
18	28	24	14	10	12	16	53	231	172	47	19	12
19	28	22	14	10	8	*10	*79	207	162	47	20	12
20	29	20	16	11	10	4	106	222	*165	45	20	12
21	28	20	16	12	10	5	118	228	162	40	20	14
22	31	20	14	11	9	5	112	213	160	39	30	13
23	30	22	10	12	9	5	118	198	152	39	28	16
24	31	22	10	8	10	5	140	204	150	41	26	14
25	29	22	10	7	11	5	162	201	143	39	23	14
26	27	24	14	10	10	5	168	201	134	37	20	14
27	28	22	12	12	6	6	150	213	131	34	*19	14
28	33	20	10	12	3	6	152	201	136	32	18	17
29	34	20	12	12	-	7	145	190	129	30	16	16
30	32	20	14	11	-----	7	124	188	120	28	17	15
31	30	-----	12	11	-----	7	-----	182	-----	28	16	-----
Total	985	674	432	326	341	271	1,860.4	6,264	5,505	1,838	680	404
Mean	31.8	22.5	13.9	10.5	12.2	8.74	62.0	202	184	59.3	21.9	13.5
Ac-ft	1,950	1,340	857	647	676	538	3,690	12,420	10,920	3,650	1,350	801

Calendar year 1961: Max 150 Min 5 Mean 29.7 Ac-ft 21,470  
Water year 1961-62: Max 283 Min 3 Mean 53.6 Ac-ft 38,840

Peak discharge (base, 280 cfs).--May 12 (2030) 362 cfs (3.98 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 30 to Apr. 3 (no gage-height record Nov. 5 to Mar. 19).

9-645, Homestake Creek near Red Cliff, Colo.

Location.--Lat 39°28'25", long 106°22'00", in sec.6, T.7 S., R.80 W., on right bank at downstream side of Forest Service highway bridge, 3 miles upstream from mouth, and 3 miles south of Red Cliff.

Drainage area.--58.9 sq mi.

Records available.--October 1910 to September 1918, May 1944 to September 1962. Published as "at Redcliff" October 1910 to September 1916.

Gage.--Water-stage recorder. Datum of gage is 8,783 ft above mean sea level (river-profile survey). Jan. 8, 1911, to Sept. 30, 1918, staff gage at three sites  $2\frac{1}{2}$  to  $2\frac{3}{4}$  miles downstream at different datums. May 25, 1944, to May 8, 1961, water-stage recorder at site 15 ft downstream at same datum.

Average discharge.--26 years, 88.8 cfs (64,290 acre-ft per year).

Extremes.--Maximum discharge during year, 712 cfs June 14 (gage height, 3.27 ft); minimum daily, 4 cfs Feb. 28.  
1910-18, 1944-62: Maximum discharge observed, 1,300 cfs June 24, 1918 (gage height, 6.2 ft, site and datum then in use); minimum observed, 0.6 cfs Jan. 25, 1915 (discharge measurement).

Remarks.--Records good except those for periods of no gage-height record, which are poor. No diversion above station.

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

1.1	5.0	2.2	157
1.3	12	2.5	285
1.5	23	2.9	490
1.7	43	3.1	610
1.9	78		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	96	44	28	16	10	6	26	137	215	454	* 64	16
2	86	40	28	14	12	10	28	* 122	285	425	* 64	14
3	76	34	28	14	14	16	30	125	330	400	64	12
4	74	32	26	18	16	14	30	147	* 370	370	81	12
5	78	28	24	20	16	14	26	189	350	316	64	11
6	83	24	24	20	14	16	26	251	365	312	55	10
7	81	* 24	22	22	16	14	24	298	340	294	49	11
8	81	32	22	22	* 16	* 12	24	316	272	303	46	13
9	94	32	22	14	18	12	24	370	227	294	43	12
10	* 88	32	22	8	22	12	26	430	312	260	44	10
11	81	32	20	9	26	14	28	442	430	223	46	9.6
12	74	34	10	12	30	12	34	514	454	215	44	8.4
13	68	32	10	20	26	10	46	466	526	* 215	44	7.7
14	66	30	16	20	24	10	60	316	562	178	39	7.4
15	68	28	24	18	22	10	100	* 231	472	150	35	7.4
16	68	30	24	* 14	20	12	150	192	360	134	32	7.7
17	70	32	22	14	20	12	200	196	243	131	31	7.7
18	68	30	22	16	20	14	250	185	239	131	40	7.1
19	64	28	22	18	18	* 16	* 240	174	380	137	41	6.8
20	60	28	24	20	18	20	227	211	* 520	131	39	7.4
21	56	32	22	20	18	18	215	227	556	119	32	13
22	60	32	20	14	16	16	196	181	544	110	31	28
23	55	28	18	6	16	16	192	150	454	107	29	21
24	52	28	16	6	16	16	227	167	460	144	31	16
25	49	30	20	8	18	22	281	215	405	122	24	14
26	48	30	22	10	14	28	264	235	430	113	20	12
27	48	28	20	10	8	34	207	260	508	99	* 19	12
28	46	26	16	10	4	34	199	203	484	94	20	13
29	44	26	20	10	-	30	207	171	466	83	18	14
30	46	26	22	8	-----	26	157	157	478	76	19	13
31	44	-----	18	9	-----	24	-----	181	-----	74	17	-----
Total	2,072	912	654	440	488	520	3,744	7,459	12,037	6,214	1,225	354.2
Mean	66.8	30.4	21.1	14.2	17.4	16.8	125	241	401	200	39.5	11.8
Ac-Ft	4,110	1,810	1,300	873	968	1,030	7,430	14,790	23,880	12,330	2,430	703

Calendar year 1961: Max 460 Min 2.8 Mean 67.3 Ac-ft 48,760  
Water year 1961-62: Max 562 Min 4 Mean 99.0 Ac-ft 71,650

Peak discharge (base, 710 cfs).--June 14 (0100) 712 cfs (3.27 ft).

\* Discharge measurement made on this day.

Note.--No gage-height record Nov. 2 to Apr. 19 (stage-discharge relation affected by ice during most of period).



## EAGLE RIVER BASIN

9-651. Cross Creek near Minturn, Colo.

Location.--Lat 39°34'05", long 106°24'45", in SW $\frac{1}{4}$  sec.36, T.5 S., R. 81 W., on right bank 0.4 mile upstream from mouth and  $1\frac{1}{2}$  miles southeast of Minturn.

Drainage area.--33.5 sq mi.

Records available.--May 1956 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 7,990 ft (from topographic map). Prior to July 18, 1956, staff gage at site 0.3 mile downstream at different datum.

Average discharge.--6 years, 53.2 cfs (38,520 acre-ft per year).

Extremes.--Maximum discharge during year, 468 cfs July 1; maximum gage height, 4.71 ft June 14; minimum daily discharge, 2.4 cfs Feb. 28.

1956-62: Maximum discharge, 754 cfs June 30, 1957; maximum gage height, 5.54 ft July 18, 1957; minimum daily discharge, 0.8 cfs Feb. 7-14, 16, 1961.

Remarks.--Records good except those for periods of ice effect, which are poor. Diversion above station for municipal supply of Minturn.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used June 28 to July 29)

2.4	3.0	3.4	90
2.6	9.0	3.8	163
2.8	21	4.2	270
3.0	40	4.6	405

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	72	31	8	5.0	3.4	2.6	6	61	122	363	69	13
2	62	30	8	4.6	3.6	2.8	6.5	*57	163	342	*62	16
3	62	24	7.5	4.8	3.8	3.2	7	55	200	304	65	15
4	61	22	7	5.5	4.0	3.4	*7.5	65	*216	300	92	14
5	63	20	6.5	6	4.0	3.4	8.0	83	198	249	68	13
6	65	20	7	6	4.0	3.2	8.3	112	208	258	58	12
7	63	*22	7	5.5	3.8	3.2	8.6	148	237	231	52	14
8	63	22	6.5	6	*3.6	*3.2	9.5	165	192	246	51	14
9	69	22	6.5	4.4	3.6	3.4	8.3	190	143	243	48	12
10	*63	22	6	3.6	4.0	3.6	8.0	228	165	225	49	11
11	57	18	5	3.6	5	3.6	8.6	240	279	208	51	10
12	54	15	4	4.4	8	3.6	12	258	300	202	48	9
13	48	15	4	5.0	7	3.6	18	243	363	*225	49	8
14	47	15	5	5.5	6	3.4	25	165	380	170	43	8
15	49	17	6	5.0	5	3.4	37	*126	328	132	39	8
16	50	17	6.5	*4.8	4.8	3.6	61	108	252	124	37	9
17	51	15	6.5	4.8	4.4	3.8	68	110	156	120	34	9
18	51	14	6	4.8	3.8	4.0	87	107	130	128	42	8
19	49	11	6	5.0	4.0	4.4	*110	94	243	130	46	8
20	48	10	6.5	6	4.2	4.4	132	115	*356	119	44	7
21	43	9	6	5.5	4.4	4.2	114	128	349	114	37	13
22	45	8.5	5.5	5.0	4.4	4.2	92	99	346	107	36	26
23	40	8.5	5	4.4	4.4	4.6	100	84	270	100	33	22
24	38	9	5	3.6	4.4	5.2	124	90	307	117	36	16
25	33	9	5.5	2.8	4.2	5.2	135	120	267	104	28	14
26	33	9	6	2.6	4.0	5.2	132	117	276	108	25	14
27	34	8	5.5	2.6	3.0	5.5	107	133	338	92	*22	12
28	33	8	5	2.6	2.4	6.5	100	110	328	89	23	11
29	29	8	6	2.8	8	8	108	94	342	84	21	10
30	31	8	6	3.0	7	7	79	90	374	79	19	8
31	30	-----	5.5	3.2	-----	6	-----	110	-----	77	20	-----
Total	1,536	467.0	186.5	138.4	121.2	131.4	1,727.3	3,905	7,828	5,390	1,347	371.8
Mean	49.5	15.6	6.02	4.46	4.33	42.4	57.6	126	261	174	43.5	12.4
Ac-ft	3,050	926	370	275	240	261	3,430	7,750	15,530	10,690	2,670	770

Calendar year 1961: Max 361 Min 0.8 Mean 44.2 Ac-ft 31,980  
Water year 1961-62: Max 380 Min 2.4 Mean 63.4 Ac-ft 45,930

Peak discharge (base, 400 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-14	0600	4.71	454	7-1	0300	4.66	468
6-20	0600	4.69	450				

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 3 to Mar. 23 (no gage-height record Jan. 11-16), Mar. 27 to Apr. 4.

9-673, Alkali Creek near Wolcott, Colo.

Location.--Lat 39°45', long 106°40', in SE¼ sec.27, T.3 S., R.83 W., on right bank 100 ft below unnamed tributary, 100 ft above ford and headgate, and 3¼ miles north of Wolcott.

Drainage area.--27 sq mi, approximately.

Records available.--October 1958 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is about 7,300 ft (estimated from nearby level line).

Extremes.--Maximum discharge during year, 48 cfs Apr. 15 (gage height, 3.66 ft); no flow Dec. 5-13, Jan. 10-17.

1958-62: Maximum discharge, 310 cfs Aug. 26, 1961 (gage height, 5.56 ft), from rating curve extended above 41 cfs on basis of slope-area measurement of peak flow, no flow for many days in each year.

Remarks.--Records good except those for periods of no gage-height record, which are poor. No diversion above station.

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.6	1.1	0.1	0.1	0.4	0.4	1.1	32	23	6.4	2.2	0.9
2	1.4	1.1	.1	.1	.4	.6	17	* 32	19	5.8	* 1.9	.9
3	1.1	1.0	.1	.2	.4	1.0	20	31	18	5.2	2.0	.9
4	1.1	.6	.1	.2	.3	1.2	* 18	32	* 16	4.9	2.0	.8
5	1.1	.5	0	.4	.1	1.4	16	34	15	4.9	1.8	.9
6	1.1	*.5	0	.2	.1	* 1.5	16	35	14	4.7	1.6	.9
7	1.1	.5	0	.2	*.1	1.5	12	35	14	4.3	1.4	.9
8	1.0	.6	0	.4	.1	1.5	11	33	15	4.3	1.4	.8
9	1.0	.6	0	.1	.1	1.6	14	33	14	3.9	1.6	.9
10	*.8	.4	0	0	.3	1.6	15	33	13	3.8	1.6	.9
11	.8	.4	0	0	.8	1.6	16	32	13	3.8	1.3	.9
12	.9	.6	0	0	2.6	1.5	18	31	12	* 3.6	1.3	.8
13	.9	.4	0	0	2.2	1.4	20	30	12	3.9	1.3	.8
14	.9	.2	.1	0	1.8	1.8	23	28	11	3.8	1.2	3.6
15	.9	.1	.2	0	1.2	2.4	28	26	11	3.6	1.2	1.9
16	.9	.2	.2	* 0	1.4	2.8	36	* 24	11	3.4	1.0	1.6
17	.9	.2	0	0	1.6	4.8	35	25	11	3.2	1.2	1.8
18	1.0	.2	** .2	.1	1.2	5.6	37	25	10	3.2	1.2	1.6
19	.9	.1	.2	.3	.7	* 4.6	* 39	24	9.2	3.0	1.3	1.6
20	.9	.1	.1	.6	.5	4.6	40	23	* 9.0	2.9	1.3	1.6
21	.9	.1	.1	.6	.5	4.7	37	22	8.8	2.7	1.2	1.9
22	1.1	.1	.1	.5	.5	4.9	36	22	8.6	2.7	1.3	2.2
23	1.0	.2	.1	.3	.5	4.9	38	21	7.8	2.9	1.2	1.9
24	1.0	.2	.1	.1	.6	5.7	40	20	7.8	2.9	1.4	2.0
25	1.0	.2	.2	.1	.5	8.4	40	20	7.6	2.7	1.2	1.9
26	1.1	.1	.3	.1	.4	1.3	38	19	7.2	2.5	1.2	1.8
27	1.2	.1	.2	.2	.2	1.8	36	21	7.2	2.5	* 1.0	1.8
28	1.2	.1	.1	.2	.2	2.2	34	21	6.8	2.5	.9	1.9
29	1.1	.1	.1	.3	-	1.5	36	20	6.8	2.4	.9	1.8
30	1.1	.1	.3	.3	-----	1.1	34	20	7.0	2.4	.9	1.6
31	1.1	-----	.2	.3	-----	1.0	-----	19	-----	2.2	.9	-----
Total	32.1	10.7	3.4	5.9	19.7	161.0	811	823	345.8	111.0	41.9	43.8
Mean	1.04	0.36	0.11	0.19	0.70	5.19	27.0	26.5	11.5	3.58	1.35	1.46
Ac-ft	64	21	6.7	12	39	319	1,610	1,630	686	220	83	87

Calendar year 1961: Max 6.6 Min 0 Mean 0.79 Ac-ft 570  
 Water year 1961-62: Max 40 Min 0 Mean 6.60 Ac-ft 4,780

Peak discharge (base, 15 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
3-27	1800	3.55	28	4-15	1900	3.66	48
4-3	1800	3.41	30				

\* Discharge measurement made on this day.

\*\* Field estimate made on this day.

Note.--No gage-height record Nov. 3 to Mar. 19 (stage-discharge relation affected by ice most of period), Apr. 22 to May 2, May 13-15.

## EAGLE RIVER BASIN

9-680. Brush Creek near Eagle, Colo.

Location.--Lat 39°33'40", long 106°46'20", in SE¼ sec.1, T.6 S., R.84 W., on left bank 150 ft downstream from Beecher Creek, 1½ miles downstream from confluence of East and West Brush Creeks, and 7½ miles southeast of Eagle.

Drainage area.--71 sq mi, approximately.

Records available.--October 1950 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 7,450 ft (estimated from nearby level line).

Average discharge.--12 years, 44.8 cfs (32,430 acre-ft per year).

Extremes.--Maximum discharge during year, 253 cfs June 30 (gage height, 3.71 ft); minimum daily, 11 cfs Feb. 28, Mar. 14.  
1950-62: Maximum discharge, 775 cfs June 7, 1952 (gage height, 5.10 ft), from rating curve extended above 400 cfs; minimum daily, 11 cfs Feb. 28, Mar. 14, 1962.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor. Small diversions for irrigation of hay meadows above and below station. One small diversion to Gypsum Creek above station. Slight regulation by Zurcher's Lake (capacity, 450 acre-ft) on West Brush Creek for irrigation of hay meadows above station.

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

2.5	15	3.1	80
2.7	26	3.7	245
2.9	45		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	43	30	21	15	18	12	19	70	105	210	54	32
2	41	28	21	14	18	14	20	*68	128	198	*52	32
3	41	26	21	14	17	16	*20	66	135	183	52	32
4	42	28	20	16	17	16	20	64	148	183	74	32
5	43	25	18	16	17	15	20	64	162	162	60	32
6	43	25	19	16	18	16	20	90	*178	160	52	32
7	43	*27	19	16	*18	*16	18	108	189	150	52	32
8	44	28	19	16	17	16	18	130	165	150	56	32
9	*44	28	20	14	17	15	18	135	148	150	51	31
10	41	28	19	12	17	16	19	162	140	140	48	31
11	40	28	16	14	18	15	20	160	170	138	45	30
12	37	28	14	15	18	13	21	160	201	*138	44	29
13	36	22	13	17	18	12	22	165	186	140	44	28
14	35	22	14	21	18	11	25	142	201	122	43	28
15	36	24	17	*21	17	12	30	*122	210	102	41	28
16	37	24	18	21	17	14	36	110	204	92	38	28
17	38	24	19	21	16	15	42	102	172	80	37	28
18	37	23	19	21	16	15	46	95	160	76	38	28
19	36	22	18	21	15	16	58	82	*195	76	41	28
20	35	23	19	21	15	16	82	90	204	76	42	28
21	35	23	18	21	16	15	90	102	210	74	43	31
22	36	22	17	20	15	15	76	88	214	76	40	37
23	34	22	16	19	15	16	76	76	217	78	38	36
24	33	22	15	18	15	16	92	74	217	85	35	35
25	32	22	17	17	17	16	115	98	214	82	33	33
26	31	22	17	17	15	16	110	92	210	85	32	32
27	32	22	15	17	12	18	88	118	210	76	32	31
28	32	22	14	18	11	19	92	105	201	68	*33	31
29	30	21	17	18	-	18	92	95	172	64	33	31
30	31	21	17	18	-----	18	78	88	228	60	32	31
31	31	-----	16	18	-----	18	-----	95	-----	57	32	-----
Total	1,149	732	543	543	458	476	1,483	3,216	5,494	3,531	1,347	929
Mean	37.1	24.4	17.5	17.5	16.4	15.4	49.4	104	183	114	43.5	31.0
Ac-ft	2,280	1,450	1,080	1,080	908	944	2,940	6,380	10,900	7,000	2,670	1,840

Calendar year 1961: Max 146

Min 13

Mean 34.6

Ac-ft 25,070

Water year 1961-62: Max 228

Min 11

Mean 54.5

Ac-ft 39,470

Peak discharge (base, 160 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-13	0230	3.50	180	6-13	0030	3.68	238
6-7	0330	3.62	214	6-30	0900	3.71	253

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 2-6, 11-16, 22-24, 27, 28, Jan. 1-3, 9, 23-27, Feb. 3-5, 18-20, 22-24, 26-28, Mar. 1, 2, 5, 12-16. No gage-height record Jan. 10-15 (stage-discharge relation affected by ice during part of period).

9-700. Eagle River below Gypsum, Colo.

Location.--Lat 39°39', long 106°57', in NW¼ sec.5, T.5 S., R.85 W., on right bank 30 ft downstream from bridge on U. S. Highways 6 and 24 at Gypsum and 150 ft downstream from Gypsum Creek.

Drainage area.--957 sq mi.

Records available.--October 1946 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 6,270 ft.

Average discharge.--16 years, 597 cfs (432,200 acre-ft per year).

Extremes.--Maximum discharge during year, 4,040 cfs June 15 (gage height, 7.42 ft); minimum daily, 136 cfs Jan. 10.

1946-62: Maximum discharge, 6,580 cfs June 11, 1952; maximum gage height, 9.17 ft June 29, 1957; minimum daily discharge, 110 cfs Feb. 21, 1955, Feb. 3, 1956.

Remarks.--Records good. Transmountain diversions above station (see elsewhere in this report). Transbasin diversions above station from Robinson Reservoir (capacity, 2,520 acre-ft) to Tenmile Creek for mining development. Many small diversions for irrigation of hay meadows above station.

Rating table (gage height, in feet, and discharge,  
in cubic feet per second)  
(Shifting-control method used Apr. 29 to May 1)

2.9	130	4.5	790
3.0	145	5.0	1,180
3.2	189	6.0	2,200
3.5	285	7.2	3,730
4.0	500		

Discharge in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	689	393	297	203	209	179	278	*1.210	1.590	3.160	556	256
2	617	393	278	187	206	189	313	1.130	1.850	2.900	*505	249
3	605	313	285	187	206	200	*341	1.070	2.200	2.700	490	256
4	583	373	281	209	200	187	333	1.040	2.480	2.590	588	249
5	578	309	239	223	195	182	297	1.280	2.600	2.260	545	243
6	594	*305	260	220	189	192	293	1.600	*2.700	2.180	475	243
7	600	321	253	217	*197	*203	278	1.970	2.780	2.020	441	239
8	600	341	243	230	203	200	260	2.260	2.560	1.970	423	249
9	629	341	243	192	206	203	267	2.500	2.150	1.940	414	246
10	*653	341	233	136	271	192	281	2.920	2.120	1.790	405	246
11	594	337	220	140	353	179	289	3.090	2.650	1.630	405	246
12	578	361	167	163	436	172	301	3.310	2.950	*1.540	397	236
13	540	321	157	217	365	167	325	3.630	3.340	1.620	397	227
14	525	301	189	230	260	161	385	*2.960	3.680	1.400	381	220
15	525	309	246	*209	236	177	480	2.370	3.700	1.200	353	217
16	530	345	263	217	236	179	665	2.000	3.250	1.070	333	211
17	535	337	243	197	230	192	744	1.920	2.520	1.010	321	209
18	535	333	*243	200	209	197	909	1.830	2.120	986	337	203
19	515	301	236	206	203	211	1.150	1.610	*2.430	954	345	203
20	515	293	253	209	203	227	1.460	1.730	3.120	923	365	197
21	490	337	243	211	209	203	1.620	1.900	3.260	874	341	209
22	480	305	230	209	200	206	1.400	1.730	3.470	825	333	249
23	465	317	206	211	200	200	1.380	1.510	3.140	764	329	281
24	450	309	197	184	197	200	1.580	1.430	3.090	811	333	243
25	418	305	211	182	209	223	1.890	1.580	2.910	790	313	227
26	410	313	249	203	195	289	1.950	1.630	2.910	777	293	220
27	428	301	211	220	177	389	1.690	1.880	3.160	695	281	217
28	428	289	197	220	151	385	1.540	1.750	3.040	653	*274	214
29	405	274	239	217	-	309	1.740	1.560	3.110	617	267	209
30	401	281	230	211	-----	271	1.430	1.400	3.130	578	263	203
31	401	-----	220	209	-----	260	-----	1.450	-----	566	263	-----
Total	16,316	9,699	7,262	6,269	6,351	6,724	25,869	59,250	84,010	43,793	11,766	6,917
Mean	526	323	234	202	227	217	862	1,911	2,800	1,413	380	231
Ac-ft	32,360	19,240	14,400	12,430	12,600	13,340	51,310	117,500	166,600	86,860	23,340	13,720

Calendar year 1961: Max 2,330 Min 142 Mean 450 Ac-ft 325,500

Water year 1961-62: Max 3,700 Min 136 Mean 779 Ac-ft 563,700

Peak discharge (base, 3,500 cfs)

\* Discharge measurement made on this day.

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-13	0800	7.29	3,860	6-22	0800	7.20	3,730
6-15	0700	7.42	4,040	7-1	0600	7.04	3,520



9-705. Colorado River near Dotsero, Colo.

Location.--Lat 39°38'40", long 107°04'40", in sec.6, T.5 S., R.86 W., on left bank about 500 ft south of U. S. Highways 6 and 24, 1½ miles west of Dotsero, and 1½ miles downstream from Eagle River.

Drainage area.--4,390 sq mi, approximately.

Gage.--Water-stage recorder. Altitude of gage is 6,130 ft (from topographic map).

Records available.--October 1940 to September 1962.

Average discharge.--22 years, 2,198 cfs (1,591,000 acre-ft per year).

Extremes.--Maximum discharge during year, 14,300 cfs May 13 (gage height, 10.22 ft); minimum daily, 750 cfs Dec. 12, Jan. 11, 1940-62: Maximum discharge, 19,100 cfs June 8, 1952 (gage height, 11.56 ft); minimum daily, 350 cfs Jan. 5, 1944.

Remarks.--Records good except those for period of ice effect, which are fair. Natural flow of stream affected by transmountain diversions, storage reservoirs, power development, diversions for irrigation of 68,000 acres above station, and return flow from irrigated areas.

Cooperation.--Gage height record collected in cooperation with The Public Service Co. of Colorado.

Rating table, except period of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 9-12, May 8 to June 12)

2.0	820	5.0	4,250
2.5	1,200	6.0	5,800
3.0	1,660	8.0	9,650
4.0	2,870	10	14,600

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,270	1,610	1,220	1,300	1,320	1,580	2,040	* 8,170	6,240	8,070	2,390	1,250
2	2,150	1,760	1,240	1,200	1,350	1,620	2,360	7,590	6,500	7,890	* 2,360	1,230
3	2,220	1,570	1,290	1,150	1,350	1,750	2,820	7,240	6,460	7,770	2,280	1,220
4	2,250	1,360	1,200	1,200	1,360	1,700	3,000	7,210	6,880	7,710	2,400	1,190
5	2,130	1,230	1,140	1,350	1,390	1,700	3,040	7,990	7,060	7,280	2,350	1,190
6	2,170	* 1,080	1,210	1,500	1,400	1,700	3,050	8,750	* 7,190	7,060	2,220	1,190
7	2,130	1,180	1,220	1,500	1,450	1,750	2,730	9,700	7,170	6,450	2,220	1,170
8	1,880	1,460	1,210	1,520	1,530	1,820	2,440	10,600	6,970	6,020	2,100	1,200
9	1,820	1,530	1,100	1,460	1,590	1,980	2,220	11,400	6,530	5,300	2,030	1,210
10	* 2,220	1,510	1,000	1,050	1,720	2,120	2,280	12,400	6,110	5,290	2,000	1,220
11	2,100	1,510	950	750	1,850	2,000	2,970	12,800	6,630	5,100	1,990	1,190
12	2,050	1,480	750	950	2,020	1,800	3,120	13,300	7,460	* 4,780	1,880	1,180
13	2,070	1,440	850	1,010	2,300	2,100	3,330	13,800	8,170	4,760	1,820	1,150
14	2,150	1,280	1,120	1,210	1,990	2,300	3,940	* 12,400	8,880	4,680	1,740	1,160
15	1,840	1,250	1,300	1,260	1,780	2,300	4,820	10,900	8,880	4,420	1,510	1,150
16	1,660	1,350	1,500	1,210	1,730	2,300	5,830	9,540	8,250	4,250	1,490	1,140
17	1,990	1,480	1,350	1,260	1,720	2,230	6,310	* 8,590	7,530	3,800	1,550	1,130
18	2,010	1,430	1,310	1,280	1,600	1,670	6,580	8,090	6,900	3,940	1,490	1,120
19	1,990	1,280	1,260	1,350	1,560	* 1,620	7,260	7,570	* 6,720	3,720	1,500	1,110
20	1,980	1,280	1,420	1,420	1,570	1,810	* 8,110	7,210	7,120	3,410	1,560	1,110
21	1,960	1,360	1,450	1,460	1,580	1,700	8,770	7,240	7,410	3,270	1,480	1,140
22	1,700	1,330	1,400	1,410	1,590	1,820	8,230	7,030	7,750	3,160	1,440	1,230
23	1,620	1,320	1,290	1,360	1,600	1,810	7,950	6,550	7,550	2,960	1,430	1,270
24	1,810	1,320	1,220	1,300	1,550	1,780	8,030	6,290	7,390	2,920	1,450	1,220
25	1,750	1,310	1,200	1,060	1,580	1,620	8,840	6,220	7,010	2,960	1,430	1,180
26	1,680	1,310	1,320	1,150	1,510	1,770	9,820	6,240	6,850	2,860	1,370	1,200
27	1,690	1,310	1,320	1,240	1,420	2,290	9,750	6,480	7,300	2,780	1,340	1,180
28	1,750	1,260	1,220	1,310	1,480	2,650	9,390	6,790	7,170	2,750	* 1,290	1,180
29	1,600	1,220	1,330	1,340	-	2,770	9,770	6,620	7,390	2,420	1,220	1,250
30	1,420	1,180	1,400	1,320	-----	2,490	9,230	6,040	7,850	2,310	1,290	1,190
31	1,590	-----	1,310	1,310	-----	2,240	-----	5,850	-----	2,440	1,250	-----
Total	60,350	40,990	38,100	39,200	44,890	60,790	168,030	266,600	217,320	142,530	53,870	35,550
Mean	1,947	1,366	1,229	1,265	1,603	1,961	5,601	8,600	7,244	4,598	1,738	1,185
Ac-ft	119,700	81,300	75,570	77,750	89,040	120,600	333,300	528,800	431,000	282,700	106,800	70,510

Calendar year 1961: Max 5,670 Min 670 Mean 1,595 Ac-ft 1,155,000  
Water year 1961-62: Max 13,800 Min 750 Mean 3,201 Ac-ft 2,317,000

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 4 to Mar. 13 (no gage-height record Dec. 14 to Mar. 13).

## 9-725. Colorado River at Glenwood Springs, Colo.

Location.--Lat 39°33'00", long 107°19'20", in sec.9, T.6 S., R.89 W., on right bank at powerplant at Glenwood Springs, 10 ft from U. S. Highways 6 and 24 and half a mile upstream from Roaring Fork.

Drainage area.--4,560 sq mi, approximately.

Records available.--May 1899 to September 1962. Prior to October 1918, published as Grand River at Glenwood Springs.

Gage.--Water-stage recorder. Datum of gage is 5,720.71 ft above mean sea level, adjustment of 1912. Prior to Jan. 1, 1900, wire-weight gage at railroad bridge 2,500 ft downstream at different datum. Jan. 1, 1900, to May 16, 1910, staff or float gage at present site and datum.

Average discharge.--63 years, 2,764 cfs (2,001,000 acre-ft per year).

Extremes.--Maximum discharge during year, 14,600 cfs May 13 (gage height, 9.83 ft); minimum daily, 764 cfs Dec. 12. 1899-1962: Maximum discharge, 30,100 cfs June 14, 1918 (gage height, 12.55 ft); minimum daily, 286 cfs Jan. 22, 1935.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Natural flow of stream affected by transmountain diversions, storage reservoirs, power development, diversions for irrigation of about 70,000 acres, and return flow from irrigated areas. Low flow regulated by Shoshone powerplant 6 miles above station.

Rating tables (gage height, in feet, and discharge,  
in cubic feet per second)  
(Shifting-control method used Dec. 18, 19, May 8 to June 13)

Oct. 1 to Apr. 11

Apr. 12 to Sept. 30

3.0	615	4.5	2,090	3.5	990	6.0	4,740
3.5	990	5.0	2,900	4.0	1,500	8.0	9,800
4.0	1,500	6.0	5,120	4.5	2,090	9.5	14,100
				5.0	2,900		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3,520	1,640	1,230	1,320	1,360	1,600	2,130	8,620	6,180	8,460	2,400	1,320
2	2,400	1,660	1,240	1,240	1,370	1,660	* 2,360	7,930	6,630	8,240	2,360	1,310
3	2,350	1,530	1,290	1,160	1,370	1,780	2,880	7,490	6,660	8,060	2,280	1,290
4	2,430	1,350	1,260	1,240	1,390	1,720	3,100	7,400	7,150	8,010	2,380	1,270
5	2,320	1,210	1,150	1,390	1,410	* 1,720	3,180	8,200	7,360	7,540	2,360	1,260
6	2,340	1,210	1,260	1,530	* 1,420	1,720	3,200	8,790	7,570	7,330	2,230	1,240
7	2,300	* 1,100	1,260	1,530	1,490	1,800	2,810	9,720	* 7,570	6,630	2,170	1,240
8	2,130	1,320	1,240	1,560	1,560	1,860	2,520	10,700	7,280	6,100	2,150	1,250
9	2,040	1,520	1,210	* 1,500	1,610	2,020	2,260	11,400	6,920	* 5,400	2,050	1,260
10	2,260	1,570	1,030	1,080	1,760	2,170	2,300	12,300	6,580	5,290	2,050	1,280
11	* 2,300	1,480	1,010	778	1,880	2,080	2,970	12,900	7,100	5,140	2,000	1,270
12	2,280	1,480	764	972	2,050	1,840	3,210	13,400	7,960	4,920	1,950	1,260
13	2,280	1,440	920	1,040	2,350	2,130	3,370	14,000	8,650	4,740	1,880	1,210
14	2,300	1,250	1,170	1,250	2,010	2,230	4,020	* 12,700	9,270	4,560	1,830	1,180
15	2,080	1,200	1,330	1,280	1,800	2,280	4,920	11,300	9,270	4,440	1,600	1,230
16	1,830	1,320	1,560	1,230	1,770	2,230	6,060	10,000	8,600	4,360	1,540	1,200
17	2,040	1,450	1,380	1,280	1,740	2,230	6,610	9,020	7,880	3,840	1,620	1,180
18	2,010	1,400	* 1,350	1,300	1,630	1,680	6,790	8,370	* 7,260	3,960	1,580	1,100
19	2,080	1,290	1,270	1,380	1,580	1,590	7,590	7,830	7,150	3,780	1,570	1,160
20	2,010	1,310	1,430	1,480	1,590	1,740	8,370	7,360	7,670	3,490	1,630	1,170
21	2,000	1,360	1,460	1,500	1,600	1,730	9,240	7,410	7,930	3,310	1,580	1,200
22	1,840	1,350	1,410	1,460	1,610	1,800	8,740	7,150	8,300	3,170	1,530	1,300
23	1,710	1,360	1,300	1,390	1,630	1,840	8,370	6,680	8,060	2,970	1,510	1,290
24	1,840	1,310	1,230	1,320	1,590	1,780	8,460	6,420	7,930	2,880	1,520	1,300
25	1,830	1,320	1,210	1,100	1,610	1,680	9,270	6,400	7,520	2,990	1,500	1,270
26	1,740	1,260	1,360	1,190	1,540	1,800	10,100	6,420	7,310	2,900	1,470	1,250
27	1,760	1,290	1,350	1,280	1,450	2,200	10,200	6,630	7,830	2,770	1,430	1,260
28	1,770	1,240	1,230	1,350	1,500	2,760	9,830	6,870	7,590	2,790	* 1,400	1,250
29	1,760	1,210	1,340	1,370	-	2,900	10,200	6,680	7,750	2,430	1,360	1,260
30	1,470	1,200	1,430	1,360	-----	2,610	* 9,690	6,030	8,300	2,290	1,350	1,280
31	1,560	-----	1,360	1,340	-----	2,360	-----	5,820	-----	* 2,430	1,340	-----
Total	64,580	40,630	39,034	40,200	45,670	61,540	174,750	271,940	229,230	145,220	55,620	37,340
Mean	2,083	1,354	1,259	1,297	1,631	1,985	5,825	8,772	7,641	4,685	1,794	1,245
Ac-ft	128,100	80,590	77,420	79,740	90,590	122,100	346,600	539,400	454,700	288,000	110,300	74,060

Calendar year 1961: Max 6,940 Min 686 Mean 1,670 Ac-ft 1,209,000  
 Water year 1961-62: Max 14,000 Min 764 Mean 3,303 Ac-ft 2,392,000

\* Discharge measurement made on this day.

Note.--No gage-height record Nov. 3-5, Nov. 14 to Dec. 5, Dec. 13-16, Feb. 27 to Mar. 1, May 4, 5, Sept. 20-22.

## ROARING FORK BASIN

9-735. Roaring Fork at Aspen, Colo.

Location.--Lat 39°11'20", long 106°48'55", in sec.7, T.10 S., R.84 W., on right bank at Aspen, three quarters of a mile upstream from Hunter Creek.

Drainage area.--109 sq mi.

Records available.--October 1910 to September 1921, October 1931 to September 1962. Monthly discharge only for some periods, published in WSP 1313. Records since May 24, 1935, are equivalent to prior records if diversion to Twin Lakes tunnel is added to flow past station.

Gage.--Water-stage recorder. Datum of gage is 7,884.58 ft above mean sea level, datum of 1929. Jan. 1, 1911, to Feb. 23, 1915, staff gage at bridge 1,800 ft upstream at different datum. Feb. 24, 1915, to Sept. 30, 1921, staff gage and Apr. 24, 1932, to Oct. 5, 1935, water-stage recorder, at bridge half a mile downstream at different datum.

Average discharge.--42 years, 153 cfs (110,800 acre-ft per year), including diversion by Twin Lakes tunnel.

Extremes.--Maximum discharge during year, 1,060 cfs June 14 (gage height, 3.83 ft); minimum daily, 12 cfs Feb. 28. 1910-21, 1931-62: Maximum discharge, 3,170 cfs June 18, 1917 (gage height, 7.2 ft, site and datum then in use, from floodmarks), from rating curve extended above 1,200 cfs; minimum daily prior to construction of Twin Lakes tunnel, 15 cfs July 15, 16, 1934; minimum daily since diversion through Twin Lakes tunnel, 0.4 cfs Sept. 24, 27, 28, 1956.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Transmountain diversion 15 miles upstream through Twin Lakes tunnel to Arkansas River basin since May 24, 1935 (see elsewhere in this report). Salvation ditch diverts water above station for irrigation of about 1,000 acres below.

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

0.6	7.0	1.4	73	2.5	370
.9	22	1.8	140	3.0	590
1.1	39	2.0	190	3.7	960

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	84	61	35	32	26	20	28	* 148	255	810	* 77	20
2	79	58	34	30	28	22	28	148	294	705	73	19
3	79	54	34	30	30	22	* 30	122	346	575	70	18
4	77	55	33	32	30	24	33	162	398	545	73	17
5	76	55	34	36	30	24	32	227	442	442	66	17
6	76	55	34	34	* 30	* 22	33	286	478	402	60	17
7	74	55	36	34	28	21	33	390	* 500	374	57	20
8	73	* 53	38	36	26	21	28	406	442	382	52	22
9	97	52	36	28	27	20	32	474	414	350	52	19
10	100	52	34	22	25	20	34	486	474	* 302	52	20
11	90	51	32	24	25	20	33	505	605	280	49	18
12	* 80	51	26	28	26	18	34	515	710	262	47	15
13	80	49	26	32	26	20	37	505	830	244	47	14
14	81	46	28	36	24	18	48	410	948	214	42	14
15	81	44	34	* 36	24	20	58	314	854	170	40	16
16	81	44	42	34	24	21	81	280	585	165	37	34
17	79	45	40	30	25	25	93	* 255	414	158	35	34
18	76	45	38	28	23	28	113	238	394	150	43	33
19	74	42	36	28	22	26	136	227	* 510	142	42	32
20	72	42	40	30	24	27	168	283	700	134	45	34
21	70	43	38	30	22	26	182	302	790	126	40	41
22	76	42	36	30	22	25	155	255	820	122	41	41
23	68	40	34	28	20	25	162	220	575	122	38	37
24	70	38	32	26	20	25	193	238	640	128	36	35
25	64	39	34	24	22	24	230	302	620	117	30	34
26	64	39	38	24	20	25	248	314	575	120	26	33
27	66	37	38	24	16	27	193	362	715	108	24	34
28	65	37	32	26	12	28	185	286	670	100	24	38
29	59	36	36	26	-	28	205	255	710	93	* 22	38
30	64	37	36	26	-----	26	165	234	730	89	21	35
31	64	-----	34	26	-----	25	-----	255	-----	83	20	-----
Total	2,339	1,397	1,078	910	677	723	3,030	9,404	17,448	8,014	1,381	799
Mean	75.5	46.6	34.8	29.4	24.2	23.3	101	303	582	259	44.5	26.6
Ac-ft	4,640	2,770	2,140	1,800	1,340	1,430	6,010	18,650	34,610	15,900	2,740	1,580

Calendar year 1961: Max 555 Min 7.4 Mean 73.5 Ac-ft 53,210  
Water year 1961-62: Max 948 Min 12 Mean 129 Ac-ft 93,610

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 4-7, 14-16, 19, 20, 22-24, 29, Dec. 5 to Feb. 7, Feb. 24, Feb. 26 to Mar. 2, Mar. 4, 5, 12-15. No gage-height record Oct. 10-12, Dec. 11 to Jan. 15.

9-780. Fryngpan Creek at Norrie, Colo.

Location.--Lat 39°19'50", long 106°39'30", in NE¼ sec.28, T.8 S., R.83 W., on right bank 300 ft south of State Highway 104 at Norrie, 1 mile upstream from North Fork, and 2 miles downstream from Chapman Gulch.

Drainage area.--89.5 sq mi.

Records available.--October 1910 to March 1917, October 1947 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 8,410 ft (from river-profile map). February 1911 to March 1917 staff gages at site 200 ft upstream at different datums.

Average discharge.--21 years (1910-16, 1947-62), 127 cfs (91,940 acre-ft per year).

Extremes.--Maximum discharge during year, 896 cfs June 13 (gage height, 4.23 ft); minimum daily, 13 cfs Mar. 13, 14.

1910-17, 1947-62: Maximum discharge, 1,780 cfs June 30, 1957; maximum gage height, 5.55 ft June 28, 1957; minimum daily discharge, 10 cfs Feb. 26, 1957, Feb. 14, 1959, Nov. 29, Jan. 28, 29, Feb. 1, 2, 7, 19-22, 1961, but may have been less during periods of no gage-height record.

Remarks.--Records good except those for periods of ice effect, which are poor. Transmountain diversions above station through Busk-Ivanhoe tunnel to Arkansas River basin since June 1925 (see elsewhere in this report).

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

1.8	19	2.5	108
2.0	30	3.0	270
2.2	49	4.2	830

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	116	64	40	28	19	14	18	*135	322	655	*127	44
2	106	58	40	26	19	15	20	135	359	595	119	41
3	96	52	39	26	18	15	22	141	413	565	122	40
4	99	50	38	25	18	14	22	176	485	526	138	39
5	101	46	34	25	18	15	22	224	535	490	116	37
6	101	46	36	24	*18	*16	24	266	570	472	103	38
7	101	46	36	24	18	16	24	330	*550	458	99	44
8	103	*46	36	24	18	15	22	382	472	467	94	45
9	124	48	36	23	18	15	22	472	440	426	96	40
10	108	50	34	*24	20	14	24	521	550	*372	94	37
11	101	50	28	18	20	14	26	560	675	346	90	36
12	*99	48	24	20	20	14	28	635	750	330	85	34
13	94	46	24	22	20	13	38	595	800	314	85	32
14	96	46	26	22	20	13	60	462	800	278	79	32
15	103	48	28	20	20	14	90	377	755	252	74	31
16	103	44	30	20	19	16	120	342	650	235	72	31
17	103	44	28	20	17	15	124	*330	521	228	72	31
18	99	44	28	22	16	16	*144	306	521	221	81	28
19	94	40	28	24	18	17	179	290	*660	218	87	28
20	92	44	29	24	17	*17	221	342	755	210	83	32
21	87	46	29	22	16	17	210	364	785	196	77	46
22	92	42	28	20	17	16	179	306	755	186	79	55
23	79	40	28	20	16	15	186	278	710	196	74	40
24	79	42	28	20	17	15	218	298	720	263	74	36
25	70	44	27	20	16	16	246	354	715	204	62	32
26	68	46	27	22	16	18	252	390	700	190	55	31
27	70	44	28	22	14	20	214	426	710	176	56	30
28	70	42	27	20	14	22	218	342	680	162	56	35
29	70	40	27	18	-	22	214	310	665	150	*48	36
30	72	40	27	18	-----	20	162	298	670	138	48	34
31	66	-----	28	18	-----	18	-----	322	-----	135	47	-----
Total	2,862	1,386	946	681	497	497	3,349	10,709	18,693	9,654	2,592	1,095
Mean	92.3	46.2	30.5	22.0	17.8	16.0	112	345	623	311	83.6	36.5
Ac-ft	5,680	2,750	1,880	1,350	986	986	6,640	21,240	37,080	19,150	5,140	2,170

Calendar year 1961: Max 620 Min 10 Mean 96.0 Ac-ft 69,530  
Water year 1961-62: Max 800 Min 13 Mean 145 Ac-ft 105,100

Peak discharge (base, 760 cfs).--June 13 (1100) 896 cfs (4.23 ft); June 21 (2300) 890 cfs (4.12 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 4 to Dec. 1, Dec. 5-19, Jan. 11 to Apr. 4, Apr. 8-16 (no gage-height record Dec. 12, 13, Jan. 15-26, Mar. 1-20).



## ROARING FORK BASIN

9-785, North Fork Fryingpan Creek near Norrie, Colo.

Location.--Lat 39°20'40", long 106°39'50", in N½ sec.21, T.8 S., R.83 W., on left bank 1,000 ft upstream from bridge on State Highway 104, a quarter of a mile upstream from mouth, half a mile downstream from Last Chance Creek, and 1 mile northwest of Norrie.

Drainage area.--41.2 sq mi.

Records available.--October 1910 to March 1917, October 1947 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 8,400 ft (from topographic map). Feb. 18, 1911, to Mar. 31, 1917, staff gage at site 10 ft downstream at different datum. Oct. 1, 1947, to Sept. 30, 1949, water-stage recorder at present site at datum 2.00 ft higher.

Average discharge.--21 years (1910-16, 1947-62), 53.8 cfs (38,950 acre-ft per year).

Extremes.--Maximum discharge during year, 637 cfs June 13 (gage height, 4.33 ft); minimum daily, 4.0 cfs Sept. 19. 1910-17, 1947-62: Maximum discharge, 1,320 cfs June 6, 1958, from rating curve extended above 700 cfs; maximum gage height, 5.80 ft May 21, 1948 (present datum); minimum daily discharge, 0.5 cfs Nov. 1, 1950.

Remarks.--Records good except those for period of ice effect or no gage-height record, which are poor. One small diversion bypasses station for development of power for private use.

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

2.0	3.5	2.8	39	3.6	195
2.2	9.0	3.0	61	3.8	270
2.6	25	3.3	113	4.1	450

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	45	22	16	11	11	9	10	*85	173	290	*34	8.7
2	38	20	17	10	11	10	11	82	202	280	30	8.1
3	37	18	17	10	12	11	13	92	220	270	30	7.5
4	38	19	16	11	12	11	12	109	258	246	46	6.9
5	41	19	15	13	12	10	11	127	275	220	34	6.3
6	44	18	13	13	*11	*11	10	159	280	209	29	6.3
7	43	16	14	12	10	12	10	195	*270	195	27	7.2
8	43	*16	14	13	11	11	10	223	230	198	25	8.7
9	49	18	14	12	12	11	10	246	209	192	23	7.8
10	43	20	13	*11	13	10	11	270	254	*170	24	6.9
11	40	20	12	9	14	9	12	285	295	148	24	6.0
12	*37	20	11	11	14	8	13	295	320	135	22	5.5
13	33	19	10	12	14	8	15	285	408	130	22	5.2
14	33	18	10	13	14	8	19	238	422	105	19	5.0
15	35	16	12	12	13	9	26	189	344	89	18	5.0
16	35	16	14	12	13	9	46	167	295	82	17	5.5
17	34	18	15	11	13	8	90	*164	223	78	16	5.8
18	33	19	14	11	12	7	*110	150	209	77	20	4.8
19	31	17	13	11	11	6.5	120	145	*305	77	21	4.0
20	30	16	14	12	11	*6.5	130	173	362	69	20	4.5
21	28	17	14	12	11	7	110	173	380	62	17	9.0
22	30	18	13	11	11	7.5	100	145	332	59	16	16
23	28	17	12	12	11	8	110	132	285	56	16	12
24	27	18	11	11	10	8.5	130	142	300	85	17	9.0
25	25	17	12	10	11	9	150	167	295	68	14	7.2
26	24	17	12	11	11	9.5	140	173	305	61	13	6.3
27	24	17	12	12	10	10	120	186	305	51	12	5.8
28	24	16	11	13	7	11	120	161	305	46	12	6.9
29	23	15	13	12	-	11	110	142	310	42	*10	8.4
30	22	15	13	12	-----	10	100	140	310	38	10	8.7
31	22	-----	12	11	-----	10	-----	164	-----	39	9.6	-----
Total	1,039	532	409	357	326	286.5	1,879	5,404	8,681	3,867	6,476	215.0
Mean	33.5	17.7	13.2	11.5	11.6	9.24	62.6	174	289	125	20.9	7.17
Ac-ft	2,060	1,060	811	708	647	568	3,730	10,720	17,220	7,670	1,280	426

Calendar year 1961: Max 266 Min - Mean 39.0 Ac-ft 28,240  
Water year 1961-62: Max 422 Min 4.0 Mean 64.8 Ac-ft 46,900

Peak discharge (base, 420 cfs).--June 13 (2130) 637 cfs (4.33 ft); June 21 (2300) 554 cfs (4.23 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 30 to Nov. 1. No gage-height record Nov. 2 to May 1 (stage-discharge relation affected by ice most of period).

## ROARING FORK BASIN

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9-802. Fryingpan Creek at Ruedi, Colo.

Location.--Lat 39°21'40", long 106°49'10", in NW¼ sec.18, T.8 S., R.84 W., on right bank 200 ft upstream from Rocky Fork, half a mile downstream from Ruedi Creek, and 1 mile west of Ruedi.

Drainage area.--223 sq mi.

Records available.--October 1959 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 7,500 ft (from river-profile map).

Extremes.--Maximum discharge during year, 1,900 cfs June 14 (gage height, 4.52 ft); minimum daily, 32 cfs Feb. 28.  
1959-62: Maximum discharge, that of June 14, 1962; minimum daily, 25 cfs Mar. 11, 12, 1961.

Remarks.--Records good except those for period of ice effect, which are poor. Diversions for irrigation of several hundred acres and small transmountain diversions above station to Arkansas River basin.

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

1.7	40	3.0	410
2.0	75	3.5	820
2.3	125	4.0	1,340
2.6	215	4.5	1,920

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	219	125	80	55	38	34	56	* 438	632	1,190	* 223	85
2	194	121	75	50	36	36	58	424	703	1,090	208	86
3	187	110	75	50	34	38	63	410	830	1,020	204	94
4	177	90	75	55	34	42	67	480	1,000	970	235	85
5	177	90	65	60	34	44	68	552	1,090	860	204	79
6	184	90	70	60	* 34	* 46	70	694	1,150	811	187	75
7	180	90	70	60	36	46	74	820	* 1,160	766	180	82
8	184	* 95	65	65	40	46	68	980	1,000	793	171	83
9	223	95	65	60	42	44	68	1,130	880	757	159	78
10	208	90	65	* 50	44	42	76	1,270	1,010	* 658	159	72
11	187	90	60	40	46	38	82	1,350	1,240	584	156	70
12	* 184	100	50	46	50	36	88	1,500	1,400	544	150	68
13	171	95	42	50	48	38	105	1,450	1,610	520	153	67
14	165	85	42	60	44	36	142	1,180	1,660	473	150	66
15	171	80	50	60	40	36	201	890	1,520	417	140	63
16	174	90	60	60	38	38	273	766	1,310	374	135	63
17	177	95	65	55	38	40	305	* 712	1,000	356	128	63
18	174	90	60	50	38	42	* 350	649	870	345	140	59
19	168	85	60	50	38	44	452	592	* 1,110	345	145	58
20	165	80	60	55	38	* 44	600	685	1,410	340	145	61
21	156	85	60	55	38	40	616	730	1,460	320	140	79
22	165	85	60	50	40	40	488	632	1,460	305	135	91
23	148	80	60	44	38	40	488	552	1,270	296	128	85
24	150	80	60	46	36	40	600	584	1,280	392	123	78
25	138	80	55	44	38	40	712	676	1,250	330	113	70
26	132	85	50	40	36	42	730	712	1,220	320	107	63
27	140	85	50	38	34	46	608	820	1,280	296	100	62
28	138	80	55	40	32	50	616	685	1,230	264	99	67
29	123	75	60	38	-	54	667	616	1,240	247	* 92	71
30	128	75	60	38	-----	54	520	576	1,230	231	89	70
31	128	-----	60	38	-----	54	-----	624	-----	227	88	-----
Total	5,215	2,696	1,884	1,562	1,082	1,310	9,311	24,179	35,505	16,441	4,586	2,193
Mean	168	89.9	60.8	50.4	38.6	42.3	310	780	1,184	530	148	73.1
Ac-ft	10,340	5,350	3,740	3,100	2,150	2,600	18,470	47,960	70,420	32,610	9,100	4,350

Calendar year 1961: Max 1,200 Min 25 Mean 172 Ac-ft 124,400  
Water year 1961-62: Max 1,660 Min 32 Mean 290 Ac-ft 210,200

Peak discharge (base, 1,500 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-13	0030	4.28	1,680	6-22	0200	4.36	1,720
6-14	0130	4.52	1,900				

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 3 to Mar. 28 (no gage-height record Nov. 4 to Mar. 20).

## ROARING FORK BASIN

9-815.5, Crystal River at Placita, Colo.

Location.--Lat 39°08'30", long 107°15'20", in SE¼ sec.31, T.10 S., R.88 W., on right bank 0.1 mile downstream from highway bridge, 0.4 mile upstream from Bears Gulch, 0.7 mile north of Placita, and 3 miles upstream from Coal Creek.

Drainage area.--107 sq mi.

Records available.--October 1959 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 7,380 ft (from river-profile map).

Extremes.--Maximum discharge during year, 1,680 cfs June 27 (gage height, 5.65 ft); minimum daily, 28 cfs, Jan. 21.  
1959-62: Maximum discharge, that of June 27, 1962; minimum daily, 20 cfs Mar. 6, 12, 1961.

Remarks.--Records good except those for period of ice effect or no gage-height record, which are poor. A few small diversions above station for irrigation of hay meadows.

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

2.3	36
2.6	68
3.0	128
3.5	250
4.0	420
4.5	680
5.5	1,510

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	150	104	65	40	46	38	55	*338	505	1,400	324	112
2	135	101	65	40	44	42	61	310	584	1,360	307	107
3	130	92	60	42	46	44	72	301	680	1,280	304	107
4	130	95	60	44	46	42	83	342	757	1,270	328	104
5	135	89	55	48	46	44	82	420	860	1,200	310	101
6	139	89	55	48	46	*48	83	520	948	1,160	280	99
7	139	90	55	46	*48	48	85	638	964	1,120	262	101
8	141	89	55	44	50	46	81	729	*860	1,160	259	96
9	198	*88	55	*34	55	44	79	844	852	1,120	250	92
10	173	82	50	30	60	42	81	924	1,040	1,030	250	88
11	*153	81	44	32	65	38	83	924	1,270	*988	259	85
12	146	83	36	38	70	36	90	988	1,360	980	238	83
13	141	79	36	46	65	36	106	940	1,440	932	226	82
14	142	75	46	48	60	36	139	750	1,470	729	206	83
15	146	83	50	42	55	38	187	596	1,360	656	200	83
16	148	79	50	40	50	40	253	495	1,090	644	198	85
17	150	75	46	38	46	42	289	440	844	656	190	83
18	148	75	44	40	44	42	342	*396	*876	638	203	82
19	144	68	44	40	44	42	396	373	1,190	608	203	79
20	141	69	46	36	44	*40	448	428	1,370	560	198	88
21	132	74	48	28	46	37	448	465	1,470	530	170	102
22	142	69	44	30	44	36	400	424	1,360	515	180	104
23	128	71	40	34	42	37	404	392	1,250	475	170	93
24	123	69	44	38	42	37	444	436	1,360	480	159	86
25	117	69	46	42	40	38	495	510	1,390	480	142	82
26	112	65	48	46	34	40	495	535	1,420	510	139	78
27	115	65	48	48	32	50	456	644	1,470	452	132	76
28	112	65	46	48	34	60	432	535	1,480	400	132	81
29	106	65	44	46	-	56	460	470	1,460	388	126	81
30	106	65	46	46	-----	53	392	428	1,470	373	*118	76
31	106	-----	44	46	-----	52	-----	452	-----	*348	117	-----
Total	4,228	2,363	1,515	1,268	1,344	1,324	7,521	16,987	34,450	24,442	6,580	2,699
Mean	136	78.8	48.9	40.9	48.0	42.7	251	548	1,148	788	212	90.0
Ac-ft	8,390	4,690	3,000	2,520	2,670	2,630	14,920	33,690	68,330	48,480	13,050	5,350

Calendar year 1961: Max 1,280 Min 20 Mean 177 Ac-ft 128,000  
Water year 1961-62: Max 1,480 Min 28 Mean 287 Ac-ft 207,700

Peak discharge (base, 1,200 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-14	0100	5.55	1,580	6-27	2330	5.65	1,680
6-20	2330	5.57	1,600				

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 26 to Dec. 8. No gage-height record Dec. 9 to Mar. 20 (stage-discharge relation affected by ice during most of period).

9-816. Crystal River above Avalanche Creek, near Redstone, Colo.

Location.--Lat 39°14', long 107°14', in SW¼ sec.33, T.9 S., R.88 W., on right bank 1½ miles upstream from Avalanche Creek and 3½ miles north of Redstone.

Drainage area.--167 sq mi.

Records available.--October 1955 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 6,905 ft (from river-profile map).

Average discharge.--7 years, 301 cfs (217,900 acre-ft per year).

Extremes.--Maximum discharge during year, 2,620 cfs June 27 (gage height, 5.05 ft); minimum daily, 31 cfs Jan. 21.  
1955-62: Maximum discharge, 3,980 cfs July 1, 1957 (gage height, 5.65 ft); minimum daily, 22 cfs Dec. 5, 1955.

Remarks.--Records good except those for periods of indefinite stage-discharge relation or no gage-height record, which are poor. A few small diversions for irrigation above station.

Rating tables, except period of indefinite stage-discharge relation  
(gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Dec. 8 to Feb. 2, June 27 to July 10)

Oct. 1 to July 10

July 11 to Sept. 30

1.0	25	2.3	305	1.8	75	3.0	500
1.2	42	3.0	680	2.2	185	4.0	1,190
1.5	84	4.0	1,450	2.6	310		
1.9	172	5.0	2,700				

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	192	129	71	41	49	61	102	* 570	828	2,000	372	131
2	172	124	70	42	54	67	118	521	919	1,860	359	125
3	167	106	67	46	57	60	*141	521	1,030	1,720	350	125
4	167	116	64	50	60	54	159	598	1,110	1,660	372	120
5	169	106	60	55	61	53	156	728	1,190	1,510	354	118
6	172	100	62	55	58	*61	156	842	1,270	1,450	322	118
7	169	104	61	55	*67	62	159	989	1,300	1,360	306	118
8	172	106	61	50	70	61	151	1,110	* 1,150	1,390	296	115
9	244	* 104	62	*44	71	55	149	1,270	1,120	1,320	286	110
10	215	102	58	34	76	55	146	1,350	1,320	1,180	278	102
11	* 189	102	55	33	82	55	156	1,360	1,630	* 1,130	286	98
12	183	104	41	41	89	55	175	1,490	1,810	1,080	272	95
13	175	95	35	55	98	55	221	1,390	2,130	1,020	260	92
14	175	89	48	62	84	50	297	1,110	2,180	845	239	92
15	180	93	64	42	79	55	422	919	2,020	768	236	95
16	178	95	58	42	78	55	538	800	1,540	754	233	98
17	180	91	53	40	74	60	604	728	1,190	754	224	98
18	178	88	54	42	70	62	698	* 662	* 1,160	733	233	95
19	172	82	52	43	67	64	770	632	2,100	705	233	92
20	167	84	58	42	68	67	842	710	1,960	646	233	102
21	156	86	57	31	68	65	807	764	2,150	616	209	122
22	175	78	52	34	65	64	722	704	1,950	604	215	131
23	151	81	44	36	68	65	728	656	1,820	562	209	112
24	146	78	47	38	67	65	794	722	1,930	550	191	102
25	136	78	50	42	64	70	863	800	1,980	545	173	98
26	132	81	54	52	55	79	863	828	2,040	580	170	92
27	141	76	50	54	46	100	782	968	2,070	525	161	92
28	136	73	47	53	50	106	764	828	2,110	462	158	98
29	129	73	53	48	-	98	794	752	2,000	445	155	102
30	129	73	54	47	-----	97	656	698	2,100	425	* 149	98
31	129	-----	44	47	-----	97	-----	740	-----	* 400	140	-----
Total	5,176	2,797	1,706	1,396	1,895	2,073	13,933	26,760	49,107	29,599	7,674	3,186
Mean	167	93.2	55.0	45.0	67.7	66.9	464	863	1,637	955	248	106
Ac-ft	10,270	5,550	3,380	2,770	3,760	4,110	27,640	53,080	97,400	58,710	15,220	6,320

Calendar year 1961: Max 1,700 Min 29 Mean 229 Ac-ft 165,500  
Water year 1961-62: Max 2,180 Min 31 Mean 398 Ac-ft 288,200

Peak discharge (base, 2,000 cfs).--June 14 (0100) 2,420 cfs (4.82 ft); June 27 (2330) 2,620 cfs (5.05 ft).

\* Discharge measurement made on this day.

Note.--No gage-height record Jan. 2-9. Stage-discharge relation indefinite Mar. 9-17.



9-825. Crystal River near Redstone, Colo.

Location.--Lat 39°18', long 107°13', in NE¼ sec.9, T.9 S., R.88 W., on right bank 20 ft downstream from private bridge, 75 ft downstream from Nettle Creek, and 7 miles north of Redstone.

Drainage area.--220 sq mi.

Records available.--May 1935 to September 1962.

Gage.--Water-stage recorder. Datum of gage is 6,483.77 ft above mean sea level, datum of 1929. Prior to Oct. 21, 1946, water-stage recorder at same site and datum. Oct. 21, 1946, to Aug. 28, 1957, at site 1 mile downstream at different datum.

Average discharge.--27 years, 357 cfs (258,500 acre-ft per year).

Extremes.--Maximum discharge during year, 2,710 cfs June 28 (gage height, 5.83 ft); minimum daily, 50 cfs Jan. 11, 22.

1935-62: Maximum discharge, 4,400 cfs June 21, 1938, from rating curve extended above 2,400 cfs; maximum gage height, 9.24 ft July 1, 1957 (site and datum then in use); minimum daily discharge, 16 cfs Oct. 9, 1956.

Remarks.--Records fair except those for periods of ice effect or indefinite stage-discharge relation, which are poor. Diversions above station for irrigation of about 115 acres above and about 2,040 acres below station.

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	252	205	121	70	85	100	123	670	922	2,270	* 478	126
2	222	195	119	75	92	92	139	* 615	1,050	2,120	460	124
3	218	162	117	80	96	92	* 162	610	1,160	2,020	455	121
4	212	182	114	85	100	88	182	706	1,260	1,940	491	121
5	212	160	105	86	100	84	180	868	1,400	1,830	460	119
6	234	155	108	86	100	92	170	1,040	1,520	1,770	419	119
7	240	158	107	91	* 99	* 94	175	1,150	1,540	1,720	390	121
8	246	* 160	105	92	99	89	165	1,300	* 1,400	1,810	378	119
9	330	158	108	* 78	100	89	162	1,480	1,300	1,720	366	114
10	306	158	107	52	112	88	162	1,450	1,560	1,570	354	102
11	* 269	155	115	50	115	86	165	1,410	1,800	* 1,470	370	86
12	258	165	89	65	132	78	182	1,640	2,100	1,400	346	83
13	246	146	84	85	146	80	225	1,500	2,300	1,310	330	78
14	246	137	123	100	119	75	314	1,200	2,300	1,030	298	80
15	255	143	150	80	110	86	450	985	2,170	950	272	80
16	258	152	114	70	112	86	555	838	1,730	922	266	81
17	262	143	97	80	108	88	615	* 754	1,340	943	249	80
18	258	139	104	80	99	86	736	670	* 1,320	922	262	77
19	248	132	99	80	96	88	832	640	1,740	894	276	72
20	246	132	107	70	102	91	943	742	2,190	826	276	86
21	234	139	105	60	99	89	943	808	2,330	796	234	112
22	266	126	100	50	94	84	814	748	2,120	766	237	132
23	231	132	86	55	97	84	820	680	1,890	724	234	104
24	222	126	89	65	92	84	929	760	2,030	718	205	91
25	212	126	94	75	89	86	1,010	880	2,090	712	172	83
26	205	135	100	85	88	99	1,010	950	2,200	742	162	78
27	220	126	92	85	68	124	922	1,110	2,250	670	152	75
28	218	123	86	85	78	143	880	922	2,290	600	150	81
29	205	121	96	80	-	126	922	808	2,210	575	137	89
30	205	123	94	80	-----	119	760	736	2,330	540	* 132	81
31	205	-----	80	80	-----	119	-----	790	-----	510	130	-----
Total	7,441	4,414	3,215	2,355	2,827	2,909	15,647	29,460	53,842	36,790	9,141	2,915
Mean	240	147	104	76.0	101	93.8	522	950	1,795	1,187	295	97.1
Ac-ft	14,760	8,760	6,380	4,670	5,610	5,770	31,040	58,430	106,800	72,970	18,130	5,780

Calendar year 1961: Max 1,890 Min 45 Mean 283 Ac-ft 204,600

Water year 1961-62: Max 2,330 Min 50 Mean 468 Ac-ft 339,100

Peak discharge (base, 2,000 cfs).--June 14 (time unknown) about 2,600 cfs; June 28 (0100) 2,710 cfs (5.83 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 31 to Jan. 4, Jan. 11 to Feb. 1. Stage-discharge relation indefinite June 12-14.

9-846. Fourmile Creek near Glenwood Springs, Colo.

Location.--Lat 39°24'00", long 107°19'25", in NW¼SW¼ sec.34, T.7 S., R.89 W., on left bank 100 ft below National Forest boundary, 2.8 miles upstream from Freeman Creek, 6 miles west of Carbondale, 8 miles upstream from mouth, and 10 miles south of Court House in Glenwood Springs.

Drainage area.--16.7 sq mi.

Records available.--October 1957 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 7,780 ft (from topographic map).

Average discharge.--5 years, 8.81 cfs (6,380 acre-ft per year).

Extremes.--Maximum discharge during year, 303 cfs May 11 (gage height, 5.21 ft), from rating curve extended above 100 cfs; minimum daily, 0.3 cfs Sept. 3-19.  
1957-62: Maximum discharge, that of May 11, 1962; minimum daily, 0.1 cfs Sept. 5, 7-11, 1959.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. No diversion above 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 Apr. 24, Aug. 23-29)

3.0	0.3	3.7	15
3.1	.8	4.0	37
3.2	1.8	4.3	76
3.4	5.0	4.9	210

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.8	b 1.4	1.2	0.9	1.0	b 1.0	2.6	64	46	9.1	1.4	0.4
2	2.4	b 1.4	1.2	.9	1.0	b 1.2	* 2.8	61	48	7.8	1.3	.4
3	1.9	b 1.2	1.2	.9	1.0	b 1.2	3.0	74	47	7.2	1.1	.3
4	1.7	b 1.4	1.2	.9	1.0	b 1.2	3.2	107	47	6.4	1.1	.3
5	1.4	b 1.4	1.2	.9	* 1.0	* b 1.0	3.2	145	47	6.1	1.1	.3
6	1.4	b 1.4	1.2	.9	1.0	b 1.0	3.5	175	* 46	5.6	.8	.3
7	1.3	1.6	1.2	.9	1.0	b 1.2	3.9	195	41	5.6	.8	.3
8	1.5	1.3	b 1.0	*.9	1.0	1.4	3.7	182	37	5.8	.7	.3
9	4.8	* 1.3	b 1.0	b .9	.9	1.4	3.7	200	34	* 5.0	.8	.3
10	4.1	1.3	b 1.0	b .8	b 1.0	1.4	4.1	195	31	4.3	.9	.3
11	2.9	1.2	b 1.0	b .8	b 1.2	1.3	4.4	195	31	3.9	.8	.3
12	* 2.7	1.3	1.0	b .8	b 1.4	1.3	5.2	188	31	3.6	.8	.3
13	2.3	1.3	1.0	1.0	b 1.4	b 1.2	7.7	150	32	3.7	.9	.3
14	2.0	1.3	1.0	1.0	b 1.2	b 1.2	15	112	31	3.4	.8	.3
15	1.9	1.2	1.0	1.0	b 1.2	b 1.2	28	90	27	2.6	.6	.3
16	1.8	1.2	1.0	.9	1.3	b 1.2	55	73	26	2.4	.6	.3
17	1.7	1.2	1.0	.9	1.3	b 1.2	79	66	23	2.1	.6	.3
18	1.6	1.3	1.0	1.0	b 1.2	1.2	94	* 64	* 20	1.8	.6	.3
19	1.5	1.2	1.0	.9	b 1.2	1.2	103	58	18	1.8	.6	.3
20	1.4	1.2	1.0	1.0	1.3	1.2	115	61	18	1.8	.7	.5
21	1.4	1.2	1.0	b 1.2	1.3	1.2	108	57	18	1.6	.7	.6
22	1.5	1.2	1.0	b 1.2	1.3	1.2	95	54	17	1.3	.6	2.1
23	1.4	1.2	1.0	1.0	1.3	1.2	100	51	16	1.3	.6	.8
24	1.3	1.2	1.0	b 1.0	1.3	1.2	110	48	15	1.3	.6	.6
25	1.2	1.2	1.0	b .9	1.3	1.4	114	48	13	1.3	.6	.5
26	1.2	1.2	1.0	b 1.0	1.3	1.7	110	46	12	1.5	.5	.4
27	1.8	1.2	1.0	1.0	b 1.2	2.3	92	49	11	1.6	.4	.4
28	b 1.6	1.2	1.0	1.0	b 1.0	b 2.4	105	46	10	1.6	.4	.5
29	b 1.4	1.2	1.0	1.0	-	b 2.4	128	49	9.7	1.4	.4	.6
30	b 1.4	1.2	1.0	1.0	-----	b 2.4	* 76	45	10	* 1.2	* .4	.6
31	b 1.4	-----	.9	1.0	-----	b 2.4	-----	42	-----	* 1.1	.4	-----
Total	58.7	38.1	32.3	29.5	32.6	44.0	1578.0	2990	812.7	105.2	22.6	13.5
Mean	1.89	1.27	1.04	0.95	1.16	1.42	52.6	96.5	27.1	3.39	0.73	0.45
Ac-ft	116	76	64	59	65	87	3,130	5,930	1,610	209	45	27

Calendar year 1961: Max 86 Min 0.2 Mean 5.84 Ac-ft 4,230  
Water year 1961-62: Max 200 Min 0.3 Mean 15.8 Ac-ft 11,420

Peak discharge (base, 60 cfs).--Apr. 28 (2230) 175 cfs (4.76 ft); May 11 (1900) 303 cfs (5.21 ft).

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 23 to Jan. 8 (stage-discharge relation affected by ice during part of period).

## ROARING FORK BASIN

9-850. Roaring Fork at Glenwood Springs, Colo.

Location.--Lat 39°32'50", long 107°19'50", in sec.9, T.6 S., R.89 W., on left bank at Glenwood Springs, 1,500 ft upstream from mouth.

Drainage area.--1,460 sq mi, approximately.

Records available.--October 1905 to September 1909, September 1910 to September 1962. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 5,720.73 ft above mean sea level, adjustment of 1912. Prior to Nov. 20, 1915, chain gage on highway bridge 800 ft downstream at different datum. Nov. 20, 1915, to Oct. 26, 1917, staff gage at present site and datum.

Average discharge.--56 years, 1,402 cfs (1,015,000 acre-ft per year).

Extremes.--Maximum discharge during year, 7,860 cfs June 14 (gage height, 5.66 ft); minimum daily, 293 cfs Jan. 11.

1905-9, 1910-62: Maximum discharge, 19,000 cfs July 1, 1957; maximum gage height, 8.7 ft June 14, 1921, from floodmarks; minimum discharge, 145 cfs Jan. 21, 1935 (gage height, 0.65 ft); minimum daily, 179 cfs Jan. 21, 1935.

Remarks.--Records good. Diversions above station for irrigation of about 35,000 acres. Transmountain diversions to Arkansas River basin through Busk-Ivanhoe tunnel since 1925 and through Twin Lakes tunnel since 1935 (see elsewhere in this report).

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

0.9	290	3.0	2,280
1.1	360	4.0	4,030
1.5	580	5.0	6,200
2.0	1,010	5.5	7,470

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.220	81.2	531	384	420	368	480	2,560	2,790	6,700	1,610	684
2	1.090	796	517	368	420	380	* 538	2,390	3,010	6,120	1,510	668
3	1.060	684	504	384	425	392	604	2,290	3,470	5,510	1,440	652
4	1.030	732	492	430	425	360	660	2,480	3,950	5,410	1,480	644
5	1.010	668	430	456	* 425	* 344	644	2,920	4,370	4,940	1,420	628
6	1.010	652	462	430	420	376	644	3,530	4,690	4,710	1,310	612
7	1.020	676	474	430	435	388	660	4,030	* 4,830	4,450	1,230	636
8	1.020	692	468	* 430	440	376	636	4,390	4,350	4,610	1,180	644
9	1.240	684	480	384	440	368	620	4,870	3,950	4,510	1,160	636
10	1.320	* 668	456	302	462	364	668	5,280	4,350	4,150	1,130	620
11	1.120	660	450	293	538	356	700	5,390	5,240	* 3,930	1,110	573
12	1.110	668	320	324	780	332	748	5,950	6,280	3,910	1,080	531
13	* 1.030	604	300	480	732	336	847	6,080	6,850	3,790	1,080	517
14	990	566	396	524	517	328	1,040	* 4,910	7,240	3,220	1,020	504
15	1.000	588	531	430	474	356	1,350	3,830	6,900	2,890	950	486
16	1.000	644	573	440	486	348	1,730	3,190	5,730	2,730	920	492
17	990	636	524	400	468	376	1,970	2,840	4,670	2,650	892	498
18	970	604	* 531	435	420	360	2,250	2,570	* 4,270	2,520	901	498
19	960	545	492	486	388	368	2,520	2,340	4,980	2,510	930	474
20	940	559	517	498	435	388	2,910	2,540	6,200	2,390	940	492
21	910	620	474	468	415	376	3,170	2,750	6,750	2,280	883	538
22	950	612	450	420	396	364	2,730	2,520	6,800	2,140	883	636
23	910	596	410	400	405	364	2,620	2,280	5,780	2,100	874	620
24	883	566	425	405	392	360	2,910	2,290	6,100	2,130	838	* 612
25	847	566	435	410	400	368	3,320	2,590	6,020	2,110	804	588
26	820	580	480	440	380	396	3,630	2,710	6,100	2,100	780	573
27	874	566	435	456	364	474	3,130	3,130	6,350	2,040	756	580
28	865	531	400	445	305	552	3,030	2,870	6,650	1,900	748	604
29	820	510	450	435	-	498	3,470	2,700	6,520	1,830	* 724	668
30	812	545	430	425	-----	468	* 2,960	2,460	6,750	1,730	700	668
31	820	-----	425	425	-----	462	-----	2,540	-----	* 1,660	692	-----
Total	30,641	18,830	14,262	13,037	12,607	11,946	53,189	103,220	161,940	103,670	31,975	17,576
Mean	988	628	460	421	450	385	1,773	3,330	5,398	3,344	1,031	586
Ac-ft	60,780	37,350	28,290	25,860	25,010	23,690	105,500	204,700	321,200	205,600	63,420	34,860

Calendar year 1961: Max 4,960 Min 284 Mean 931 Ac-ft 674,300  
 Water year 1961-62: Max 7,240 Min 293 Mean 1,570 Ac-ft 1,136,000

Peak discharge (base, 6,300 cfs)

\* Discharge measurement made on this day.

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-13	0500	5.25	6,700	7-1	0600	5.55	7,600
6-14	0700	5.66	7,860				

DIVIDE CREEK BASIN

197

9-895. West Divide Creek near Raven, Colo.

Location.--Lat 39°20', long 107°35', in W½ sec.29, T.8 S., R.91 W., on left bank 10 ft downstream from private road bridge, 0.8 mile upstream from Brook Creek, 8 miles south of Raven, and 16 miles south of Silt.

Drainage area.--65.8 sq mi.

Records available.--October 1955 to September 1962.

Gage.--Water-stage recorder.

Average discharge.--7 years, 29.6 cfs (21,430 acre-ft per year).

Extremes.--Maximum discharge during year, 790 cfs May 12 (gage height, 5.41 ft) from rating curve extended above 350 cfs; minimum daily, 0.4 cfs Oct. 5, Sept. 3-7, 15-20.

1955-62: Maximum discharge, that of May 12, 1962; no flow at times in most years.

Remarks.--Records good except those for periods of ice effect, indefinite stage-discharge relation, or no gage-height record, which are poor. Natural flow of stream affected by water diverted from Thompson Creek (Roaring Fork basin), Muddy Creek (Muddy Creek basin), and Buzzard Creek (Plateau Creek basin).

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5	3.4				3.2	4.6	236	*218	93	7.6	0.5
2	3.5	3.4				3.4	5	*226	216	79	5.0	.5
3	1.5	2.6				3.4	7	220	216	74	3.5	.4
4	.5	2.8				3.2	7.5	264	220	69	7.9	.4
5	.4	2.6				3.2	8	346	213	63	4.5	.4
6	.6	2.6				3.4	8	427	196	58	3.2	.4
7	.8	2.8				3.6	8	416	179	58	2.6	.4
8	.7	3.4				3.6	7	423	161	58	2.2	.5
9	5	4.4				3.6	6.5	475	154	*55	2.1	.5
10	1.4	*5.0				3.4	7	495	152	48	2.7	.6
11	3	5.0				3.2	8.5	491	152	42	2.1	.6
12	4	4.2				3.0	11	527	146	40	1.6	.5
13	*3.6	3.6				2.8	20	487	142	40	1.6	.5
14	3.3	3.2				2.8	30	*350	135	36	1.4	.5
15	3.5	3.4				3.0	50	261	121	30	1.2	.4
16	3.1	4.0	3	2.5	2.5	3.2	70	243	111	27	1.1	.4
17	2.8	4.0				3.4	95	210	95	25	1.0	.4
18	2.6	3.4				3.6	120	188	85	23	1.1	.4
19	2.4	3.2				3.8	160	179	*103	23	1.2	.4
20	2.3	3.4				4.0	*220	196	106	20	1.7	.4
21	2.6	3.8				3.8	198	188	107	18	2.4	.8
22	2.6	3.6				3.6	157	171	116	16	2.5	2.2
23	2.4	3.4				3.4	183	154	123	15	1.8	1.5
24	2.2	3.4				3.6	246	163	116	14	1.7	.9
25	2.2	3.4				4.0	288	169	116	13	1.5	.8
26	2.0	3.6				5.0	342	165	114	12	1.1	.7
27	3.0	3.4				5.5	303	186	109	10	.9	.7
28	3.2	3.4				6.0	315	157	104	9.1	.8	.8
29	2.8	3.2				5.5	325	157	103	8.2	.7	1.1
30	3.0	3.0				5.0	253	159	107	*8.5	.6	1.1
31	3.2	-----				4.6	-----	177	-----	8.2	*.5	-----
Total	91.8	104.6	93	77.5	70.0	116.8	3,463.1	8,506	4,236	1,093.0	69.8	19.7
Mean	2.96	3.49	3	2.5	2.5	3.77	115	274	141	35.3	2.25	0.66
Ac-ft	182	207	184	154	139	232	6,870	16,870	8,400	2,170	138	39

Calendar year 1961: Max 175 Min 0 Mean 19.6 Ac-ft 14,160

Water year 1961-62: Max 527 Min 0.4 Mean 49.2 Ac-ft 35,580

Peak discharge (base, 160 cfs)						
Date	Time	Gage height	Discharge	Date	Time	Gage height
4-20	1800	4.60	288	5-12	2100	5.41
4-28	2030	4.51	409	6- 2	2300	4.19
						243

\* Discharge measurement made on this day.

Note.--Stage-discharge relation indefinite Oct. 1-12, 21-31. Stage-discharge relation affected by ice Nov. 1-9. No gage-height record Nov. 10 to Apr. 20 (stage-discharge relation affected by ice during most of period).



## DIVIDE CREEK BASIN

9-907. East Divide Creek near Silt, Colo.

Location.--Lat 39°26', long 107°34', in NE¼NE¼ sec.20, T.7 S., R.91 W., on right bank an eighth of a mile upstream from unnamed tributary, three-quarters of a mile upstream from June Creek, and 9 miles southeast of Silt.

Drainage area.--40.8 sq mi.

Records available.--October 1959 to September 1962.

Gage.--Water-stage recorder.

Extremes.--Maximum discharge during year, about 350 cfs May 12; maximum gage height, 5.05 ft May 7; no flow for many days, 1959-62: Maximum discharge, that of May 12, 1962; maximum gage-height, 5.06 ft Mar. 16, 1961 (backwater from ice); no flow for many days in each year.

Remarks.--Records good except those for period of ice effect, no gage-height record, or indefinite stage-discharge relation, which are poor. One small diversion above station for irrigation of hay meadows.

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

Oct. 1 to July 9

July 10 to Sept. 30

2.9	0.1	3.6	12	2.5	0	3.1	1.5
3.0	.3	3.8	20	2.7	.1	3.2	2.3
3.1	.8	4.0	36	2.8	.2	3.3	3.7
3.2	1.9	4.2	67	2.9	.5	3.4	5.7
3.3	3.5	4.4	116				
3.4	5.7	4.7	220				

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.0	2.1			1.2	1.0	3.3	74	* 94	16	1.3	
2	.7	2.2			1.4	1.2	* 4.4	* 82	89	13	1.2	0
3	.6	.8			1.4	1.4	5.5	76	92	13	1.0	0
4	.5	.8			1.4	1.2	5.7	87	94	11	1.2	0
5	.4	.8			* 1.4	1.2	6.0	105	89	10	.9	0
6	.3	1.0			1.4	1.4	6.0	150	82	9.7	.6	0
7	.2	1.0			1.5	1.6	6.3	200	76	8.7	.4	0
8	.2	1.0		(*)	1.6	1.4	5.7	190	69	8.1	.3	0
9	1.5	1.2			1.8	1.4	5.5	220	64	* 6.9	.4	0
10	2.5	* 1.6			2.4	1.2	5.7	230	60	5.7	.5	0
11	1.7	1.6			2.8	1.0	6.9	220	60	5.1	.4	0
12	1.8	1.4			2.8	.8	7.8	240	58	4.9	.2	0
13	* 2.2	1.2			2.6	.8	11	220	57	5.1	.2	0
14	1.9	1.0			2.4	.8	14	* 188	52	5.1	.2	0
15	1.8	1.2			2.0	1.0	18	145	47	4.1	.2	0
16	1.7	1.4	1	0.9	2.0	1.2	25	122	43	3.6	.1	0
17	1.7	1.4			2.0	1.4	46	108	39	3.3	0	0
18	1.5	1.2			1.8	1.4	52	100	33	2.9	0	0
19	.8	1.0			1.6	1.6	60	100	* 30	2.9	0	0
20	.8	1.2			1.4	1.8	69	102	30	2.6	.3	0
21	1.2	1.4			1.6	1.6	76	100	29	2.1	.2	0
22	1.2	1.2			1.6	1.6	58	92	25	1.8	.2	.1
23	1.1	1.2			1.4	1.4	65	82	25	1.7	.1	.1
24	1.0	1.2			1.4	1.4	85	87	23	1.8	.1	.1
25	.9	1.2			1.6	1.6	82	89	22	1.8	.1	.1
26	.9	1.4			1.4	2.2	87	87	19	2.2	0	.1
27	1.4	1.2			1.0	3.5	74	94	17	2.1	0	.1
28	2.1	1.2			.8	4.6	80	87	16	1.9	0	.1
29	1.6	1.0			-	4.4	100	89	16	1.5	0	.2
30	1.7	1.0			-----	4.2	85	87	21	* 1.3	0	.2
31	1.9	-----			-----	3.9	-----	87	-----	1.3	* 0	-----
Total	38.8	37.1	31	27.9	47.7	55.2	1,155.8	3,940	1,471	161.2	10.1	1.3
Mean	1.25	1.24	1	0.9	1.70	1.78	38.5	127	49.0	5.20	0.33	0.04
Ac-ft	77	74	61	55	95	109	2,290	7,810	2,920	320	20	1.6

Calendar year 1961: Max 67 Min 0 Mean 6.52 Ac-ft 4,720  
Water year 1961-62: Max 240 Min 0 Mean 19.1 Ac-ft 13,830

Peak discharge (base, 80 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-21	0030	4.35	92	5-12	Unknown	Unknown	†350
4-29	0200	4.50	130	5-27	0600	4.33	102

† About.

\* Discharge measurement or observation of no flow made on this day.

Note.--Stage-discharge relation affected by ice Nov. 4-9, Feb. 8 to Mar. 26. No gage-height record Nov. 10 to Feb. 5 (stage-discharge relation affected by ice during most of period). Stage-discharge relation indefinite May 6-13.

## RIFLE CREEK BASIN

199

9-915. East Rifle Creek near Rifle, Colo.

Location.--Lat 39°41', long 107°41', in sec.22, T.4 S., R.92 W., on right bank 100 ft downstream from abandoned powerplant outlet, 100 ft upstream from Grass Valley Canal, and 12 miles northeast of Rifle.

Drainage area.--32 sq mi, approximately.

Records available.--October 1936 to September 1943 (published as East Fork Rifle Creek near Rifle), October 1956 to September 1962. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Altitude of gage is 6,550 ft (by barometer). Prior to Apr. 20, 1938, staff gage just downstream at different datum. Apr. 20 to Dec. 3, 1938, staff gage at same site and datum. Dec. 4, 1938, to Sept. 30, 1943, water-stage recorder at same site and datum.

Average discharge.--13 years, 39.3 cfs (28,450 acre-ft per year).

Extremes.--Maximum discharge during year, 160 cfs May 12 (gage height, 3.17 ft); minimum daily 26 cfs Feb. 28. 1936-43, 1956-62: Maximum discharge observed, 409 cfs Aug. 5, 1937 (gage height, 4.00 ft, datum then in use), from rating curve extended above 50 cfs; minimum daily, 24 cfs Feb. 18, 1938, Dec. 27-29, 1939, Feb. 26-28, 1941.

Remarks.--Records good. Several small diversions for irrigation above station. One diversion to Colorado Fish and Game Department fish hatchery; water is returned to stream above gage.

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

Oct. 1 to June 11

June 12 to Sept. 30

1.8	22	3.0	141
2.0	37	3.1	153
2.5	85		

2.0	40
2.1	49
2.3	67

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	33	33	31	31	29	28	31	61	75	57	47	41
2	33	33	31	31	29	29	*32	59	73	56	45	40
3	33	31	31	31	29	29	31	57	72	55	46	40
4	33	31	31	31	29	28	32	58	*74	55	46	40
5	33	31	*31	31	*29	28	32	62	72	54	45	41
6	33	31	31	31	30	29	31	68	71	54	44	*41
7	33	31	31	32	30	*30	32	74	70	54	44	43
8	33	31	31	*32	30	29	33	87	69	54	44	42
9	35	31	31	32	30	30	32	110	67	54	42	41
10	34	31	31	30	30	31	31	125	65	*54	42	41
11	33	31	31	30	30	29	31	139	64	54	42	41
12	33	31	29	30	31	29	31	151	64	54	43	42
13	32	31	29	30	31	28	31	148	63	54	43	43
14	32	*31	29	30	29	28	32	137	62	53	43	43
15	32	31	30	30	29	29	33	119	62	53	43	43
16	32	31	32	30	30	30	33	*108	62	52	43	42
17	32	31	32	30	30	29	34	98	62	51	43	43
18	*33	31	31	30	29	29	35	90	61	50	43	43
19	33	31	31	29	29	30	35	87	*61	51	43	43
20	33	31	31	31	30	30	36	86	61	50	42	43
21	33	31	31	31	30	31	38	84	59	50	43	44
22	33	31	31	30	29	31	41	86	60	49	43	43
23	33	31	31	30	30	31	44	82	58	49	43	42
24	33	31	32	30	30	30	45	82	58	49	43	41
25	33	31	32	30	30	30	50	81	57	49	42	41
26	33	31	32	29	29	31	55	79	56	49	42	42
27	33	31	31	29	28	31	*57	83	55	48	42	43
28	34	31	31	29	26	31	61	82	56	48	41	43
29	33	31	31	29	-	31	64	80	57	48	42	43
30	33	31	32	29	-----	31	61	77	58	*47	42	42
31	33	-----	31	29	-----	31	-----	76	-----	47	41	-----
Total	1,022	934	960	937	825	921	1,164	2,816	1,904	1,602	1,337	1,260
Mean	33.0	31.1	31.0	30.2	29.5	29.7	38.8	90.8	63.5	51.7	43.1	42.0
Ac-ft	2,030	1,850	1,900	1,860	1,640	1,830	2,310	5,590	3,780	3,180	2,650	2,500

Calendar year 1961: Max 44 Min 28 Mean 32.1 Ac-ft 23,230  
 Water year 1961-62: Max 151 Min 26 Mean 43.0 Ac-ft 31,120

\* Discharge measurement made on this day.

## RIFLE CREEK BASIN

9-920. Rifle Creek near Rifle, Colo.

Location.--Lat 39°37'10", long 107°45'45", in NE¼ sec.18, T.5 S., R.92 W., on right bank 0.5 mile downstream from confluence of East and West Rifle Creeks and 6.2 miles northeast of Rifle.

Drainage area.--140 sq mi.

Records available.--October 1939 to September 1946, October 1952 to September 1962. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Concrete control since Apr. 20, 1960. Altitude of gage is 5,810 ft (from topographic map). Prior to July 21, 1942, staff gage at same site at datum 1.31 ft higher. July 21, 1942, to Sept. 30, 1946, water-stage recorder at site 100 ft downstream at same datum.

Average discharge.--17 years, 25.4 cfs, unadjusted (18,390 acre-ft per year).

Extremes.--Maximum discharge during year, 292 cfs Feb. 12 (gage height, 3.43 ft); minimum daily, 4.5 cfs Jan. 10.

1939-46, 1952-62: Maximum discharge, 758 cfs July 18, 1953 (gage height, 6.14 ft, from floodmarks), from rating curve extended above 110 cfs on basis of slope-area measurement of peak flow; minimum daily, 2.7 cfs Feb. 6, 1941.

Maximum stage known, 7.7 ft July 27, 1951, from floodmarks at site 100 ft downstream (discharge, about 1,500 cfs).

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 870 acres above station in Rifle Creek basin. Some regulation by small reservoir on West Rifle Creek. Diversion above station from East Rifle Creek by Grass Valley Canal to Harvey Gap Reservoir for use outside Rifle Creek basin (see table below). A small amount of water diverted from canal for irrigation in Elk Creek drainage.

## Monthly diversion, in acre-feet, water year October 1961 to September 1962

Month	Diversion
October.....	1,440
November.....	1,600
December.....	1,810
Calendar year 1961.....	12,110
January.....	1,750
February.....	1,260
March.....	1,430
April.....	1,800
May.....	3,030
June.....	2,590
July.....	1,080
August.....	505
September.....	705
Water year 1961-62.....	19,000

## Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	12	16	8.2	6	7.6	31	16	75	52	50	44	41
2	10	16	7.9	5.5	7.9	31	* 18	71	52	44	46	41
3	11	14	8.2	6	7.9	31	20	66	52	40	47	38
4	11	13	7.6	6	8.2	31	18	69	* 48	38	50	35
5	12	11	7	6	*8.5	31	16	68	43	37	47	35
6	11	10	7.5	6	8.5	33	14	78	45	41	47	* 34
7	11	10	7.5	5.5	9.1	* 28	14	90	44	43	47	32
8	11	9	7.5	*5.5	11	7.9	14	110	45	40	46	32
9	26	8	7.5	5	12	7.9	13	150	45	40	45	33
10	12	8	7	4.5	131	8.2	14	180	39	* 44	45	34
11	11	8.5	6.5	5.5	110	7	15	199	38	45	42	33
12	10	8.5	6	6	132	6	15	170	34	43	45	32
13	11	23	6	6.5	111	6	15	186	31	41	43	33
14	11	32	6.5	6.5	26	6.5	16	145	28	38	43	34
15	12	* 7.9	7	6.5	14	7.5	18	138	30	42	39	34
16	12	7.9	7.5	6	13	9	26	* 127	31	39	41	34
17	12	7.9	8	6	12	11	32	113	32	40	39	32
18	* 12	7.6	8.2	6.5	12	14	40	102	32	38	38	31
19	12	7	7.9	7	16	18	50	96	33	39	34	32
20	12	7	* 7.9	7	14	24	65	94	* 33	40	32	36
21	13	7.9	7.6	7.5	13	16	80	83	34	41	29	38
22	13	7	7.3	7.6	13	14	75	84	38	40	28	36
23	13	8	6.7	7.6	13	16	70	75	46	46	29	35
24	13	8	7.3	7	12	18	80	69	46	47	30	35
25	13	8.5	7.3	7	12	24	90	68	44	46	34	35
26	13	9.1	7.3	7	14	31	110	63	47	44	38	35
27	14	8.2	7.0	7	20	66	* 99	73	53	45	38	34
28	16	8.2	6.7	7.6	30	60	98	69	53	45	38	33
29	16	7.5	7.6	7.6	-	40	99	64	57	44	39	26
30	14	8.2	7.3	7.6	-----	26	84	58	62	* 42	39	23
31	16	-----	6.7	7.6	-----	20	-----	60	-----	40	40	-----
Total	396	312.9	226.2	200.6	798.7	680.0	1,334	3,093	1,267	1,302	1,242	1,016
Mean	12.8	10.4	7.30	6.47	28.5	21.9	44.5	99.8	42.2	42.0	40.1	33.9
Ac-ft	785	621	449	398	1,580	1,350	2,650	6,130	2,510	2,580	2,460	2,020

Calendar year 1961: Max 51 Min 3.4 Mean 19.0 Ac-ft 13,800  
 Water year 1961-62: Max 199 Min 4.5 Mean 32.5 Ac-ft 23,530

Peak discharge (base, 140 cfs)--Feb. 12 (2300) 292 cfs (3.43 ft); May 11 (0130) 260 cfs (3.22 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 4-10, 19, 20, 22-24, 29, Dec. 5-17, Jan. 1-21, 24-27, Feb. 16-21, 24-27, Mar. 11-17. No gage-height record Mar. 28 to Apr. 26.

## BEAVER CREEK BASIN

201

9-925. Beaver Creek near Rifle, Colo.

Location.--Lat 39°28'20", long 107°49'55", in NE¼ sec.1, T.7 S., R.94 W., on left bank 150 ft upstream from unnamed tributary, 200 ft (revised) upstream from road bridge, 4 miles upstream from mouth, and 4.8 miles southwest of Rifle.

Drainage area.--7.90 sq mi (revised).

Records available.--October 1952 to September 1962.

Gage.--Water-stage recorder and plank control. Altitude of gage is 6,685 ft (from topographic map).

Average discharge.--10 years, 4.20 cfs (3,040 acre-ft per year).

Extremes.--Maximum discharge during year, 65 cfs May 12 (gage height, 3.71 ft); minimum daily, 0.6 cfs Mar. 14, 15, 1952-62; Maximum discharge, 72 cfs June 5, 1957, from rating curve extended above 40 cfs; maximum gage height, 3.70 ft May 29, 1958; minimum daily discharge, 0.3 cfs Jan. 4-6, 1959.

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 170 acres below station and about 380 acres in Mamm Creek basin.

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

2.7	0.2	3.1	9.4
2.8	1.2	3.3	20
2.9	3.6	3.4	27
3.0	6.4	3.7	57

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.4	2.8	1.8	2.1	1.1	0.7	2.1	15	*21	24	3.6	1.6
2	4.2	2.3	1.8	2.1	1.1	.8	*2.3	13	26	19	3.3	1.6
3	4.0	2.2	1.8	2.1	1.1	.8	2.6	14	27	18	3.6	1.6
4	4.0	2.0	1.6	2.1	1.1	.9	2.6	18	25	18	3.3	1.6
5	4.0	1.8	*2.0	2.1	*1.1	.9	2.3	26	26	16	3.1	1.6
6	4.0	1.4	2.0	2.1	1.1	.9	2.1	33	27	15	3.1	*1.6
7	4.2	1.6	1.8	2.1	1.1	*.9	2.1	40	27	14	3.1	1.6
8	4.4	1.8	1.8	*1.8	1.1	.8	2.1	45	25	12	3.1	1.4
9	4.8	2.0	1.6	1.4	1.1	.8	2.1	47	24	11	3.1	1.4
10	4.2	2.2	1.6	1.2	1.1	.8	2.3	50	23	*11	3.1	1.4
11	3.8	2.2	1.4	1.2	1.4	.8	2.3	54	22	9.4	2.8	1.4
12	3.6	2.3	1.2	1.2	2.0	.8	2.6	52	25	9.1	2.8	1.4
13	3.4	2.3	1.4	1.6	2.0	.7	2.6	47	29	8.5	2.8	1.6
14	3.2	2.0	1.6	1.6	1.4	.6	3.1	*44	32	7.3	2.6	1.6
15	3.4	*1.8	1.6	1.4	1.2	.6	4.2	34	30	7.0	2.6	1.6
16	3.2	1.8	1.8	1.4	1.2	.8	5.6	30	25	6.7	2.3	1.6
17	3.2	1.8	1.8	1.2	1.1	.9	6.1	26	19	6.7	2.3	1.6
18	*3.2	1.8	1.8	1.4	1.1	.9	7.6	23	20	6.4	2.6	1.6
19	3.1	1.6	1.8	1.6	1.2	.9	8.5	23	*22	6.4	2.6	1.4
20	2.8	1.6	1.8	1.6	1.1	.9	9.4	25	24	5.6	2.6	1.4
21	2.8	1.8	1.8	1.6	.9	1.1	9.9	21	26	5.3	2.3	2.1
22	2.8	1.6	1.8	1.4	.9	1.1	8.5	19	23	5.3	2.6	3.1
23	2.3	1.8	1.8	1.2	.9	1.1	*8.8	18	23	5.0	2.1	1.8
24	2.6	1.8	1.8	1.1	.9	1.1	12	21	23	4.8	1.8	1.6
25	2.6	1.8	1.8	1.1	.9	1.2	16	21	24	4.8	1.8	1.6
26	2.8	1.8	1.8	1.1	.9	1.6	18	21	23	4.8	1.6	1.4
27	3.1	1.8	1.8	1.1	.8	2.3	16	24	20	4.5	1.6	1.6
28	2.8	1.8	1.8	1.1	.7	2.6	18	17	20	3.9	1.6	2.1
29	2.6	1.8	2.1	1.1	-	2.1	19	18	21	3.9	1.6	2.3
30	3.1	1.8	2.1	1.1	-----	1.8	16	19	28	*3.6	1.6	1.8
31	2.8	-----	2.1	1.1	-----	1.8	-----	21	-----	3.3	1.8	-----
Total	105.4	57.1	54.7	46.3	31.6	34.0	216.8	879	730	280.3	78.8	50.0
Mean	3.40	1.90	1.76	1.49	1.13	1.10	7.23	28.4	24.3	9.04	2.54	1.67
Ac-ft	209	113	108	92	63	67	430	1,740	1,450	556	156	99

Calendar year 1961: Max 24 Min 0.6 Mean 3.55 Ac-ft 2,570  
 Water year 1961-62: Max 54 Min 0.6 Mean 7.02 Ac-ft 5,080

Peak discharge (base, 25 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-12	2200	3.71	65	6-30	0700	3.39	29
6-14	2000	3.44	35				

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 1-18. Stage-discharge relation affected by ice Nov. 3-11, 14, 15, 19, 20, 22, Dec. 4-9, 12-17, Feb. 12, 13, Feb. 27 to Mar. 3, Mar. 12-16.



## BATTLEMENT CREEK BASIN

9-926, Battlement Creek near Grand Valley, Colo.

Location.--Lat 39°26'10", long 107°58'40", in NE¼SE¼ sec.15, T.7 S., R.95 W., on left bank 300 ft downstream from ford, 4½ miles up stream from mouth, and 5 miles southeast of Grand Valley.

Drainage area.--8.31 sq mi.

Records available.--October 1956 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 6,630 ft (from topographic map).

Average discharge.--6 years, 8.80 cfs (6,370 acre-ft per year).

Extremes.--Maximum discharge during year, 58 cfs May 12 (gage height, 2.54 ft); minimum daily, 1.2 cfs Jan. 24, 25.

1956-62: Maximum discharge, 102 cfs June 7, 1957 (gage height, 2.79 ft); maximum gage height, 2.96 ft May 26, 1958 (backwater from debris); minimum discharge not determined.

Remarks.--Records fair except those for periods of ice effect, which are poor. Slight regulation from Battlement Reservoir. No diversion above station.

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

Oct. 1 to May 6

May 7 to Sept. 30

1.7	2.8	1.6	2.0
1.9	5.0	1.8	5.0
2.1	9.5	2.1	14
2.2	13	2.2	19
2.4	25	2.4	37
		2.6	68

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.8	4.4	3.6	1.8	1.6	1.6	3.7	1.4	* 3.0	3.7	9.2	2.6
2	5.4	4.0	3.5	1.8	1.6	1.8	3.9	1.4	3.5	3.4	8.9	2.8
3	5.2	3.4	3.6	1.8	1.6	1.8	4.2	1.4	4.0	3.1	8.6	2.8
4	5.0	3.8	3.4	1.8	1.6	1.8	4.4	1.6	4.5	2.9	8.6	2.8
5	5.0	4.0	3.0	2.0	* 1.6	1.8	4.2	1.9	4.7	2.8	8.0	2.8
6	4.9	4.2	3.2	2.0	1.6	1.8	4.2	2.5	4.3	2.5	7.7	2.8
7	4.2	4.2	3.4	2.0	1.8	2.0	4.3	3.7	4.0	2.3	7.7	* 3.5
8	4.3	4.4	3.4	* 1.8	1.8	1.8	4.4	4.5	4.0	2.1	7.4	3.4
9	7.2	4.5	3.0	1.6	1.8	1.8	4.4	5.1	4.1	* 2.0	7.1	3.4
10	5.0	4.5	2.4	1.4	2.0	1.6	4.5	5.0	4.4	1.9	7.1	3.4
11	4.8	4.5	1.8	1.4	2.2	1.6	4.5	4.8	4.5	1.8	6.5	3.2
12	4.8	4.5	1.8	1.4	2.4	1.6	4.3	5.1	4.7	1.7	6.2	3.2
13	4.5	4.2	2.0	1.6	2.2	1.6	5.2	5.1	5.0	1.6	5.9	3.2
14	4.5	4.0	2.0	1.6	2.0	1.4	6.2	4.1	5.1	1.6	5.6	3.2
15	4.5	* 4.8	2.2	1.6	2.0	1.6	8.0	* 3.5	5.1	1.5	5.6	3.0
16	4.5	3.8	2.2	1.4	2.0	1.6	1.0	3.3	5.0	1.4	5.3	3.0
17	4.3	3.8	2.2	1.4	2.0	1.8	1.1	2.8	4.5	1.4	5.0	3.0
18	* 4.0	3.6	2.0	1.4	1.8	1.8	1.4	2.5	4.4	1.4	4.8	3.0
19	4.2	3.2	2.0	1.6	1.6	1.8	1.6	3.1	4.4	1.3	4.7	3.0
20	4.2	3.2	2.2	1.6	1.8	1.8	1.8	3.4	4.4	1.3	4.6	3.0
21	4.2	3.6	2.2	1.6	2.0	1.8	1.8	3.5	4.4	1.2	4.6	4.1
22	4.4	3.2	2.2	1.6	2.0	* 1.8	1.6	3.3	4.4	1.2	4.6	4.4
23	4.3	3.7	2.2	1.4	2.0	1.8	* 1.6	3.1	4.4	1.2	4.2	3.6
24	4.3	3.6	2.2	1.2	2.0	1.6	1.9	3.1	4.3	1.2	4.2	3.5
25	4.2	3.6	2.0	1.2	2.0	1.8	2.1	3.0	4.3	1.2	4.0	3.5
26	4.3	3.7	2.0	1.4	1.8	2.4	2.2	3.1	4.1	1.2	3.4	3.5
27	4.5	3.5	2.0	1.4	1.6	3.0	1.8	3.4	* 4.0	1.1	4.1	3.0
28	4.4	3.5	2.0	1.4	1.4	2.8	1.7	3.2	3.8	1.0	3.5	3.5
29	4.5	3.2	2.2	1.4	-	2.6	1.8	2.9	3.8	1.0	3.6	3.5
30	4.4	3.6	2.2	1.6	-----	2.6	1.5	2.9	3.8	* 9.8	2.8	3.2
31	4.4	-----	2.0	1.6	-----	3.2	-----	2.9	-----	9.5	2.8	-----
Total	144.2	116.2	76.1	48.8	51.8	59.8	319.4	1.006	1.289	539.3	176.3	96.9
Mean	4.65	3.87	2.45	1.57	1.85	1.93	10.6	32.5	43.0	17.4	5.69	3.23
Ac-ft	286	230	151	97	103	119	634	2,000	2,560	1,070	350	192

Calendar year 1961: Max 34 Min - Mean 5.67 Ac-ft 4,100

Water year 1961-62: Max 51 Min 1.2 Mean 10.8 Ac-ft 7,790

Peak discharge (base, 40 cfs).--May 12 (2100) 58 cfs (2.54 ft); June 14 (2300) 54 cfs (2.52 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 2-8, 13-15, 18-22, 29, Dec. 4 to Mar. 31 (no gage-height record Dec. 27 to Jan. 8, Feb. 27 to Mar. 22).

## PARACHUTE CREEK BASIN

203

9-928, West Fork Parachute Creek near Grand Valley, Colo.

Location.--Lat 39°35'15", long 108°07'30", in SW¼ sec.25, T.5 S., R.96 W., on left bank 0.3 mile upstream from bridge, a quarter of a mile downstream from Red Gulch, 1.1 miles upstream from Parachute Creek, and 10 miles north of Grand Valley.

Drainage area.--48.1 sq mi.

Records available.--October 1957 to September 1962 (discontinued).

Gage.--Water-stage recorder. Metal control since May 27, 1959. Altitude of gage is 5,900 ft (from topographic map).

Average discharge.--5 years, 4.37 cfs (3,160 acre-ft per year).

Extremes.--Maximum discharge during the year, 147 cfs Apr. 26; maximum gage height, 5.51 ft Apr. 22; no flow for many days.  
1957-62: Maximum discharge, that of Apr. 26, 1962; maximum gage height, that of Apr. 22, 1962; no flow at times in 1957, 1960-62.

Remarks.--Records poor. No diversion above station.

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.7	* 1.4	0.1		0	1.0	4.0	96	15	5.0	2.7	1.2
2	.5	.4	.1		0	1.6	5.5	89	14	4.2	2.2	1.0
3	.4	.1	.1		0	1.8	8	80	14	4.2	3.2	1.2
4	.5	0	0		0	1.8	14	84	13	5.3	3.2	.8
5	.7	.2	0		0	1.8	14	85	14	5.0	2.2	2
6	.7	0	0		0	2.0	12	81	12	4.0	2.0	.9
7	.7	0	0		.1	2.2	12	80	13	3.4	1.6	* 1.4
8	.9	0	.1	(*)	.2	2.0	10	77	13	4.2	1.6	1.3
9	3.2	0	.1		* .5	2.0	12	* 80	13	* 4.6	1.2	1.4
10	1.3	.1	0		1.8	2.0	12	78	11	4.2	1.2	1.4
11	1.3	.1	0		4.0	1.6	14	70	* 8.6	4.0	1.2	1.3
12	1.0	.1	0		7	1.4	18	64	6.9	4.0	.8	1.2
13	.8	0	0		4.0	1.2	22	59	5.0	4.2	.8	1.0
14	.8	* 0	0		2.0	1.2	26	51	5.7	4.0	2	1.0
15	.8	* .1	0		2.0	1.2	34	45	5.7	4.0	.8	.9
16	.8	.2	0		1.8	1.4	32	42	5.3	4.0	1.0	.9
17	.8	.1	0		1.2	1.6	40	38	5.7	3.7	1.2	.9
18	* .8	.1	0		1.0	1.6	46	34	5.7	3.7	1.4	.8
19	.8	0	0		1.2	2.4	60	29	5.0	3.7	1.3	.8
20	.9	.1	0		1.8	2.4	80	26	5.3	3.0	1.4	.8
21	1.0	.1	0		1.8	2.2	120	26	4.2	2.4	1.3	1.6
22	.9	.1	0		1.2	* 1.8	110	26	3.4	2.7	1.3	1.7
23	0	.1	0		1.4	1.6	* 101	25	4.0	2.7	1.3	1.2
24	.9	.1	0		1.8	1.6	93	23	4.0	2.7	1.3	1.0
25	.7	.1	0		1.4	2.2	104	23	3.7	2.7	1.2	1.2
26	.6	.1	0		1.2	3.6	* 134	20	4.6	2.4	1.0	1.2
27	.8	0	0		1.0	4.4	* 120	22	* 5.7	2.2	.8	1.3
28	.8	.1	0		.6	4.0	125	22	5.7	1.7	1.0	2.4
29	.7	0	0		-	2.6	128	19	5.7	2.0	.9	1.7
30	.6	.1	0		-----	2.0	110	17	5.7	* 2.4	.9	1.4
31	1.4	-----	0		-----	2.8	-----	16	-----	1.7	1.0	-----
Total	26.8	3.8	0.5	0	39.0	63.0	1,620.5	1,527	237.6	108.0	43.2	35.1
Mean	0.86	0.13	0.02	0	1.39	2.03	54.0	49.3	7.92	3.48	1.39	1.17
Ac-ft	53	7.5	1.0	0	77	125	3,210	3,030	471	214	86	70

Calendar year 1961: Max 11 Min 0 Mean 1.27 Ac-ft 919  
Water year 1961-62: Max 134 Min 0 Mean 10.1 Ac-ft 7,340

Peak discharge (base, 50 cfs).--Apr. 26 (2100) 147 cfs (4.08 ft).

\* Discharge measurement or observation of no flow made on this day.

Note.--Stage-discharge relation affected by ice Nov. 17, 18, 20-26, 28, Nov. 30 to Dec. 3, Dec. 8, 9. No gage-height record Nov. 3, 5, 10-12, 15, 16, Feb. 7-9, Feb. 21 to Mar. 5. Stage-discharge relation indefinite Feb. 10-20, Mar. 6 to Apr. 22.

## COLORADO RIVER MAIN STEM

9-955. Colorado River near Cameo, Colo.

Location.--Lat 39°14'20", long 108°16'00", in SW¼SW¼ sec.30, T.9 S., R.97 W., on left bank 100 ft north of U. S. Highways 6 and 24, half a mile upstream from Jackson Canyon, 5.9 miles upstream from Grand Valley project diversion dam, and 7 miles northeast of Cameo.

Drainage area.--8,050 sq mi, approximately.

Records available.--October 1933 to September 1962.

Gage.--Water-stage recorder. Datum of gage is 4,813.73 ft above mean sea level, datum of 1929. Prior to Oct. 10, 1934, staff gage on river and water-stage recorder on highline canal, about 10 miles downstream at different datum. Oct. 10, 1934, to Feb. 27, 1958, at site 3 miles downstream at datum 22.55 ft lower.

Average discharge.--29 years, 3,976 cfs (2,879,000 acre-ft per year).

Extremes.--Maximum discharge during year, 25,500 cfs May 13 (gage height, 10.77 ft); minimum daily, 1,300 cfs Jan. 11, 1933-62: Maximum discharge, 36,000 cfs June 16, 1935; maximum gage height, 11.60 ft June 8, 1952 (site and datum then in use); minimum daily discharge, 700 cfs Dec. 29, 1939.

Remarks.--Records good except those for period of ice effect, which are fair. Natural flow of stream affected by transmountain diversions, storage reservoirs, power developments, and diversion for irrigation of about 160,000 acres.

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

3.5	1,800	6.0	6,740
4.0	2,540	8.0	13,600
5.0	4,400	10.6	24,800

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4,640	2,590	1,960	1,900	1,900	1,880	2,990	14,100	9,980	17,400	4,260	2,160
2	4,040	2,590	1,960	1,800	1,950	2,330	2,930	12,300	11,000	16,400	4,100	2,130
3	3,330	2,680	1,970	1,750	1,950	2,380	3,280	11,300	11,900	15,700	4,000	2,120
4	3,480	2,350	1,970	1,850	1,950	2,410	3,900	11,100	12,800	15,200	3,980	2,080
5	3,440	2,330	1,970	2,000	2,000	2,330	4,100	12,200	13,700	14,600	4,100	2,060
6	3,350	2,180	1,900	2,050	2,050	2,330	*4,080	14,100	14,200	13,600	3,940	2,040
7	3,370	2,030	1,920	2,150	2,100	*2,510	4,120	16,000	*14,800	12,800	*3,700	2,030
8	3,350	2,010	1,940	2,150	2,150	2,620	3,800	17,800	14,100	12,100	3,630	2,030
9	3,820	2,280	1,960	2,050	2,250	2,620	3,400	19,400	13,100	11,500	3,460	2,040
10	3,570	2,360	1,700	1,700	2,450	2,730	3,240	21,000	12,700	10,400	3,400	2,040
11	3,650	2,330	1,600	1,300	3,000	2,830	3,420	22,000	13,800	9,980	3,290	2,040
12	3,420	2,300	1,400	1,550	3,400	2,570	4,180	22,900	15,500	9,560	3,260	2,030
13	3,350	2,280	1,600	1,750	4,000	2,280	4,420	24,400	17,100	9,060	3,130	1,930
14	3,330	2,180	1,900	1,850	3,610	2,740	4,950	22,500	18,300	8,740	3,060	1,930
15	3,380	*2,060	2,200	1,850	*2,800	2,740	6,050	*19,600	18,500	7,950	2,880	1,920
16	3,040	2,030	2,350	1,800	2,810	2,810	7,650	17,100	17,100	7,560	2,640	1,930
17	2,950	2,100	2,250	1,850	2,920	2,740	8,960	15,000	14,900	7,110	2,620	1,940
18	3,310	2,240	2,150	1,900	2,480	2,780	9,770	13,300	13,000	6,740	2,620	1,900
19	3,260	2,180	2,050	2,000	2,330	2,190	10,900	12,200	12,800	*6,610	2,620	1,850
20	3,220	2,040	2,150	2,050	2,200	2,270	12,600	11,600	14,300	6,220	2,620	1,890
21	3,190	2,060	2,150	2,050	2,280	2,520	14,300	11,800	15,900	5,810	2,660	1,990
22	3,130	2,140	2,200	2,000	2,250	2,350	14,000	11,900	16,700	5,550	2,540	2,180
23	2,970	2,070	2,000	1,900	2,240	2,490	*13,100	11,000	16,300	5,370	2,510	2,100
24	*2,830	2,130	1,900	1,800	2,240	2,380	13,300	10,200	15,900	5,190	2,490	2,080
25	2,990	2,070	1,950	1,700	2,250	2,380	14,500	10,300	15,900	5,280	2,440	2,070
26	2,880	2,100	2,000	1,800	2,240	2,400	15,900	10,700	15,700	5,190	2,410	2,060
27	2,800	2,120	2,000	1,850	2,130	2,730	*16,700	11,100	15,900	5,080	2,330	2,010
28	2,880	2,060	1,900	1,850	2,130	3,460	15,800	11,800	*16,400	4,910	2,280	2,080
29	2,880	2,010	2,000	1,850	-	3,550	16,200	11,300	16,000	4,690	2,250	2,120
30	2,610	1,970	2,000	1,850	-----	3,420	15,900	10,300	16,600	4,300	2,190	2,120
31	2,490	-----	1,900	1,900	-----	3,150	-----	9,700	-----	4,120	*2,160	-----
Total	100,950	65,870	60,900	57,850	69,050	80,920	258,440	450,000	444,880	274,720	93,570	60,960
Mean	3,256	2,196	1,965	1,866	2,431	2,610	8,615	14,520	14,830	8,862	3,018	2,031
Ac-ft	200,200	130,700	120,800	114,700	135,000	160,500	512,600	892,600	882,400	544,900	185,600	120,900

Calendar year 1961: Max 12,400 Min 1,200 Mean 2,808 Ac-ft 2,033,000  
 Water year 1961-62: Max 24,400 Min 1,300 Mean 5,526 Ac-ft 4,001,000

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 10 to Feb. 13 (no gage-height record Dec. 16 to Feb. 10).

PLATEAU CREEK BASIN

205

9-958. Plateau Creek near Heiberger, Colo.

Location.--Lat 39°13'10", long 107°46'30", near center of sec.4, T.10 S., R.93 W., on right bank 50 ft upstream from ford, 7 miles south of Heiberger, and 9½ miles southeast of Collbran.

Drainage area.--19 sq mi, approximately.

Records available.--May 1958 to September 1962.

Gage.--Water-stage recorder. Datum of gage is 8,016.31 ft above mean sea level (Bureau of Reclamation bench mark).

Extremes.--Maximum discharge during year, 189 cfs May 9 (gage height, 3.17 ft); minimum daily, 1.3 cfs July 21.  
1958-62: Maximum discharge, 272 cfs May 23, 1958 (gage height, 3.56 ft); minimum daily, 0.3 cfs Sept. 11, 1959.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of hay meadows and slight regulation by one reservoir (capacity, 200 acre-ft) above station. Erie Canal diverts water above station to Buzzard Creek drainage for irrigation of about 280 acres.

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

Oct. 1 to May 7

May 8 to Sept. 30

1.8	3.6	1.4	0.8
1.9	6.0	1.5	2.0
2.1	17	1.7	5.8
2.5	50	1.8	8.2
2.8	95	2.0	18
		2.3	42
		2.6	79
		3.0	155

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	10	6.5	4.8	3.0	3.4	2.6	4.1	41	50	40	3.5	2.7
2	6.0	5.5	4.8	2.8	3.4	3.0	4.6	37	68	35	3.5	2.7
3	6.5	5.0	4.6	* 2.4	3.2	3.2	5.3	40	93	31	4.8	2.7
4	6.5	5.5	4.6	2.4	3.2	3.0	5.3	52	98	27	5.4	2.5
5	6.5	5.5	4.0	2.8	3.4	3.0	4.8	70	96	22	3.9	* 2.3
6	7.0	5.0	4.2	3.2	3.4	3.0	4.8	85	102	19	*4.1	2.2
7	7.0	5.5	4.2	3.2	3.2	3.2	5.0	89	89	17	4.8	3.7
8	8.0	5.5	4.0	3.0	3.2	3.0	4.6	117	82	16	4.5	2.8
9	15	5.5	3.8	2.6	3.4	3.0	4.8	141	86	14	4.3	2.3
10	10	5.5	3.8	2.2	3.8	3.2	4.8	149	91	11	4.3	2.3
11	9.5	5.5	3.6	2.4	4.2	3.0	5.0	147	* 102	9.9	3.7	2.2
12	9.5	6.0	3.0	2.8	5.0	2.4	5.8	137	107	8.2	3.7	2.0
13	9.5	5.5	2.6	3.4	4.4	2.6	8.0	131	102	9.5	3.7	2.0
14	10	5.0	3.0	3.6	4.2	2.6	12	94	98	7.7	3.4	2.0
15	12	5.0	3.6	3.6	4.0	2.8	17	76	88	6.0	3.0	2.0
16	11	*5.0	4.2	3.4	* 4.2	3.0	22	64	66	5.6	2.8	2.2
17	11	5.5	4.0	3.2	4.0	3.2	26	59	49	*5.4	3.4	1.8
18	10	5.0	4.2	3.2	3.6	3.4	30	53	50	5.2	3.7	1.6
19	*9.5	5.0	4.0	3.4	3.2	3.6	*37	59	53	4.3	3.7	1.6
20	9.0	5.5	4.0	3.6	3.2	3.6	45	78	*54	1.8	3.9	2.2
21	8.0	5.0	4.0	3.6	3.4	3.4	50	73	58	1.3	3.5	2.8
22	9.0	5.0	3.8	3.4	3.4	3.2	43	*59	52	1.6	4.3	4.1
23	7.5	5.0	3.4	3.2	3.2	3.2	40	52	46	1.9	5.6	1.9
24	7.0	5.0	3.2	3.0	3.2	3.4	46	66	44	1.8	4.3	1.9
25	6.0	5.5	3.6	3.0	3.2	3.8	62	64	44	4.9	3.4	1.8
26	5.8	5.5	3.4	3.2	3.0	* 4.0	62	63	45	13	3.0	1.5
27	7.5	5.0	3.4	3.6	2.6	7.5	*54	72	42	3.2	3.0	1.6
28	5.8	4.6	3.4	3.6	2.4	6.0	56	53	39	2.0	2.7	3.4
29	7.0	4.8	3.6	3.6	-	4.1	56	49	39	2.0	2.5	3.5
30	8.0	4.6	3.4	3.4	-----	3.6	46	45	49	3.4	2.5	2.3
31	7.5	-----	3.2	3.4	-----	3.8	-----	44	-----	3.9	2.7	-----
Total	262.6	158.0	117.4	97.2	98.0	106.4	770.9	2359	2082	334.6	115.6	70.6
Mean	8.47	5.27	3.79	3.14	3.50	3.43	25.7	76.1	69.4	10.8	3.73	2.35
Ac-ft	521	313	233	193	194	211	1,530	4,680	4,130	664	229	140

Calendar year 1961: Max 99 Min 0.7 Mean 8.52 Ac-ft 6,170

Water year 1961-62: Max 149 Min 1.3 Mean 18.0 Ac-ft 13,040

Peak discharge (base, 140 cfs).--May 9 (2000) 189 cfs (3.17 ft); June 12 (1930) 143 cfs (2.86 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 1-15. No gage-height record Nov. 16 to Mar. 26 (stage-discharge relation affected by ice during most of period).



## PLATEAU CREEK BASIN

9-961. Vega Reservoir near Collbran, Colo.

Location.--Lat 39°13'30", long 107°48'40", in sec. 6, T.10 S., R.93 W., at dam on Plateau Creek, 10 miles southeast of Collbran.

Records available.--April 1960 to September 1962.

Gage.--Staff gage read once daily. Datum of gage is 7,906 ft above mean sea level (Bureau of Reclamation bench mark); gage readings have been reduced to elevations above mean sea level.

Extremes.--Maximum contents observed during year, 34,110 acre-ft June 12-15 (elevation, 7,985.3 ft); minimum observed, 11,610 acre-ft Oct. 1-6 (elevation, 7,952.5 ft).  
1960-62: Maximum contents observed, that of June 12-15, 1962; minimum observed, 1,260 acre-ft Apr. 15, 1960 (elevation, 7,917.4 ft).

Remarks.--Reservoir is formed by an earth- and rock-fill dam. Dam completed by Bureau of Reclamation in 1960. Usable storage began in May 1958 while dam was under construction. Capacity of reservoir, 32,930 acre-ft between elevations 7,906 (bottom of outlet gate) and 7,984 ft (crest of spillway). Dead storage, 823 acre-ft. Figures given herein are usable contents. Reservoir is used to store water for irrigation and power development.

Cooperation.--Records furnished by Bureau of Reclamation.

Month-end elevation and contents, water year October 1961 to September 1962

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	7,952.5	11,640	-
Oct. 31.....	7,953.3	11,980	+340
Nov. 30.....	7,954.2	12,410	+430
Dec. 31.....	7,954.8	12,700	+290
Calendar year 1961.....	-	-	+7,880
Jan. 31.....	7,955.5	13,050	+350
Feb. 28.....	7,956.5	13,560	+510
Mar. 31.....	7,957.1	13,870	+310
Apr. 30.....	7,962.3	16,780	+2,910
May 31.....	7,984.3	33,200	+16,420
June 30.....	7,984.5	33,390	+190
July 31.....	7,979.8	29,280	-4,110
Aug. 31.....	7,971.9	23,100	-6,180
Sept. 30.....	7,965.3	18,620	-4,480
Water year 1961-62.....	-	-	+6,980

Elevation at 0800.

9-965. Plateau Creek near Collbran, Colo.

Location--Lat 39°15'00", long 107°50'25", in NE¼ sec. 26, T.9 S., R.94 W., on right bank 10 ft downstream from private bridge, ½ miles downstream from Leon Creek, and 6 miles east of Collbran.

Drainage area--88 sq mi, approximately.

Records available--September 1921 to September 1962. Prior to October 1933 monthly discharge only, published in WSP 1313.

Gage--Water-stage recorder. Altitude of gage is 7,130 ft (from topographic map).

Extremes--Maximum discharge during year, 758 cfs June 12 (gage height, 4.20 ft); minimum daily, 6.5 cfs Dec. 12.

1921-62: Maximum discharge, 3,080 cfs May 27, 1922 (gage height, 6.90 ft), from rating curve extended above 1,300 cfs; minimum daily, 1.9 cfs Feb. 26, 1961 (result of storage in Vega Reservoir); minimum daily prior to construction of Vega Reservoir, 3 cfs Sept. 21, 1926.

Remarks--Records good except those for periods of ice effect or no gage-height record, which are poor. Natural flow of stream affected by storage in Vega Reservoir since 1959, transbasin diversion to Surface Creek in Gunnison River basin, diversions above station for irrigation of about 800 acres above and about 8,400 acres below, and about 550 acres in Buzzard Creek drainage.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Apr. 21 to May 9)

0.9	9.5	2.5	145
1.2	22	3.0	250
1.5	42	3.5	410
2.0	85	4.0	650

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	51	27	13	9.5	10	9	24	95	262	310	33	20
2	41	25	12	9.5	10	10	24	121	361	256	32	19
3	40	24	11	* 9.5	9.5	11	26	99	478	220	29	20
4	41	26	11	10	9.5	12	25	56	510	198	32	24
5	44	26	10	10	9.5	12	24	84	520	164	29	* 24
6	44	24	10	9.5	9.5	12	25	118	565	151	* 28	25
7	42	24	10	9.5	9.5	12	25	202	585	144	25	27
8	41	24	9.5	10	9.5	13	24	215	530	128	24	25
9	59	24	8.5	9	10	* 13	24	130	545	116	23	24
10	49	23	7.5	8	11	14	24	202	545	95	27	24
11	47	22	7	7.5	13	14	24	220	596	80	26	31
12	49	20	6.5	8	15	14	26	274	* 626	70	26	30
13	54	19	8	8.5	12	14	29	225	580	60	27	19
14	63	19	9	9	11	15	38	116	565	50	28	18
15	72	19	10	10	9	16	52	40	510	40	29	18
16	72	* 20	10	10	* 8	17	66	51	410	34	29	18
17	70	14	9.5	10	8	18	82	53	307	* 30	* 32	18
18	65	14	9.5	9.5	9	18	100	51	307	29	33	18
19	* 51	13	9	9.5	9	18	* 129	103	325	41	34	18
20	44	13	9	9.5	8	18	160	100	* 350	40	39	20
21	39	13	9.5	10	8.5	18	170	71	368	32	32	26
22	41	13	9	10	9	18	170	* 65	358	29	28	32
23	37	13	8.5	10	9	18	188	139	319	28	26	23
24	34	12	8.5	9.5	9.5	18	238	295	307	28	20	20
25	29	12	9	9	9	19	301	307	301	28	18	26
26	27	12	9.5	9	9	20	295	301	298	36	17	19
27	29	12	9.5	9.5	7	23	* 218	316	274	38	18	17
28	27	12	10	10	7.5	24	182	248	259	37	20	24
29	27	12	10	10	-	22	192	210	256	36	20	30
30	28	13	10	10	-----	22	121	205	372	29	20	23
31	28	-----	9.5	10	-----	23	-----	218	-----	24	20	-----
Total	1,385	544	293.0	293.0	268.5	505	3,026	4,980	12,589	2,601	824	680
Mean	44.7	18.1	9.45	9.45	9.59	16.3	101	161	420	83.9	26.6	22.7
Ac-ft	2,750	1,080	581	581	533	1,000	6,000	9,880	24,970	5,160	1,630	1,350

Calendar year 1961: Max 440 Min 1.9 Mean 29.9 Ac-ft 21,670  
Water year 1961-62: Max 626 Min 6.5 Mean 76.7 Ac-ft 55,520

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 3-9, 13-15, 22, Dec. 1 to Mar. 16. No gage-height record Dec. 28 to Jan. 3, Jan. 9 to Feb. 16, July 10-17.

## PLATEAU CREEK BASIN

9-968, Buzzard Creek below Owens Creek, near Heiberger, Colo.

Location.--Lat 39°14', long 107°38', in N½ sec.35, T.9 S., R.92 W., on left bank 500 ft downstream from Owens Creek, 2½ miles upstream from Porter Creek, 4½ miles southeast of Hightower ranger station, and 8½ miles southeast of Heiberger.

Drainage area.--52.2 sq mi.

Records available.--October 1955 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 8,215 ft (from topographic map).

Average discharge.--7 years, 26.2 cfs (18,970 acre-ft per year).

Extremes.--Maximum discharge during year, 572 cfs May 11 (gage height, 5.43 ft); no flow for many days.  
1955-62: Maximum discharge, 636 cfs June 4, 1957 (gage height, 5.82 ft); no flow at times 1956-62.

Remarks.--Records good except those for periods of ice effect or indefinite stage-discharge relation, which are poor. Natural flow of stream affected by diversions above station from Owens Creek to West Divide Creek basin for irrigation.

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

Apr. 15 to Sept. 19

1.5	0	2.7	48
1.6	1.0	3.0	77
1.7	2.2	3.5	152
1.9	5.5	4.0	250
2.1	11	5.0	465
2.4	26		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9.8	6.5			3.8	3.8	28	170	161	63	1.4	0
2	8.2	5			3.8	4.0	36	172	184	51	1.1	0
3	7.5	4.6			3.8	4.0	40	196	206	44	.5	0
4	7.2	5			3.8	4.0	34	252	224	37	2.2	0
5	7.2	5.5			3.8	3.8	30	312	214	30	2.1	0
6	7.8	5.5			3.8	3.8	28	340	206	25	1.4	*0
7	7.8	6			3.8	3.8	30	362	188	24	.6	0
8	8.0	6			4.0	3.6	34	364	*163	21	*2	0
9	15	6			4.2	3.6	40	420	154	18	0	.4
10	11	6			4.6	3.6	44	420	157	13	0	.5
11	8.5	5.5			5.5	3.8	46	440	170	10	0	1
12	8.2	5			6	3.6	50	435	180	9.2	0	0
13	7.8	4.6			5	3.6	60	364	170	9.5	0	0
14	7.8	3.6			4.2	3.4	90	280	159	9.8	0	0
15	8.0	3.8			4.0	3.6	120	220	140	7.2	0	0
16	7.8	4.0	3.8	3.6	4.0	3.8	136	194	110	6.0	0	0
17	8.0	*4.0			4.2	4.0	150	*170	83	5.3	0	0
18	7.2	4.2			4.2	4.0	180	154	77	4.8	0	0
19	*6.8	4.4			4.0	3.8	200	176	80	*5.0	.6	0
20	5.9	4.4			4.0	4.0	232	220	83	5.8	.8	2
21	5.2	4.2			4.2	4.4	224	204	95	4.1	1.0	1
22	7.0	4.0			4.2	4.4	190	165	90	3.3	1.0	2.0
23	5.7	4.2			4.2	4.2	214	150	80	2.8	2.8	1.0
24	5.2	4.4			4.4	4.4	248	174	77	3.0	3.3	.8
25	4.5	4.6			4.4	5.5	264	190	77	3.3	2.2	.8
26	4.0	4.8			4.0	*7	*258	184	*75	24	1.4	.7
27	3.8	4.6			3.6	12	238	200	72	5.3	.8	.8
28	3.6	4.4			3.0	20	264	161	67	3.0	.5	.9
29	4.4	4.2			-	30	242	146	66	2.2	.3	.8
30	5.7	4.0			-----	26	180	137	80	1.7	0	.7
31	6.3	-----			-----	24	-----	140	-----	1.7	0	-----
Total	220.9	143.0	117.8	111.6	116.5	217.5	3,930	7,512	3,888	453.0	24.6	9.8
Mean	7.13	4.77	3.8	3.6	4.16	7.02	131	242	130	14.6	0.79	0.33
Ac-Ft	438	284	234	221	231	431	7,800	14,900	7,710	899	48	13

Calendar year 1961: Max 152 Min 0 Mean 15.1 Ac-ft 10,900  
Water year 1961-62: Max 440 Min 0 Mean 45.9 Ac-ft 33,220

Peak discharge (base, 200 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-28	2100	4.55	360	6-4	2000	4.03	258
5-11	2100	5.43	572				

\* Discharge measurement or observation of no flow made on this day.

Note.--Stage-discharge relation affected by ice Oct. 27-29, Nov. 2 to Apr. 14 (no gage-height record Nov. 13 to Mar. 26). Stage-discharge relation indefinite Sept. 20-30.

# PLATEAU CREEK BASIN

209

9-975. Buzzard Creek near Collbran, Colo.

Location.--Lat 39°16'20", long 107°51'00", in sec. 14, T.9 S., R.94 W., on right bank 150 ft upstream from county bridge, half a mile upstream from Brush Creek, and 7 miles east of Collbran.

Drainage area.--139 sq mi.

Records available.--September 1921 to September 1962. Prior to October 1933 monthly discharge only, published in WSP 1313.

Gage.--Water-stage recorder. Altitude of gage is 6,955 ft (from topographic map).

Average discharge.--41 years, 48.2 cfs (34,900 acre-ft per year).

Extremes.--Maximum discharge during year, 902 cfs May 12 (gage height, 5.79 ft); minimum daily, 0.4 cfs Aug. 15, 16, 23. 1921-62: Maximum discharge, 1,630 cfs May 14, 1941 (gage height, 7.80 ft), from rating curve extended above 900 cfs; no flow for many days in 1959-60.

Remarks.--Records fair except those for periods of ice effect or indefinite stage-discharge relation, which are poor. Diversions for irrigation of about 1,300 acres above station. Erie Canal imports water from Plateau Creek for irrigation of about 280 acres above station.

Rating table, 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 Apr. 25 to May 1, Sept. 5-14, 20-30)

0.8	0	2.0	56
.9	1.0	2.5	109
1.0	2.6	3.0	184
1.1	4.5	4.0	400
1.4	14	5.2	740
1.7	30		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	13	8	6	4.4	4.4	9	44	274	166	85	6.0	2.0
2	10	7	6	4.4	4.4	10	67	276	186	72	5.4	3.2
3	11	6.5	5.5	* 4.4	4.4	10	86	284	209	62	5.1	2.8
4	13	5.5	4.4	4.4	4.4	10	95	380	218	55	4.8	3.4
5	12	6.0	4.0	4.6	4.4	9.7	68	455	218	46	4.1	* 2.1
6	12	6.5	4.6	4.6	4.6	9.7	64	599	207	37	* 3.2	1.3
7	13	7	4.8	4.4	4.6	9.7	74	617	193	34	2.4	2.3
8	14	7	4.8	4.4	4.8	* 9.4	68	674	168	29	2.6	1.6
9	28	7	4.8	4.0	5.5	8.8	58	689	160	28	2.0	1.5
10	32	7	4.4	3.6	6.5	8.5	77	701	153	22	1.5	1.6
11	20	7	3.6	3.4	9	7.5	80	698	179	18	.9	1.5
12	15	6.5	3.6	3.6	12	7	99	713	* 177	15	.8	1.5
13	15	5.5	3.6	3.8	30	7.5	130	626	186	15	.6	1.2
14	13	5	4.0	4.2	24	7.5	171	422	166	17	.5	1.2
15	13	5.5	4.6	4.4	20	7.5	242	310	156	16	.4	1.2
16	14	* 6.5	4.6	4.4	* 18	7.8	268	264	134	12	.4	1.2
17	14	7	4.6	4.4	18	8.1	310	238	110	* 10	.5	1.3
18	13	6	4.2	4.2	16	8.5	358	206	99	9.7	.6	1.3
19	10	5	4.0	4.2	12	8.8	* 402	193	99	8.8	.9	1.3
20	* 9.4	5	4.2	4.2	10	9.1	480	256	* 98	8.1	.8	1.3
21	8.5	5	4.6	4.4	11	9.7	432	250	107	8.5	.8	2.0
22	7.8	4.5	4.6	4.4	11	9.7	300	* 202	111	7.5	.5	2.1
23	9.7	5	4.4	4.4	10	9.4	335	166	101	6.6	.4	1.6
24	8.8	5	4.2	4.0	10	11	412	188	94	5.4	.7	1.8
25	7.5	5	4.2	3.6	9.7	11	465	191	91	5.7	.8	2.3
26	6.6	6	4.2	3.8	10	13	* 490	188	89	14	.9	1.8
27	6.5	7	4.4	4.2	9	19	458	222	85	17	.9	2.0
28	6	6.5	4.6	4.4	8	40	435	184	80	10	1.2	2.1
29	6	6	4.6	4.6	-	60	492	166	79	7.2	1.3	2.1
30	7	6	4.6	4.6	-----	51	335	153	102	6.3	1.5	2.1
31	8	-----	4.4	4.6	-----	44	-----	147	-----	5.7	1.5	-----
Total	376.8	182.5	139.1	131.0	295.7	451.9	7,385	10,932	4,221	6,935	54.0	54.7
Mean	12.2	6.08	4.49	4.23	10.6	14.6	246	353	141	22.4	1.74	1.82
Ac-ft	747	362	276	260	587	896	14,650	21,680	8,370	1,380	107	108

Calendar year 1961: Max 226 Min 0.4 Mean 21.5 Ac-ft 15,560  
Water year 1961-62: Max 713 Min 0.4 Mean 68.3 Ac-ft 49,420

Peak discharge (base, 350 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-20	2230	5.18	731	5-12	0230	5.79	902
4-29	0200	4.99	647				

\* Discharge measurement made on this day.

Note.--Stage-discharge relation indefinite Oct. 1-19. Stage-discharge relation affected by ice Oct. 27 to Feb. 24, Feb. 27 to Mar. 1, Mar. 11-14 (no gage-height record Dec. 31 to Jan. 3).



## PLATEAU CREEK BASIN

9-976. Brush Creek near Collbran, Colo.

Location.--Lat 39°19'30", long 107°50'30", in W½ sec.36, T.8 S., R.94 W., on right bank at site of former highway bridge, 1 mile downstream from West Brush Creek, 4 miles upstream from mouth, and 8½ miles northeast of Collbran.

Drainage area.--10.6 sq mi.

Records available.--October 1955 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 8,183 ft (from topographic map).

Average discharge.--7 years, 7.41 cfs (5,360 acre-ft per year).

Extremes.--Maximum discharge during year, 117 cfs May 6 (gage height, 3.58 ft); minimum daily determined, 0.6 cfs Sept. 30, 1955-62: Maximum discharge, 317 cfs June 7, 1957 (gage height, 4.35 ft); minimum daily determined, 0.1 cfs Apr. 1, 2, 1961.

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)  
(Shifting-control method used May 11-29)

1.9	0.2
2.0	.9
2.2	3.3
2.4	7.0
2.7	21
3.0	38
3.3	70
3.6	117

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.8	2.3	1.4				4.4	34	28	9.8	2.1	1.2
2	2.6	2.2	1.4				5	32	34	8.6	2.1	1.1
3	2.4	1.8	1.4	(*)			6	34	40	7.8	2.5	1.2
4	2.4	1.4	1.4				6.5	44	43	7.4	2.6	1.1
5	2.3	1.6	1.4				6	67	45	6.6	2.6	*12
6							6	95	39	6.4	*2.3	1.1
7	2.1	2.0					5.5	103	35	6.0	2.1	1.2
8	2.0	2.2				2.5	5.5	90	31	5.8	1.9	1.2
9	2.9	2.2					5.5	80	29	5.4	2.1	1.1
10	2.1	2.2					5.5	86	28	5.2	1.9	1.1
11	2.1	2.0					6	81	28	4.8	1.8	1.1
12	2.0	1.6					7	89	*30	4.8	1.9	1.1
13	1.9	1.4					10	64	30	4.8	1.8	1.1
14	2.0	1.2					13	34	27	4.3	1.6	1.0
15	2.0	1.6					17	26	20	4.2	1.7	.9
16	1.9	*1.9		1.0	1.8		*25	28	15	4.0	1.6	.9
17	1.9	1.9					30	28	14	*3.6	1.6	.9
18	2.0	1.9	1.2				34	30	14	3.5	1.7	.9
19	1.8	1.6					53	29	14	3.3	1.8	.9
20	*2.0	1.6					41	34	*16	3.0	1.8	1.0
21	2.0	1.6					30	37	16	2.9	2.1	.8
22	2.0	1.4					26	*35	16	2.8	2.0	1.9
23	1.9	1.6				3.5	32	30	16	2.8	1.4	.8
24	2.0	1.7					47	31	14	2.8	1.4	.8
25	2.1	1.6					69	34	12	2.9	1.4	.8
26	2.1	1.6					*66	34	11	2.9	1.3	.7
27	2.4	1.6					48	38	10	2.6	1.2	.8
28	2.1	1.6					49	34	9.8	2.5	1.3	.8
29	2.2	1.4					45	30	11	2.4	1.3	.7
30	2.3	1.4					39	26	12	2.4	1.3	.6
31	2.3	-----					-----	26	-----	2.1	1.2	-----
Total	66.6	52.3	38.2	31.0	50.4	93.5	742.9	1,463	687.8	138.4	55.4	30.0
Mean	2.15	1.74	1.23	1.0	1.8	3.02	24.8	47.2	22.9	4.46	1.79	1.00
Ac-ft	132	104	76	61	100	185	1,470	2,900	1,360	275	110	60

Calendar year 1961: Max 43 Min - Mean 4.25 Ac-ft 3,070  
Water year 1961-62: Max 103 Min - Mean 9.45 Ac-ft 6,830

Peak discharge (base, 50 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-19	2000	3.35	78	5-6	1900	3.58	117
4-25	1700	3.38	84				

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 29, Nov. 2-15, 19-23, Dec. 6-10. No gage-height record Dec. 11 to Apr. 16 (stage-discharge relation affected by ice most of period), May 25 to June 3.

## PLATEAU CREEK BASIN

211

9-1050. Plateau Creek near Cameo, Colo.

Location.--Lat 39°11'00", long 108°16'10", in NW¼SW¼ sec.18, T.10 S., R.97 W., on left bank 300 ft from State Highway 65, 1.1 miles upstream from mouth, and 4 miles northeast of Cameo.

Drainage area.--604 sq mi.

Records available.--October 1935 to September 1962. Prior to May 1936 monthly discharge only, published in WSP 1313.

Gage.--Water-stage recorder. Altitude of gage is 4,836 ft (from topographic map). Prior to Aug. 27, 1936, staff gage at same site and datum.

Average discharge.--27 years, 192 cfs (139,000 acre-ft per year).

Extremes.--Maximum discharge during year, 1,510 cfs May 12 (gage height, 5.24 ft); minimum daily, 50 cfs Dec. 12.

1935-62: Maximum discharge, 3,920 cfs May 27, 1942 (gage height, 7.73 ft), from rating curve extended above 3,000 cfs; minimum daily, 13 cfs July 31, 1959.

Remarks.--Records good except those for period of ice effect or no gage-height record, which are fair. Natural flow of stream affected by storage reservoirs, diversions for irrigation of about 25,000 acres, and return flow from irrigated areas.

Rating table, except period of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Apr. 27 to May 1, July 7 to Aug. 29, Sept. 28-30)

1.7	34	3.0	385
1.9	63	3.5	585
2.1	104	4.0	845
2.5	215	4.8	1,290

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	191	158	109	70	70	112	137	479	471	475	71	61
2	155	158	106	65	70	102	150	495	600	413	71	61
3	142	116	109	60	65	102	188	483	812	364	67	61
4	134	129	104	* 65	65	97	218	515	916	329	72	65
5	129	124	91	70	65	95	182	650	972	294	71	* 67
6	126	122	90	75	70	104	170	900	1,020	252	65	72
7	124	124	85	75	80	116	176	1,030	938	236	* 63	89
8	122	129	85	70	100	* 109	188	1,140	840	215	63	91
9	349	132	85	65	150	100	164	1,110	862	182	63	80
10	200	124	85	60	230	100	197	1,140	900	155	61	76
11	173	124	80	60	340	91	182	1,130	960	109	61	72
12	170	137	50	60	236	80	197	1,250	* 960	100	61	72
13	167	119	60	65	209	86	239	1,140	950	90	60	78
14	179	109	75	65	147	72	322	752	872	85	61	71
15	194	114	90	65	126	78	406	* 515	779	80	60	69
16	203	* 126	110	60	* 145	82	527	416	660	75	57	69
17	203	124	100	60	147	89	565	406	515	* 70	53	69
18	194	114	95	60	112	91	650	340	455	67	55	67
19	179	100	90	65	97	100	* 730	315	479	67	58	65
20	* 161	104	90	70	116	106	867	434	495	67	61	71
21	152	114	95	70	106	106	916	410	527	67	65	91
22	145	93	95	65	102	102	630	350	535	71	67	158
23	147	109	95	65	106	100	675	322	471	67	65	100
24	137	100	85	60	97	93	796	491	463	71	63	97
25	126	106	70	55	104	97	938	550	434	71	61	95
26	122	109	65	60	100	122	944	515	427	93	61	102
27	124	106	70	65	91	145	* 823	620	402	100	61	104
28	134	104	75	70	84	176	720	519	* 385	80	61	134
29	134	97	70	70	-	167	878	471	392	80	60	147
30	145	106	70	70	-----	145	650	455	535	78	57	134
31	145	-----	75	70	-----	124	-----	438	-----	74	58	-----
Total	5,006	3,531	2,654	2,025	3,430	3,289	14,425	19,781	20,027	4,577	1,933	2,588
Mean	161	118	85.6	65.3	122	106	481	638	668	148	62.4	86.3
Ac-ft	9,930	7,000	5,260	4,020	6,800	6,520	28,610	39,240	39,720	9,080	3,830	5,130

Calendar year 1961: Max 650 Min 19 Mean 103 Ac-ft 74,780  
Water year 1961-62: Max 1,250 Min 50 Mean 228 Ac-ft 165,100

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 6 to Feb. 9. No gage-height record July 12-17.

## GUNNISON RIVER BASIN

9-1085. Taylor Park Reservoir at Taylor Park, Colo.

Location.--Lat 38°49'05", long 106°36'15", in sec.24, T.14 S., R.83 W., at dam on Taylor River just downstream from Taylor Park, 17 miles northeast of Almont.

Records available.--October 1937 to September 1962. Prior to October 1938, published in WSP 1313.

Gage.--Staff gage read once or twice daily. Datum of gage is 9,187 ft above mean sea level (Bureau of Reclamation bench mark); gage readings have been reduced to elevations above mean sea level.

Extremes.--Maximum contents observed during year, 109,700 acre-ft June 23 to July 5 (elevation, 9,331.65 ft); minimum, 48,820 acre-ft Oct. 1 (elevation, 9,294.95 ft).

1937-62: Maximum contents observed, 111,000 acre-ft July 1, 1957 (elevation, 9,332.35 ft); minimum (after first filling), 8,780 acre-ft Oct. 19, 20, 1956 (elevation, 9,240.70 ft).

Remarks.--Reservoir is formed by an earth- and rock-fill dam. Dam completed by Bureau of Reclamation in September 1937. Capacity of reservoir, 106,200 acre-ft between elevations 9,187 (bottom of outlet gates) and 9,330 ft (crest of spillway). No dead storage. Water used for irrigation in Uncompahgre Valley. No other reservoirs of any consequence in Gunnison River basin. Figures given herein are usable contents.

Cooperation.--Records furnished by Uncompahgre Valley Water Users Association.

Month-end elevation and contents, water year October 1961 to September 1962

Date	Elevation (feet)†	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	9,294.80	48,640	-
Oct. 31.....	9,303.10	59,180	+10,540
Nov. 30.....	9,307.20	65,310	+6,130
Dec. 31.....	9,310.30	70,390	+5,080
Calendar year 1961.....	-	-	+44,450
Jan. 31.....	9,312.90	74,740	+4,350
Feb. 28.....	9,315.20	78,640	+3,900
Mar. 31.....	9,317.10	81,900	+3,260
Apr. 30.....	9,318.00	83,450	+1,550
May 31.....	9,322.10	90,680	+7,230
June 30.....	9,331.65	109,700	+19,020
July 31.....	9,330.90	108,100	-1,600
Aug. 31.....	9,321.60	89,790	-18,310
Sept. 30.....	9,302.30	58,110	-31,680
Water year 1961-62.....	-	-	+9,470

† Elevation at about 0800.

9-1090. Taylor River below Taylor Park Reservoir, Colo.

Location.--Lat 38°48'50", long 106°36'40", in sec.24, T.14 S., R.83 W., on left bank 500 ft downstream from Taylor Park Reservoir Dam, 3 1/4 miles upstream from Lottis Creek, and 16 miles northeast of Almont.

Drainage area.--245 sq mi.

Records available.--June 1929 to September 1934 (monthly discharge only, published in WSP 1313), October 1938 to September 1962.

Gage.--Water-stage recorder. Datum of gage is 9,169.67 ft above mean sea level (Bureau of Reclamation bench mark). Prior to Nov. 11, 1952, at site 1,000 ft downstream at datum 1.00 ft lower. Oct. 15, 1946, to May 4, 1952, supplementary chain and staff gages just downstream from reservoir outlet at different sites and datums used during winter months.

Average discharge.--29 years, 187 cfs (135,400 acre-ft per year).

Extremes.--Maximum discharge during year, 1,150 cfs June 22 (gage height, 5.96 ft); minimum daily, 7.3 cfs Oct. 3, 4.

1938-62: Maximum discharge, 2,270 cfs July 1, 1957 (gage height, 7.56 ft); no flow May 1 to July 3, 1940, May 7-22, 1942, May 5-21, 1943.

Remarks.--Records good. Flow regulated by Taylor Park Reservoir (see preceding page) since 1937. One small diversion from Willow Creek above reservoir.

Rating table (gage height, in feet, and discharge,  
in cubic feet per second)  
(Shifting-control method used June 11-30)

2.2	7.0	3.0	61	5.0	640
2.4	13	3.5	137	6.0	1,100
2.6	23	4.0	265	6.5	1,430

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	14	10	16	17	17	18	22	604	108	995	250	824
2	13	10	16	17	17	18	22	*608	108	941	232	833
3	7.3	10	16	17	17	18	22	612	109	869	229	824
4	7.3	20	16	17	17	18	21	608	109	824	253	820
5	7.6	14	16	17	17	18	18	604	* 114	770	247	828
6	7.6	16	16	17	17	18	18	466	116	725	223	896
7	7.6	* 21	16	17	17	18	18	517	117	684	205	833
8	7.9	10	16	17	18	18	18	628	121	660	229	824
9	8.2	16	16	17	18	18	18	694	121	640	402	824
10	* 8.2	21	16	17	18	18	18	648	123	* 604	391	838
11	8.8	21	16	17	21	18	18	900	124	572	412	892
12	11	21	16	17	20	18	* 27	905	318	544	422	838
13	11	22	17	17	20	18	74	910	698	552	426	815
14	12	22	17	17	20	18	90	923	975	536	440	766
15	12	22	17	17	18	18	96	* 910	1,090	492	556	738
16	12	16	17	17	18	18	124	887	1,040	456	612	738
17	12	16	17	17	18	18	171	887	914	419	608	676
18	12	16	17	17	18	18	402	725	860	398	608	656
19	13	16	17	17	18	18	648	664	* 914	391	604	656
20	14	16	17	17	18	18	648	664	1,010	377	604	656
21	15	16	17	17	18	18	550	664	1,110	356	604	592
22	16	16	17	17	18	18	238	551	1,120	335	512	488
23	12	16	17	17	18	18	96	387	1,080	338	460	448
24	12	16	17	17	18	18	180	318	1,040	370	460	388
25	16	16	17	17	18	18	351	159	1,000	374	528	276
26	14	16	17	17	18	18	588	94	980	380	616	171
27	12	16	17	17	18	18	716	96	985	352	648	78
28	13	16	17	17	18	18	707	100	985	321	652	25
29	14	16	17	17	-	18	716	105	946	293	* 712	19
30	14	16	17	17	-----	18	632	106	955	268	734	20
31	9.7	-----	17	17	-----	18	-----	108	-----	* 259	752	-----
Total	354.2	496	515	527	506	558	7,277	17,052	19,290	16,095	14,631	18,280
Mean	11.4	16.5	16.6	17.0	18.1	18.0	243	550	643	519	472	609
Ac-ft	703	984	1,020	1,050	1,000	1,110	14,430	33,820	38,260	31,920	29,020	36,260

Calendar year 1961: Max 698 Min 7.3 Mean 107 Ac-ft 77,830  
 Water year 1961-62: Max 1,120 Min 7.3 Mean 262 Ac-ft 189,600

\* Discharge measurement made on this day.

Note.--Discharge computed from once-daily chain-gage readings Nov. 7 to Apr. 12.



## GUNNISON RIVER BASIN

9-1100. Taylor River at Almont, Colo.

Location.--Lat 38°40', long 106°51', in sec.22, T.51 N., R.1 E., on left bank at Almont, 15 ft downstream from bridge on State Highway 306 and 800 ft upstream from confluence with East River.

Drainage area.--440 sq mi, approximately.

Records available.--July 1910 to September 1962. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 8,010.76 ft above mean sea level, datum of 1929. Prior to Apr. 16, 1922, staff gage at same site and datum.

Average discharge.--52 years, 344 cfs (249,000 acre-ft per year).

Extremes.--Maximum discharge during year, 1,820 cfs May 13 (gage height, 3.84 ft); minimum daily, 45 cfs Dec. 12.  
1910-62: Maximum discharge observed, 3,760 cfs June 9, 1920 (gage height, 5.0 ft), from rating curve extended above 2,300 cfs; maximum gage height, 5.32 ft July 1, 1957; minimum discharge observed before storage began in Taylor Park Reservoir, 50 cfs for several days in August 1913 (gage height, 1.2 ft); minimum daily, 24 cfs Mar. 12, 1938.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Flow regulated since September 1937 by Taylor Park Reservoir (see elsewhere in this report), 24 miles above station. Diversions for irrigation of about 360 acres above station.

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

1.0	73	2.8	830
1.3	135	3.5	1,440
1.6	225	3.8	1,770
2.0	385		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	112	100	70	60	70	55	90	908	524	1,420	390	948
2	106	96	75	60	75	70	90	*900	529	1,390	367	932
3	106	68	75	60	80	80	95	940	606	1,300	349	924
4	100	96	75	65	75	75	100	1,010	668	1,220	367	924
5	98	78	70	70	75	70	105	1,070	*686	1,130	367	940
6	96	80	70	75	80	70	105	1,090	704	1,050	340	1,020
7	98	*96	65	80	85	80	100	1,060	722	1,020	320	980
8	98	87	60	90	85	75	90	1,220	680	964	308	948
9	132	87	60	70	90	75	85	1,330	692	932	455	932
10	*140	88	60	50	100	80	85	1,410	734	*886	485	948
11	118	88	55	50	90	80	*85	1,680	764	824	502	1,010
12	118	92	45	65	90	80	88	1,730	879	788	534	980
13	110	80	50	70	*85	75	145	1,740	1,320	800	534	948
14	110	70	60	75	80	75	194	1,660	1,670	782	529	908
15	110	75	*75	75	85	*80	225	*1,600	1,760	722	662	851
16	110	80	75	75	90	80	284	1,570	1,650	668	746	851
17	110	80	70	*70	90	80	362	1,530	1,480	628	746	806
18	110	80	75	50	85	80	612	1,330	1,400	584	746	770
19	108	75	70	65	75	75	924	1,220	*1,460	578	746	770
20	108	75	75	80	75	70	1,030	1,260	1,600	568	746	776
21	106	75	75	75	75	70	932	1,270	1,690	546	746	734
22	120	70	75	65	75	70	644	1,100	1,720	512	656	622
23	110	75	70	55	70	70	445	865	1,640	502	562	600
24	106	75	65	55	75	70	573	782	1,580	540	556	490
25	108	75	65	60	80	70	617	698	1,540	546	606	385
26	110	85	70	60	70	75	948	622	1,510	551	734	284
27	108	75	70	60	70	80	1,130	680	1,500	518	776	208
28	106	70	65	60	50	90	1,170	639	1,460	475	776	138
29	102	70	75	65	-	95	1,190	595	1,440	445	*818	108
30	106	70	70	65	-----	95	980	534	1,430	420	844	102
31	106	-----	65	70	-----	90	-----	540	-----	*400	865	-----
Total	3,386	2,411	2,095	2,045	2,235	2,390	13,523	34,583	36,038	23,709	19,188	21,837
Mean	109	80.4	67.6	66.0	79.8	77.1	451	1,116	1,201	765	587	728
Ac-ft	6,720	4,780	4,160	4,060	4,430	4,740	26,820	68,590	71,480	47,030	36,080	43,310

Calendar year 1961: Max 806 Min 45 Mean 200 Ac-ft 144,700

Water year 1961-62: Max 1,760 Min 45 Mean 445 Ac-ft 322,200

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 14-19. No gage-height record Nov. 20 to Apr. 11 (stage-discharge relation affected by ice most of period).

9-1125. East River at Almont, Colo.

Location.--Lat 38°40', long 106°51', in sec.22, T.51 N., R.1 E., on left bank at Almont, 200 ft upstream from bridge on State Highway 135 and 400 ft upstream from confluence with Taylor River.

Drainage area.--295 sq mi.

Records available.--April to October 1905, July 1910 to September 1922, October 1934 to September 1962. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 8,006.29 ft above mean sea level, datum of 1929. Apr. 16 to Sept. 30, 1905, and July 27, 1910, to Apr. 30, 1922, staff gages at bridge 200 ft downstream at different datums. Oct. 1, 1934, to Sept. 22, 1954, water-stage recorder at present site at datum 2.00 ft higher.

Average discharge.--40 years, 347 cfs (251,200 acre-ft per year).

Extremes.--Maximum discharge during year, 2,590 cfs May 12 (gage height, 6.01 ft); minimum daily, 60 cfs Jan. 10.

1905, 1910-22, 1934-62: Maximum discharge observed, 6,500 cfs June 15, 1921 (gage height, 6.6 ft, site and datum then in use), from rating curve extended above 3,000 cfs; minimum daily, 19 cfs Aug. 13, 1913.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 7,400 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 Oct. 4-16, Apr. 24 to May 8, May 15, 16)

Oct. 1 to July 9

July 10 to Sept. 30

1.9	60	3.5	570	2.1	55	3.5	550
2.2	125	4.0	860	2.3	110	4.0	860
3.0	375	6.0	2,610	3.0	340	4.5	1,260

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	216	204	135	95	80	75	88	916	876	1,740	336	134
2	207	198	125	85	85	80	90	*900	1,030	1,600	347	131
3	204	180	125	85	85	85	92	1,020	1,250	1,440	326	128
4	222	198	122	85	90	80	96	1,270	1,400	1,360	336	113
5	231	174	108	90	85	75	100	1,440	*1,490	1,240	316	75
6	237	171	122	95	85	85	102	1,540	1,560	1,120	298	70
7	237	174	120	100	85	90	108	1,870	1,590	1,040	274	70
8	243	*168	122	110	90	85	102	1,910	1,430	1,070	260	68
9	336	177	125	85	100	85	105	2,160	1,400	996	256	68
10	*330	165	125	60	110	90	108	2,340	1,580	*916	260	70
11	291	165	120	65	100	80	*105	2,270	1,770	832	249	78
12	274	168	100	70	110	80	110	2,400	1,860	818	232	75
13	264	150	80	80	*110	75	120	2,340	2,020	804	228	78
14	258	145	95	90	100	80	150	2,020	2,110	666	214	78
15	267	159	*120	80	90	*86	204	*1,530	1,980	590	207	75
16	264	165	140	80	92	82	264	1,270	1,650	540	200	78
17	255	156	120	*75	90	86	333	1,070	1,360	500	200	80
18	252	145	120	80	86	84	430	932	1,310	468	204	75
19	243	138	120	90	90	82	550	876	*1,560	460	218	72
20	249	138	130	90	90	82	670	1,040	1,850	423	218	75
21	243	150	120	90	88	82	736	1,120	2,030	407	204	86
22	258	132	110	85	88	82	748	916	2,030	391	207	89
23	246	148	100	75	90	82	818	784	1,820	383	197	86
24	231	130	100	75	88	80	1,000	790	1,830	399	185	83
25	219	132	100	75	88	78	1,150	884	1,800	407	173	86
26	216	140	110	80	86	78	1,170	892	1,840	491	167	86
27	219	130	110	80	80	82	1,130	1,160	1,800	415	161	86
28	219	125	100	80	70	84	1,230	996	1,810	368	155	92
29	204	125	110	80	-	88	1,260	940	1,720	340	*143	95
30	210	150	110	80	-----	88	1,040	832	1,760	322	137	92
31	207	-----	100	80	-----	86	-----	839	-----	*312	134	-----
Total	7,552	4,700	3,544	2,570	2,531	2,557	14,209	41,267	49,516	22,858	7,042	2,572
Mean	244	157	114	82.9	90.4	82.5	474	1,331	1,651	737	227	85.7
Ac-ft	14,980	9,320	7,030	5,100	5,020	5,070	28,180	81,850	98,210	45,340	13,970	5,100

Calendar year 1961: Max 1,480 Min 40 Mean 237 Ac-ft 171,500  
 Water year 1961-62: Max 2,400 Min 60 Mean 441 Ac-ft 319,200

Peak discharge (base, 1,600 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-12	2330	6.01	2,590	6-22	0600	5.65	2,250
6-14	0530	5.61	2,210				

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 11 to Jan. 20, Feb. 27. No gage-height record Jan. 21 to Feb. 13, Feb. 28 to Mar. 13 (stage-discharge relation affected by ice during most of period).

## GUNNISON RIVER BASIN

9-1133, Ohio Creek at Baldwin, Colo.

Location.--Lat 38°45'50", long 107°02'55", in NW¼ sec.7, T.15 S., R.86 W., on left bank a quarter of a mile northwest of Baldwin and 0.6 mile downstream from Castle Creek.

Drainage area.--48 sq mi, approximately.

Records available.--October 1958 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 8,595 ft (from topographic map).

Extremes.--Maximum discharge during year, about 550 cfs May 9; maximum gage height, 3.77 ft May 12; minimum daily discharge determined, 8.7 cfs Sept. 5, 6.  
1958-62: Maximum discharge, about 550 cfs May 9, 1962; maximum gage height, 3.77 ft May 12, 1962; minimum daily discharge, 4.7 cfs Sept. 15, 1959.

Remarks.--Records good except those for periods of ice effect or indefinite stage-discharge relation, which are poor. Diversions above station for irrigation of 1,750 acres. Two diversions above station for irrigation below.

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

Oct. 1 to May 14

May 15 to Sept. 30

1.8	13	2.7	120	1.3	6.0	2.5	135
1.9	18	3.0	195	1.5	12	2.8	210
2.1	31	3.2	270	1.8	36	3.1	340
2.4	67			2.2	85		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	22	21					14	145	186	234	51	11
2	20	20					15	*152	207	204	46	10
3	19	17					16	177	228	183	51	10
4	19	18					17	216	228	178	58	10
5	19	17					17	254	*242	168	45	8.7
6	19	16					17	300	245	158	38	8.7
7	18	*17					17	380	238	158	36	11
8	19	18					17	410	217	151	34	11
9	62	18					17	460	217	145	38	11
10	*37	18					17	380	231	*131	37	10
11	30	18					*18	400	242	117	36	10
12	29	17					19	460	254	112	36	9.7
13	29	16					21	440	290	109	34	9.7
14	27	16					29	380	286	93	30	9.7
15	27	16				(*)	48	*300	263	84	27	10
16	27	17	12	11	12	14	61	254	238	75	24	10
17	25	16		(*)			81	217	201	64	25	10
18	23	16					118	204	201	60	28	9.7
19	22	15					142	214	*238	55	26	9.7
20	22	16					171	245	263	52	25	12
21	21	17					174	231	286	49	24	15
22	28	16					152	204	276	48	26	12
23	22	17					165	183	276	49	24	11
24	21	16					202	189	258	58	23	10
25	20	16					220	198	258	58	19	10
26	20	16					209	201	258	72	17	10
27	22	16					198	238	254	66	17	11
28	21	15					206	201	238	66	16	11
29	20	14					195	192	224	58	*14	11
30	22	13					158	175	234	53	13	10
31	22	-----					-----	175	-----	*52	11	-----
Total	754	499	372	341	336	434	2,751	8,175	7,277	3,160	929	312.9
Mean	24.3	16.6	12	11	12	14	91.7	264	243	102	30.0	10.4
Ac-ft	1,500	990	738	676	666	861	5,460	16,210	14,430	6,270	1,840	621

Calendar year 1961: Max 220 Min - Mean 36.7 Ac-ft 26,580  
Water year 1961-62: Max 460 Min - Mean 69.4 Ac-ft 50,260

Peak discharge (base, 300 cfs).--May 9 (time unknown) about 550 cfs; June 13 (2330) 360 cfs (3.14 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 3 to Apr. 2 (no gage-height record Nov. 3, Dec. 13 to Mar. 31). Stage-discharge relation indefinite May 6-14.

9-1135. Ohio Creek near Baldwin, Colo.

Location--Lat 38°42', long 107°00', in SW¼ sec.34, T.15 S., R.86 W., on right bank 600 ft upstream from bridge, 800 ft downstream from Mill Creek, ½ miles southeast of Baldwin, and 11 miles upstream from mouth.

Drainage area--124 sq mi.

Records available--April 1940 to September 1950, October 1958 to September 1962. Monthly discharge only for some periods, published in WSP 1313.

Gage--Water-stage recorder. Altitude of gage is 8,180 ft (by barometer). Prior to Apr. 3, 1942, staff gage at present site and datum. Apr. 3, 1942, to Sept. 30, 1950, water-stage recorder at present site and datum.

Average discharge--14 years, 92.4 cfs (66,890 acre-ft per year).

Extremes--Maximum discharge during year, 1,010 cfs May 9 (gage height, 3.84 ft); minimum daily, 14 cfs Sept. 18, 19. 1940-50, 1958-62: Maximum discharge, 1,260 cfs May 19, 1948 (gage height, 4.65 ft), from rating curve extended above 560 cfs; minimum daily, 6.9 cfs Sept. 12, 1960. Floods in May 1952 and June 1957 reached a stage of 5.5 ft, from floodmarks (discharge, about 1,500 cfs).

Remarks--Records good except those for periods of ice effect, which are poor. Diversions for irrigation of 3,850 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 Apr. 4 to May 6, Aug. 28 to Sept. 2)

0.4	14	1.4	131
.5	18	2.2	355
.8	39	3.0	650
1.1	75	3.5	850

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	33	36				18	28	305	281	366	67	18
2	31	30				19	28	* 327	308	320	61	17
3	30	24				20	30	394	338	290	67	17
4	31	26				20	37	484	344	275	78	18
5	31	24				19	38	558	* 348	248	61	18
6	32	20				19	43	626	372	242	55	18
7	32	* 20				20	43	706	352	242	51	25
8	33	20				22	37	746	341	222	48	24
9	32	20				22	36	806	341	203	51	20
10	* 59	22				22	37	818	366	* 180	53	19
11	48	22				20	* 43	766	376	163	50	17
12	48	22				22	54	826	380	158	49	16
13	45	20			(*)	22	74	790	428	158	50	16
14	45	18				24	113	642	436	127	46	16
15	45	19				* 26	156	* 502	397	113	43	16
16	44	22	18	16	18	26	196	436	362	102	41	15
17	41	20		(*)		26	257	383	308	90	42	15
18	37	19				28	358	366	305	90	47	14
19	36	18				28	404	338	* 358	87	47	14
20	34	18				28	506	372	394	72	46	17
21	33	20				26	464	376	432	67	42	25
22	40	18				26	411	334	436	62	44	21
23	34	20				26	432	284	428	62	43	17
24	32	20				26	509	290	414	80	39	16
25	30	22				26	523	299	404	89	35	16
26	30	22				26	481	299	400	121	33	16
27	35	22				28	446	383	386	94	30	18
28	34	20				36	446	327	366	82	30	18
29	30	19				32	453	305	344	74	* 26	19
30	35	18				30	344	272	372	72	22	17
31	37					28		275		* 71	18	
Total	1,187	641	558	496	504	761	7,027	14,635	11,127	4,622	1,415	533
Mean	38.3	21.4	18	16	18	24.5	234	472	371	149	45.6	17.8
Ac-ft	2,350	1,270	1,110	984	1,000	1,510	13,940	29,030	22,070	9,170	2,810	1,060

Calendar year 1961: Max 341 Min - Mean 58.3 Ac-ft 42,230  
Water year 1961-62: Max 826 Min 14 Mean 119 Ac-ft 86,300

Peak discharge (base, 450 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-20	1800	3.32	822	6-14	0100	2.55	470
5-9	2200	3.84	1,010	6-23	0130	2.53	470

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 3 to Apr. 3 (no gage-height record Dec. 9 to Mar. 15).



GUNNISON RIVER BASIN

9-1145. Gunnison River near Gunnison, Colo.

Location.--Lat 38°32'50", long 106°57'00", on line between secs. 34 and 35, T.50 N., R.1 W., on right bank 1,500 ft downstream from Antelope Creek and 1 mile west of Gunnison.

Drainage area.--1,010 sq mi, approximately.

Records available.--October 1910 to December 1928, October 1944 to September 1962. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Altitude of gage is 7,670 ft (from river-profile map). Nov. 25, 1910, to Dec. 31, 1928, staff or chain gages (supplementary water-stage recorder Apr. 28, 1916, to June 17, 1918) at bridge about 1 mile downstream at various datums.

Average discharge.--36 years, 796 cfs (576,300 acre-ft per year).

Extremes.--Maximum discharge during year, 5,440 cfs May 13 (gage height, 5.77 ft); minimum daily, 140 cfs Jan. 10, 11. 1910-28, 1944-62; Maximum discharge observed, 11,400 cfs June 13, 1918 (gage height, 4.05 ft, site and datum then in use), from rating curve extended above 5,000 cfs; minimum daily determined, 90 cfs Feb. 21, 1955.

Remarks.--Records good except those for periods of ice effect, which are poor. Flow regulated by Taylor Park Reservoir (see elsewhere in this report), 37 miles above station. Diversions for irrigation of about 22,000 acres above station.

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

1.5	230
2.0	440
3.0	1,170
4.0	2,220
5.0	3,790
6.0	6,100

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	340	355	240	180	200	160	240	*2,280	1,520	3,560	962	1,000
2	320	345	230	170	200	180	260	2,180	1,650	3,280	946	986
3	312	272	230	170	200	180	280	2,330	1,920	2,960	890	996
4	320	355	210	180	210	180	310	2,590	2,170	2,780	946	962
5	328	296	180	190	200	170	300	2,880	*2,300	2,570	922	898
6	316	* 292	200	200	190	180	310	3,100	2,460	2,380	850	962
7	304	296	210	220	200	190	310	3,290	2,520	2,230	786	954
8	304	304	210	240	200	200	300	3,530	2,350	2,170	728	914
9	*430	324	210	200	210	190	300	3,910	2,300	2,080	866	906
10	494	308	200	140	220	190	*310	4,250	2,520	1,920	890	914
11	405	304	190	140	220	200	336	4,570	2,780	* 1,780	898	986
12	390	290	170	160	* 210	190	405	4,950	2,980	1,720	866	978
13	375	260	150	180	220	170	548	5,000	3,620	1,750	834	914
14	370	240	160	230	220	*160	756	4,330	4,070	1,600	810	898
15	390	250	* 210	220	210	170	946	3,560	4,010	1,420	874	850
16	380	280	240	* 220	210	180	1,090	*3,130	3,600	1,300	954	850
17	375	280	230	200	200	190	1,270	2,840	3,030	1,230	970	842
18	365	250	230	180	200	180	1,610	2,550	2,820	1,150	978	770
19	360	220	220	200	190	180	2,240	2,340	*3,130	1,190	994	756
20	375	230	230	220	200	180	2,700	2,500	3,660	1,140	986	778
21	360	250	210	220	190	180	2,760	2,560	4,050	1,070	962	794
22	390	240	200	210	190	180	2,300	2,240	4,130	1,030	930	693
23	370	250	190	180	190	190	2,060	1,900	3,830	1,020	842	588
24	355	240	190	170	190	180	2,380	1,730	3,790	1,100	794	560
25	332	250	200	170	200	180	2,660	1,700	3,700	1,170	763	470
26	328	260	210	170	180	190	2,920	1,590	3,700	1,310	834	385
27	355	240	200	170	170	200	2,990	1,940	3,580	1,170	898	320
28	355	220	180	180	150	210	2,960	1,820	3,550	1,100	* 906	276
29	328	210	200	180	-	220	3,040	1,700	3,470	1,030	938	254
30	350	230	200	180	-----	220	2,540	1,580	3,510	* 986	970	242
31	365	-----	190	190	-----	220	-----	1,530	-----	962	946	-----
Total	11,141	8,141	6,320	5,860	5,570	5,790	41,431	86,400	92,720	52,158	27,733	22,686
Mean	359	271	204	189	199	187	1,381	2,787	3,091	1,683	895	756
Ac-ft	22,100	16,150	12,540	11,620	11,050	11,480	82,180	171,400	183,900	103,500	55,010	45,000

Calendar year 1961: Max 1,850 Min 100 Mean 452 Ac-ft 327,100  
Water year 1961-62: Max 5,000 Min 140 Mean 1,003 Ac-ft 725,900

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 12 to Apr. 10 (no gage-height record Dec. 7 to Mar. 14, Apr. 7-10).

9-1155. Tomichi Creek at Sargents, Colo.

Location.--Lat 38°24', long 106°25', in SW¼ sec.21, T.48 N., R.5 E., on right bank 300 ft from U. S. Highway 50, half a mile downstream from Marshall Creek, and three-quarters of a mile south of Sargents.

Drainage area.--155 sq mi.

Records available.--October 1916 to September 1922, October 1937 to September 1962. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Altitude of gage is 8,420 ft (estimated from railroad elevation). May 12 to Oct. 5, 1917, staff gage and Oct. 6, 1917, to Sept. 30, 1922, water-stage recorder, at railroad bridge 1,000 ft upstream at different datum. Apr. 18, 1938, to Sept. 9, 1953, water-stage recorder at present site at datum 1.00 ft higher.

Average discharge.--31 years, 64.5 cfs (46,700 acre-ft per year).

Extremes.--Maximum discharge during year, 474 cfs May 13 (gage height, 2.61 ft); minimum daily, 17 cfs Sept. 5, 6. 1916-22, 1937-62: Maximum discharge, 804 cfs June 6, 1957 (gage height, 3.66 ft); minimum recorded, 6 cfs Nov. 16, 1920.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 1,900 acres above station. Larkspur ditch diverts water above station to Arkansas River basin (see elsewhere in this report).

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

0.7	11	1.7	170
.8	18	2.1	290
1.0	38	2.7	485
1.3	78		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	41	32	30	32	32	26	38	181	198	100	* 36	19
2	40	28	30	30	34	28	38	* 181	201	86	34	19
3	40	24	30	32	36	32	44	187	206	82	34	18
4	40	26	30	34	36	30	50	212	212	78	34	18
5	39	28	28	36	34	28	50	239	* 212	72	32	17
6	39	26	26	38	34	30	46	280	209	64	28	17
7	38	* 24	26	42	36	32	42	322	215	67	27	22
8	39	26	28	42	38	32	38	357	198	65	27	24
9	62	26	28	34	38	30	36	396	184	58	27	23
10	* 52	26	26	26	36	28	36	428	181	53	27	22
11	44	26	24	24	38	26	* 40	440	181	* 52	26	22
12	44	24	22	26	44	24	46	444	181	57	25	22
13	42	22	20	34	* 44	24	103	454	181	62	24	23
14	42	20	22	40	44	26	160	431	181	56	24	23
15	42	22	24	34	38	28	173	* 396	170	49	23	22
16	41	24	30	36	36	* 28	176	364	158	49	23	22
17	40	26	36	34	36	28	209	335	153	47	22	22
18	39	28	36	* 34	34	30	223	325	153	46	22	22
19	38	28	34	36	32	30	232	300	* 153	47	24	24
20	37	26	34	40	34	32	245	300	148	45	27	30
21	36	26	36	40	32	34	218	293	139	41	26	38
22	34	28	36	36	30	34	181	268	136	38	24	28
23	32	30	34	32	30	32	181	252	129	39	23	24
24	32	32	34	30	32	28	204	245	122	52	23	22
25	34	32	36	32	32	28	229	242	115	47	22	22
26	36	30	36	34	32	32	229	232	110	48	21	22
27	36	30	32	36	28	34	218	242	105	42	20	24
28	34	28	32	34	26	36	226	226	98	40	* 19	28
29	30	28	38	32	-	38	236	223	94	38	19	28
30	28	30	38	32	-----	40	215	204	108	38	19	30
31	32	-----	36	32	-----	40	-----	206	-----	38	19	-----
Total	1,203	806	952	1,054	976	948	4,162	9,205	4,831	1,696	781	697
Mean	38.8	26.9	30.7	34.0	34.9	30.6	139	297	161	54.7	25.2	23.2
Ac-ft	2,390	1,600	1,890	2,090	1,940	1,880	8,260	18,260	9,580	3,360	1,550	1,380

Calendar year 1961: Max 261 Min 14 Mean 48.8 Ac-ft 35,370  
Water year 1961-62: Max 454 Min 17 Mean 74.8 Ac-ft 54,180

Peak discharge (base, 200 cfs).--Apr. 17 (1800) 348 cfs (2.34 ft); May 13 (0100) 474 cfs (2.61).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 22 to Apr. 12. No gage-height record Oct. 26 to Nov. 7, Dec. 12 to Jan. 18, Jan. 26 to Mar. 16, Sept. 10-30.

## GUNNISON RIVER BASIN

9-1180. Quartz Creek near Ohio City, Colo.

Location.--Lat 38°33'35", long 106°38'10", in SW¼SW¼ sec.27, T.50 N., R.3 E., on left bank 10 ft downstream from bridge on State Highway 162, 0.7 mile downstream from Willow Creek, 1.3 miles southwest of Ohio City, and 1.4 miles downstream from Gold Creek.

Drainage area.--106 sq mi.

Records available.--October 1937 to September 1950 (published as "near Ohio"), October 1959 to September 1962. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Altitude of gage is 8,430 ft (from topographic map). Prior to Oct. 1, 1945, at site 75 ft upstream at datum 3.00 ft higher. Oct. 1, 1945, to Sept. 30, 1950, at site 75 ft upstream at datum 2.00 ft higher.

Average discharge.--16 years, 54.5 cfs (39,460 acre-ft per year).

Extremes.--Maximum discharge during year, 389 cfs May 12 (gage height, 3.19 ft); minimum daily, 13 cfs Dec. 13.

1937-50, 1959-62: Maximum discharge, 640 cfs May 26, 1942 (gage height, 5.90 ft, present datum), from rating curve extended above 470 cfs; maximum gage-height, 7.73 ft (present datum) July 31, 1945 (backwater from Flick Gulch, 225 ft below station); minimum daily discharge, 8.5 cfs Sept. 30, 1950.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 700 acres above and 200 acres below station. Slight regulation prior to 1946 by small powerplant 3 miles above station.

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

1.7	18	2.5	150
1.9	36	3.0	325
2.2	80	3.1	365

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	37	32	24	18	20	16	25	128	153	145	* 50	26
2	35	30	24	18	22	17	24	* 130	156	132	46	25
3	34	28	22	18	22	20	26	132	184	120	42	24
4	34	32	20	18	22	18	30	150	215	118	42	22
5	34	34	19	19	20	17	32	171	* 229	105	42	22
6	34	28	20	20	20	18	32	215	246	102	42	21
7	34	* 28	22	22	22	20	32	250	246	102	43	23
8	34	30	22	26	24	22	29	282	218	94	43	24
9	44	30	22	24	24	22	29	329	222	86	43	24
10	* 39	30	20	16	22	20	30	353	250	80	40	24
11	33	30	19	15	20	20	* 27	365	264	* 74	37	24
12	33	28	16	17	20	19	28	365	264	75	39	24
13	33	26	13	19	* 22	19	33	349	274	77	37	24
14	33	24	15	24	24	19	43	317	278	72	37	24
15	33	24	20	22	22	20	58	271	264	67	36	24
16	33	26	24	20	22	* 22	74	* 257	232	64	35	24
17	33	28	24	* 20	22	20	88	229	198	61	35	25
18	33	26	22	20	20	19	112	215	194	63	35	24
19	32	24	22	24	20	18	130	198	* 208	58	36	25
20	30	22	22	24	20	18	156	218	226	56	40	26
21	29	22	24	22	22	18	150	226	232	53	38	25
22	34	24	22	20	20	18	125	204	218	49	36	26
23	30	24	20	19	19	19	118	187	212	51	34	25
24	29	24	19	19	19	19	138	177	198	56	34	26
25	28	26	19	20	20	20	159	190	180	57	34	26
26	28	26	20	20	19	21	156	190	171	58	32	26
27	30	24	22	20	17	22	150	204	168	51	32	27
28	30	22	19	19	16	22	159	187	159	49	* 30	28
29	28	22	22	20	-	24	171	174	150	46	28	29
30	30	22	22	20	-----	24	145	153	148	47	27	27
31	32	-----	20	20	-----	25	-----	159	-----	51	27	-----
Total	1,013	796	641	623	582	616	2,509	6,975	6,357	2,319	1,152	744
Mean	32.7	26.5	20.7	20.1	20.8	19.9	83.6	225	212	74.8	37.2	24.8
Ac-ft	2,010	1,580	1,270	1,240	1,150	1,220	4,980	13,830	12,610	4,600	2,280	1,480

Calendar year 1961: Max 208

Min 13

Mean 39.8

Ac-ft 28,840

Water year 1961-62: Max 365

Min 13

Mean 66.6

Ac-ft 48,250

Peak discharge (base, 220 cfs)

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 3-9, Nov. 13 to Mar. 18. No gage-height record Nov. 21 to Mar. 16, Aug. 20-28.

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-12	0200	3.19	389	6-21	0100	2.80	257
6-14	0100	2.93	301				

## GUNNISON RIVER BASIN

221

9-1190. Tomichi Creek at Gunnison, Colo.

Location.--Lat 38°31'20", long 106°56'25", in NE¼SW¼ sec.11, T.49 N., R.1 W., on right bank 300 ft downstream from highway bridge, 1.8 miles southwest of post office in Gunnison, and 2 miles upstream from mouth.

Drainage area.--1,020 sq mi, approximately.

Records available.--November and December 1910 (gage heights and discharge measurements only), October 1937 to September 1962. Monthly discharge only for some periods, published in WSP 1313. Published as "near Gunnison" 1910.

Gage.--Water-stage recorder. Datum of gage is 7,628.58 ft above mean sea level, datum of 1929. Nov. 25 to Dec. 24, 1910, staff gage 300 ft upstream at different datum. Apr. 20, 1938, to Oct. 2, 1940, water-stage recorder at present site at datum 1.00 ft higher.

Average discharge.--25 years, 173 cfs (125,200 acre-ft per year).

Extremes.--Maximum discharge during year, 920 cfs May 13 (gage height, 3.05 ft); minimum daily, 24 cfs Sept. 6. 1937-62: Maximum discharge, 1,900 cfs June 8, 1957 (gage height, 4.10 ft); minimum daily, 13 cfs Sept. 12, 14-16, 1956.

Remarks.--Records good except those for periods of ice effect, which are poor. Diversions for irrigation of about 24,000 acres above stations. Water diverted above station by Larkspur ditch to Arkansas River basin since 1935 and by Tarbell ditch to Rio Grande basin since 1914 (see elsewhere in this report).

Rating table, except period of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Apr. 12-18, June 13 to July 5)

0.7	22	2.1	400
.9	40	2.6	640
1.1	70	3.1	960
1.5	170		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	130	135	118	65	60	55	180	* 570	404	320	152	35
2	122	138	115	65	65	60	200	525	388	300	135	43
3	115	112	120	65	65	65	210	505	392	276	135	43
4	112	135	120	65	65	60	220	500	424	260	138	33
5	110	140	95	70	60	60	220	515	* 450	240	140	28
6	105	122	80	75	55	60	200	560	445	216	138	24
7	105	* 115	75	80	55	70	180	625	445	224	130	26
8	100	125	75	85	60	75	170	665	475	216	125	32
9	* 118	149	75	70	60	80	170	726	455	182	130	28
10	138	143	70	60	55	80	200	780	445	155	128	28
11	132	135	60	45	55	80	250	831	460	132	125	29
12	125	155	55	50	* 55	80	* 348	880	480	* 132	125	28
13	120	128	50	60	60	85	396	888	490	161	125	29
14	115	100	60	70	65	* 95	465	888	500	185	118	30
15	112	115	* 75	70	70	100	535	* 845	495	167	110	31
16	112	130	85	* 65	75	100	580	762	440	152	105	33
17	105	138	90	65	75	95	585	665	404	138	98	34
18	98	138	90	65	75	90	610	605	376	118	92	32
19	92	125	80	70	70	90	655	570	* 356	120	98	31
20	80	105	75	75	65	90	732	530	352	128	112	49
21	98	125	80	70	65	95	824	495	344	122	125	65
22	100	120	75	65	65	95	744	455	360	110	112	76
23	102	122	70	60	65	100	615	428	348	115	105	74
24	98	128	65	55	70	110	610	408	352	135	105	68
25	90	130	65	55	75	110	660	380	340	155	98	65
26	86	132	70	55	70	110	690	356	324	179	90	65
27	98	122	75	55	60	110	680	380	312	176	88	67
28	105	118	75	55	55	120	645	416	292	161	84	82
29	105	105	70	55	-	130	655	420	292	140	74	84
30	112	115	70	55	-----	140	630	408	320	138	* 63	86
31	128	-----	70	55	-----	160	-----	404	-----	* 155	43	-----
Total	3,368	3,800	2,448	1,970	1,790	2,850	13,859	17,985	11,960	5,408	3,446	1,378
Mean	109	127	79.0	63.5	63.9	91.9	462	580	399	174	111	45.9
Ac-ft	6,680	7,540	4,860	3,910	3,550	5,650	27,490	35,670	23,720	10,730	6,840	2,730

Calendar year 1961: Max 356 Min 45 Mean 111 Ac-ft 80,400  
Water year 1961-62: Max 888 Min 24 Mean 192 Ac-ft 139,400

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 6 to Apr. 11 (no gage-height record Dec. 15 to Mar. 14).



## GUNNISON RIVER BASIN

9-1218, Cebolla Creek near Powderhorn, Colo.

Location.--Lat 38°13'40", long 107°04'20", in NW¼ sec.23, T.46 N., R.2 W., on right bank 50 ft downstream from private bridge, 1.4 miles upstream from Beaver Creek, and 4.5 miles southeast of Powderhorn.

Drainage area.--223 sq mi.

Records available.--April 1960 to September 1962.

Gage.--Water-stage recorder. Datum of gage is 8,281.04 ft above mean sea level, datum of 1929.

Extremes.--Maximum discharge during year, 589 cfs May 13 (gage height, 3.86 ft); minimum daily, 20 cfs Dec. 12, 13.  
1960-62: Maximum discharge, that of May 13, 1962; minimum daily, 14 cfs Mar. 28, 1961.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Small diversions above station for irrigation of hay meadows. Tabor ditch (see elsewhere in this report) diverts water into Clear Creek in the Rio Grande basin.

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

2.0	28
2.2	50
2.4	82
2.6	135
3.0	265
3.7	525

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	54	56	34	26	26	24	32	* 212	189	186	* 80	38
2	50	51	34	24	26	26	34	226	206	174	75	40
3	49	44	32	24	26	26	40	251	220	168	78	39
4	49	44	30	26	26	24	42	282	* 234	165	80	39
5	49	44	28	28	26	22	42	314	248	165	71	39
6	48	40	28	30	26	22	42	328	272	156	66	42
7	46	38	30	30	26	24	42	363	276	156	63	54
8	46	* 36	30	28	28	26	40	388	251	147	60	53
9	94	36	30	24	30	26	40	425	258	132	60	50
10	61	38	28	22	32	24	* 44	453	265	120	56	46
11	* 58	40	26	22	36	22	50	481	258	108	51	45
12	61	40	20	24	* 38	22	64	505	265	* 111	54	43
13	58	38	20	28	38	24	96	489	282	123	54	42
14	60	36	24	32	36	* 24	150	* 405	286	105	51	43
15	63	36	30	36	32	24	198	335	262	100	50	39
16	63	38	34	* 36	30	26	216	290	237	94	50	42
17	63	38	34	36	28	26	234	254	220	87	51	43
18	61	38	32	34	26	24	268	244	* 209	87	56	39
19	58	36	32	32	26	24	310	234	209	87	69	38
20	58	36	32	30	28	26	370	251	212	87	64	48
21	57	38	30	28	28	26	335	240	209	80	71	58
22	60	38	28	26	26	24	262	220	198	84	66	56
23	54	38	26	26	26	24	282	216	183	94	58	50
24	54	36	26	26	26	24	332	226	174	108	56	49
25	53	34	28	28	26	24	366	234	171	103	51	51
26	50	34	30	30	24	26	338	230	177	96	49	48
27	53	34	30	30	22	30	268	268	177	84	48	48
28	51	34	30	30	22	32	290	237	168	80	* 48	49
29	51	32	30	28	-	32	314	220	183	78	48	48
30	53	32	28	26	-----	30	251	206	192	77	46	46
31	58	-----	28	26	-----	30	-----	212	-----	78	43	-----
Total	1,743	1,153	902	876	790	788	5,392	9,239	6,691	3,520	1,823	1,365
Mean	56.2	38.4	29.1	28.3	28.2	25.4	180	298	223	114	58.8	45.5
Ac-ft	3,460	2,290	1,790	1,740	1,570	1,560	10,690	18,330	13,270	6,980	3,620	2,710

Calendar year 1961: Max 208 Min 14 Mean 51.6 Ac-ft 37,400  
Water year 1961-62: Max 505 Min 20 Mean 93.9 Ac-ft 68,010

Peak discharge (base, 350 cfs).--Apr. 20 (2200) 585 cfs (3.82 ft); May 13 (0100) 589 cfs (3.86 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 3-7. No gage-height record Nov. 8 to Apr. 10 (stage-discharge relation affected by ice during most of period).

9-1225. Soap Creek near Sapinero, Colo.

Location.--Lat 38°33'40", long 107°19'30", in SW¼ sec.29, T.50 N., R.4 W., on right bank 1½ miles upstream from Cow Creek and ½ miles north of Sapinero.

Drainage area.--57.3 sq mi.

Records available.--August 1955 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 7,790 ft (from topographic map).

Average discharge.--7 years, 62.6 cfs (45,320 acre-ft per year).

Extremes.--Maximum discharge during year, 510 cfs Apr. 20 (gage height, 3.55 ft); minimum daily, 0.9 cfs Sept. 16, 17.

1955-62: Maximum discharge, about 1,000 cfs sometime during period June 4-6, 1957; maximum gage height, 6.07 ft June 6, 1957; minimum daily discharge, that of Sept. 16, 17, 1962.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. One small diversion for irrigation of hay meadows above station.

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	20	17				7.5	18	190	188	193	18	1.9
2	17	17				7.5	24	*182	232	168	*16	1.5
3	17	15				7.5	28	208	259	145	16	1.2
4	17	17				7	34	286	265	133	22	1.1
5	17	18				6.5	36	338	286	114	16	1.0
6	16	19				6.5	36	356	*301	109	15	1.0
7	16	19				7.5	35	376	283	103	14	8.6
8	16	*18			9	7.5	32	348	265	86	13	7.8
9	23	16				7.5	30	398	262	74	14	5.2
10	22	17				7	30	436	274	66	14	3.1
11	*19	16				6.5	31	426	283	64	12	2.5
12	19	16				6	39	415	295	*59	11	1.7
13	17	14				*6	66	412	331	57	11	1.3
14	16	13				6.5	109	359	*345	50	9.8	1.2
15	16	15				7	168	247	307	44	9.0	1.0
16	16	15				7	208	*226	271	40	8.2	.9
17	15	15				7	256	193	232	38	8.6	.9
18	15	14				7.5	292	165	199	33	8.6	1.0
19	14	12				8	304	162	211	32	9.4	1.2
20	14	13				8.5	401	202	*247	*29	9.8	3.3
21	14	14				8	334	220	277	28	9.4	1.4
22	16	14				7.5	238	190	295	28	11	1.1
23	14	13				7.5	262	155	289	27	12	7.0
24	14	14				7.5	359	150	271	27	9.4	5.2
25	14	14				8	404	172	265	*27	7.8	5.5
26	14	13				10	398	190	262	31	5.9	4.4
27	16	12				13	314	232	256	25	5.5	4.4
28	16	11				15	274	199	241	22	*5.9	8.2
29	14	11				15	259	178	220	20	4.0	9.0
30	14	12				13	208	158	211	18	2.9	7.0
31	16					12		162		19	2.3	
Total	504	444	310	248	239	258.5	5,227	7,931	7,923	1,909	331.5	123.1
Mean	16.3	14.8	10	8	8.5	8.34	174	256	264	61.6	10.7	4.10
Ac-ft	1,000	881	615	492	474	513	10,370	15,730	15,720	3,790	658	244

Calendar year 1961: Max 256 Min - Mean 39.2 Ac-ft 28,340

Water year 1961-62: Max 436 Min 0.9 Mean 69.7 Ac-ft 50,490

Peak discharge (base, 300 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-20	1700	3.55	510	5-6	2100	3.53	502
4-24	1900	3.34	436	6-13	2300	2.70	366

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 3-8, Nov. 13 to Apr. 6. No gage-height record Nov. 14 to Mar. 13, May 1, Sept. 5, 6, 14-19.

## GUNNISON RIVER BASIN

9-1245. Lake Fork at Gateview, Colo.

Location.--Lat 38°17'50", long 107°13'50", in sec.29, T.47 N., R.3 W., on left bank at old village of Gateview, 15 ft downstream from private bridge, a quarter of a mile upstream from Indian Creek, and 15 miles upstream from mouth.

Drainage area.--338 sq mi.

Records available.--October 1937 to September 1962. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 7,827.66 ft above mean sea level, datum of 1929. Prior to Oct. 1, 1938, at datum 2.00 ft higher and Oct. 1, 1938, to Sept. 30, 1945, at datum 1.00 ft higher.

Average discharge.--25 years, 248 cfs (179,500 acre-ft per year).

Extremes.--Maximum discharge during year, 1,460 cfs June 14 (gage height, 3.15 ft); maximum gage height, 3.65 ft Dec. 14 (backwater from ice); minimum daily discharge, 34 cfs Mar. 14.

1937-62: Maximum discharge, 2,700 cfs June 29, 1957 (gage height, 4.30 ft); minimum daily determined, 25 cfs Dec. 5, 1955, Jan. 10, 17, 18, 1957.

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

Rating tables, except period of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Apr. 13 to May 4, July 26 to Aug. 8)

Oct. 1 to July 31

Aug. 1 to Sept. 30

0.5	82	2.0	600	0.5	69
1.0	170	3.0	1,350	.9	135
1.5	340			1.5	300

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	157	128	85	65	60	40	90	*410	485	1,280	*250	98
2	146	126	85	60	60	42	100	370	630	1,170	238	95
3	141	105	70	55	60	44	110	355	727	1,090	232	94
4	139	110	65	60	55	42	110	425	*762	1,040	232	90
5	135	100	65	65	55	38	95	558	797	996	215	88
6	132	95	65	70	55	38	90	666	892	948	202	88
7	130	95	60	75	55	40	90	884	964	956	194	100
8	128	*100	65	70	55	42	90	932	853	916	186	94
9	120	110	70	55	60	42	95	1,070	908	860	184	90
10	170	107	65	46	60	40	*100	1,170	1,030	797	176	88
11	*155	112	50	46	60	38	110	1,210	1,140	776	176	84
12	146	116	36	46	*70	38	120	1,290	1,240	*741	176	83
13	141	105	44	50	80	36	139	1,200	1,310	734	146	82
14	144	95	50	55	70	*34	180	*1,020	1,340	630	150	80
15	146	100	60	46	60	36	242	783	1,210	576	155	77
16	150	102	70	*44	55	38	308	636	1,050	540	155	79
17	152	107	70	44	55	42	332	530	818	500	155	79
18	152	98	70	50	55	44	410	460	*818	500	157	76
19	146	88	65	55	55	46	505	425	1,040	500	162	73
20	143	88	65	60	55	48	558	450	1,240	500	171	84
21	141	96	70	60	55	50	520	505	1,320	470	164	119
22	141	88	70	60	55	48	420	445	1,330	455	159	139
23	135	90	65	55	55	48	385	425	1,300	430	153	146
24	132	95	60	55	60	60	425	460	1,260	450	146	139
25	128	90	60	55	60	80	530	530	1,270	435	135	135
26	126	90	65	55	55	100	588	525	1,250	395	127	129
27	128	90	70	60	48	100	505	630	1,250	365	123	127
28	126	85	70	65	44	100	480	546	1,230	332	*117	123
29	123	80	65	65	-	90	520	490	1,200	312	112	119
30	128	80	75	65	-----	80	450	440	1,290	288	106	110
31	135	-----	75	65	-----	80	-----	445	-----	268	100	-----
Total	4,386	2,971	2,020	1,777	1,622	1,644	8,697	20,285	31,954	20,250	5,154	3,008
Mean	141	99.0	65.2	57.3	57.9	53.0	290	654	1,065	653	166	100
Ac-ft	8,700	5,890	4,010	3,520	3,220	3,260	17,250	40,230	63,380	40,170	10,220	5,970

Calendar year 1961: Max 1,300 Min 30 Mean 209 Ac-ft 151,500  
Water year 1961-62: Max 1,340 Min 34 Mean 284 Ac-ft 205,800

Peak discharge (base, 1,400 cfs).--June 14 (0100) 1,460 cfs (3.15 ft); June 23 (0230) 1,430 cfs (3.12 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 3-8, 13-15, Nov. 23 to Apr. 12 (no gage-height record Dec. 25 to Jan. 16, Feb. 3-12, Feb. 18 to Mar. 14).

9-1250. Curecanti Creek near Sapinero, Colo.

Location.--Lat 38°29'15", long 107°24'55", in sec.21, T.49 N., R.5 W., on downstream side of left pier of bridge on State Highway 92, ¼ miles upstream from mouth and 6 miles west of Sapinero.

Drainage area.--31.8 sq mi.

Records available.--October 1945 to September 1962. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 7,867.43 ft above mean sea level, datum of 1929. Prior to Oct. 1, 1947, at site 65 ft upstream at datum 3.00 ft higher. Oct. 1, 1947, to Sept. 17, 1952, at site 65 ft upstream at datum 1.00 ft higher.

Average discharge.--17 years, 33.7 cfs (24,400 acre-ft per year).

Extremes.--Maximum discharge during year, 274 cfs May 9 (gage height, 3.90 ft); minimum daily, 2.8 cfs Sept. 3-5.

1945-62: Maximum discharge, 480 cfs June 5, 1957; maximum gage height, 4.30 ft June 28, 1957; minimum daily discharge, 2.0 cfs Aug. 1-3, 1948, 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. One diversion above station for irrigation in Smith Fork drainage.

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 Nov. 2)

2.0	1.5	2.3	7.5	3.0	63
2.1	3.0	2.5	15	3.5	160
2.2	5.0	2.6	21	3.8	250

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	11	9.2					9	109	121	101	6.8	3.2
2	10	8.2					10	107	135	88	* 6.0	3.0
3	10	8					12	*129	158	76	6.5	2.8
4	9.6	9					13	166	169	69	7.0	2.8
5	9.6	11					15	193	181	61	6.0	2.8
6	9.2	*12					14	220	*187	56	5.2	3.0
7	8.9	12			7	7	13	235	178	51	4.6	4.4
8	8.9	10					12	238	160	47	4.6	5.0
9	*14	9					11	250	158	41	4.8	4.0
10	13	9					13	250	158	35	5.2	3.6
11	10	8					15	241	166	30	4.6	3.4
12	10	7.5				(*)	40	247	175	*26	4.6	3.4
13	9.2	7.5					70	238	178	28	4.4	3.2
14	9.6	6.5					100	211	184	24	4.2	3.4
15	9.2	7.5					107	175	175	20	4.0	3.0
16	8.9	7	6.5	6			121	*150	145	15	3.6	3.2
17	8.6	5					152	135	123	13	3.4	3.4
18	8.2	5					172	121	111	12	3.8	3.2
19	7.8	6					187	111	113	12	4.0	3.2
20	7.8	7					192	127	*131	11	4.6	4.2
21	7.8	8					163	140	142	10	4.4	7.8
22	9.6	7.5			6		142	127	148	9.2	5.2	6.5
23	8.2	7.5				8.5	163	113	142	9.6	6.0	4.8
24	8.6	7.5					196	109	135	9.6	4.4	4.2
25	7.2	8					196	117	131	9.6	4.0	4.2
26	7.2	8.5					181	129	127	11	3.6	4.4
27	8.9	8.5					160	152	117	8.9	3.4	4.2
28	8.6	8					163	138	111	7.5	3.4	5.0
29	7.2	8					158	127	103	7.0	3.2	5.2
30	8.9	8					129	115	103	6.8	* 3.2	4.6
31	9.6	-----			-----		-----	115	-----	6.8	3.2	-----
Total	285.3	244.9	201.5	186	183	241.0	2,936	5,035	4,365	912.0	141.9	119.1
Mean	9.20	8.16	6.5	6	6.5	7.77	97.9	162	146	29.4	4.58	3.97
Ac-ft	566	486	400	369	363	478	5,820	9,990	8,660	1,810	281	236

Calendar year 1961: Max 148 Min 2.2 Mean 20.9 Ac-ft 15,140  
Water year 1961-62 Max 250 Min 2.8 Mean 40.7 Ac-ft 29,460

Peak discharge (base, 250 cfs).--May 9 (2300) 274 cfs (3.90 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 3 to Dec. 9. No gage-height record Dec. 10 to Apr. 14 (stage-discharge relation affected by ice during most of period).



GUNNISON RIVER BASIN

9-1260. Cimarron Creek near Cimarron, Colo.

Location.--Lat 38°15'30", long 107°32'40", in sec.8, T.46 N., R.6 W., on right bank 0.2 mile downstream from highway bridge, 0.5 mile upstream from headgate on Cimarron ditch, 2.5 miles downstream from West Fork, and 13 miles south of Cimarron.

Drainage area.--66.8 sq mi.

Records available.--October 1954 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 8,650 ft (from topographic map).

Average discharge.--8 years, 90.7 cfs (65,660 acre-ft per year).

Extremes.--Maximum discharge during year, 710 cfs June 19; maximum gage height, 6.15 ft June 13; minimum daily discharge, 10 cfs

Dec. 12.

1954-62: Maximum discharge, 1,790 cfs June 28, 1957 (gage height, 8.32 ft); minimum daily determined, 10 cfs Mar. 13, 1957,

Feb. 9, Nov. 16, 1960, Dec. 12, 1961.

Remarks.--Records good except those for periods of ice effect, which are poor. Diversion above station through Owl Creek ditch into Uncompahgre River basin. Diversion below station by Cimarron ditch for water year 1962 is given below.

Month	Diversion in acre-feet	Month	Diversion in acre-feet
October.....	833	April.....	0
November.....	22	May.....	4,490
December.....	0	June.....	7,790
	- - - - -	July.....	6,790
Calendar year 1961....	20,400	August.....	2,370
	- - - - -	September.....	1,060
January.....	0		
February.....	0	Water year 1961-62....	23,360
March.....	0		

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used June 30 to July 29)

3.4	8.0	4.1	65	5.0	260
3.6	17	4.5	140	5.8	570
3.8	30				

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	54	32	22	18	19	12	18	162	318	362	66	22
2	47	28	20	16	21	14	20	*146	330	306	*64	21
3	46	20	18	14	21	15	21	160	338	294	65	21
4	43	26	16	14	22	15	24	176	*342	281	66	20
5	48	20	16	16	21	14	23	192	394	263	59	20
6	47	*16	18	18	21	15	24	230	402	239	52	24
7	44	20	18	18	22	15	24	260	394	236	49	28
8	44	22	18	18	22	14	21	298	354	230	47	24
9	*57	24	18	17	22	14	22	342	398	212	48	22
10	46	24	18	16	21	14	22	398	458	210	46	21
11	46	24	13	16	21	14	20	454	510	195	44	20
12	49	22	10	18	22	12	20	518	526	185	43	19
13	48	20	12	19	19	12	*22	462	530	*176	40	19
14	50	18	13	19	17	12	30	*338	*534	150	38	19
15	49	20	16	19	17	12	70	257	450	136	36	18
16	47	22	18	18	18	12	90	272	386	122	34	21
17	46	24	20	18	16	12	106	215	326	124	35	19
18	44	24	20	18	16	12	148	208	*402	122	37	21
19	42	22	20	18	15	14	172	208	486	124	38	21
20	41	22	18	16	16	14	185	239	522	110	40	58
21	39	22	18	18	16	14	166	251	510	100	36	132
22	41	22	20	19	16	14	138	200	514	92	37	82
23	34	22	20	18	15	14	150	205	470	92	33	51
24	37	20	16	18	15	14	210	239	442	120	30	43
25	34	20	14	18	16	14	218	275	414	110	28	41
26	35	20	14	18	15	17	202	290	410	100	26	33
27	38	20	18	18	14	21	180	338	458	92	*26	40
28	32	20	18	18	12	24	192	272	410	86	26	42
29	33	20	16	18	-	19	190	257	398	76	24	34
30	36	22	16	18	-----	19	156	225	426	72	24	31
31	35	-----	18	18	-----	16	-----	266	-----	70	23	-----
Total	1,332	658	530	543	508	454	2,884	8,353	12,852	5,087	1,260	987
Mean	43.0	21.9	17.1	17.5	18.1	14.6	96.1	269	428	164	40.6	32.9
Ac-ft	2,640	1,310	1,050	1,080	1,010	900	5,720	16,570	25,490	10,090	2,500	1,960

Calendar year 1961: Max 522 Min 10 Mean 76.1 Ac-ft 55,110  
Water year 1961-62: Max 534 Min 10 Mean 97.1 Ac-ft 70,320

Peak discharge (base, 400 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-12	2100	6.03	662	6-13	2100	6.15	700
5-27	1630	5.46	450	6-19	2000	6.10	710
6-5	2030	5.49	466				

\* Discharge measurement made on this day.  
Note.--Stage-discharge relation affected by ice Nov. 3 to  
Jan. 12, Feb. 27 to Mar. 2, Mar. 12-18, Mar. 31 to Apr. 3,  
Apr. 11-15.

## GUNNISON RIVER BASIN

227

9-1265. Cimarron Creek at Cimarron, Colo.

Location.--Lat 38°26'35", long 107°33'15", in SW¼SW¼ sec.5, T.48 N., R.6 W., on right bank at Cimarron, 400 ft upstream from Squaw Creek and 1 mile upstream from mouth.

Drainage area.--212 sq mi.

Records available.--October 1902 to November 1905, April to September 1962.

Gage.--Water-stage recorder. Datum of gage is 6,884.97 ft above mean sea level, datum of 1929. Prior to Apr. 1, 1962, staff gage at site 600 ft upstream at different datum.

Extremes.--Maximum discharge during period, about 1,600 cfs May 12, 13; minimum daily, 11 cfs Sept. 12-18.  
1903-5, 1962: Maximum discharge, that of May 12, 13, 1962; minimum daily, that of Sept. 12-18, 1962.

Remarks.--Records good except those for period of indefinite stage-discharge relation, which are poor. Natural flow of stream affected by Cimarron and Owl Creek ditches for irrigation of about 5,000 acres in the Uncompahgre River drainage, imported water from Blue Creek drainage, diversions for irrigation of about 3,000 acres, and return flow from irrigated areas.

Rating tables, except period of indefinite stage-discharge relation  
(gage height, in feet, and discharge, in cubic feet per second)

Apr. 1 to June 16

June 17 to Sept. 30

3.0	30	3.7	210	2.8	9.0	3.4	77
3.1	42	4.0	380	3.0	18	3.7	170
3.4	105	4.4	750	3.1	26	4.0	305
				3.2	37	4.2	435

Discharge, in cubic feet per second, April to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1							140	220	300	290	26	13
2							150	245	320	242	25	14
3							140	250	350	194	27	13
4							* 100	270	* 359	170	26	13
5							* 80	290	373	149	21	13
6							64	331	408	129	20	13
7							55	366	394	123	17	16
8							38	380	338	129	16	15
9							35	500	359	135	17	14
10							40	600	436	123	18	14
11							40	700	540	126	16	14
12							51	750	640	105	15	11
13							76	750	651	* 108	16	11
14							102	* 600	* 630	75	16	11
15							138	440	531	63	16	11
16							174	300	415	49	16	11
17							202	260	305	44	16	11
18							* 324	240	* 305	40	16	11
19							295	240	359	52	17	12
20							280	260	407	49	18	18
21							240	280	379	40	18	80
22							190	260	365	37	18	49
23							178	240	359	37	19	24
24							220	240	329	52	19	20
25							255	280	300	61	19	51
26							260	340	275	59	20	54
27							225	400	265	44	* 20	59
28							225	360	270	37	16	77
29							255	320	246	32	16	68
30							225	240	295	* 29	15	54
31		-----			-----		-----	240	-----	32	14	-----
Total							4,797	11,192	11,503	2,855	569	795
Mean							160	361	383	92.1	18.4	26.5
Ac-ft							9,510	22,200	22,820	5,660	1,130	1,580

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

\* Discharge measurement made on this day.

Note.--Stage-discharge relation indefinite May 9 to June 3.

## GUNNISON RIVER BASIN

9-1275. Crystal Creek near Maher, Colo.

Location.--Lat 38°33'05", long 107°30'20", in SE¼ sec.35, T.50 N., R.6 W., on left bank 640 ft (revised) downstream from private bridge, half a mile upstream from diversion dam for Cattleman's ditch, 0.7 mile downstream from Dyer Creek (revised), 7 miles upstream from mouth, and 7 miles southeast of Maher.

Drainage area.--39.1 sq mi.

Records available.--July 1945 to September 1954, October 1960 to September 1962. Records for October 1916 to September 1919, at site 1 mile downstream (revised) not equivalent owing to diversion by Cattleman's ditch.

Gage.--Water-stage recorder. Altitude of gage is 8,070 ft (from topographic map). July 6, 1945, to Sept. 30, 1954, at site 140 ft upstream at datum 1.45 ft higher.

Average discharge.--11 years (1945-54, 1960-62), 28.8 cfs (20,850 acre-ft per year).

Extremes.--Maximum discharge during year, 388 cfs Apr. 20 (gage height, 3.36 ft); minimum daily, 2.7 cfs Sept. 19. 1945-54, 1960-62: Maximum discharge, 542 cfs Apr. 29, 1948 (gage height, 5.05 ft, site and datum then in use), from rating curve extended above 200 cfs; minimum daily, 1.8 cfs Aug. 29, 31, 1954.

Remarks.--Records good except those for periods of ice effect, which are poor. Small diversions for irrigation of hay meadows above station. Diversions above station for irrigation of about 800 acres below station and about 700 acres in Iron Creek basin.

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

0.9	1.5	1.6	29
1.0	3.0	1.9	61
1.1	5.0	2.4	145
1.2	8.0	3.0	280
1.4	16		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	12	9.2	7	5	3.8	3.2	12	116	84	62	8.4	4.2
2	10	8.8	7.5	5	4.0	3.4	15	106	92	54	7.7	4.0
3	9.6	8	7	5	4.4	3.6	21	123	100	46	7.7	3.2
4	9.2	7	7	5	4.6	3.4	25	165	104	39	8.0	3.0
5	8.8	7	7	5	4.6	3.4	25	199	112	32	7.1	2.8
6	8.4	7	6.5	5	4.6	4.0	24	225	* 116	28	* 6.8	2.8
7	8.0	7	6.5	5.5	4.4	4.4	23	240	112	30	6.5	4.4
8	8.0	7.5	6.5	6	4.0	4.2	20	240	103	41	6.2	4.2
9	14	8	6	5	4.0	4.0	19	260	104	35	6.5	3.8
10	11	8	5.5	4.0	4.4	3.8	19	265	114	33	6.5	3.6
11	10	8.5	5	4.0	5.0	3.6	19	242	112	30	5.9	3.4
12	10	8.5	4.5	4.2	5.0	3.8	23	252	114	29	5.9	3.2
13	9.6	8	5	4.4	5.0	4.0	42	240	119	29	5.9	3.0
14	9.6	7.5	6	4.6	4.4	3.8	81	195	125	26	5.3	3.0
15	9.2	7.5	6	4.6	* 3.6	* 4.0	135	145	112	23	5.0	3.0
16	8.8	8	6	4.2	3.4	4.4	175	* 123	96	21	4.8	3.0
17	8.4	8.5	6	3.8	3.4	4.6	215	104	80	18	4.8	3.0
18	8.0	8	5.5	3.8	3.2	4.8	248	87	75	18	5.3	3.0
19	8.0	7.5	5.5	3.8	3.2	5.0	258	81	87	17	5.6	2.7
20	7.7	* 7.5	6	4.0	3.4	5.5	268	88	* 93	* 16	6.2	3.4
21	7.4	8	5.5	4.4	3.4	5.5	228	92	100	14	5.9	5.3
22	8.4	7.5	5.5	4.2	3.2	5.5	185	76	100	14	6.2	4.6
23	* 6.8	7	5.5	3.8	3.2	6	185	65	98	14	5.9	3.8
24	7.4	7	6	3.8	3.4	5.5	210	65	92	14	5.0	3.6
25	6.8	7.5	6	3.8	3.6	6.5	232	71	87	13	4.8	3.6
26	7.1	7.5	6	3.6	3.4	9	* 238	78	84	15	4.6	3.4
27	8.0	7.5	5.5	3.6	3.2	11	189	103	76	12	4.6	3.6
28	7.7	7	5.5	3.6	3.0	12	165	90	72	11	4.6	4.2
29	6.8	7	6	3.6	-	11	177	80	62	9.6	4.4	4.4
30	8.0	7	5.5	3.6	-----	11	149	72	67	8.8	* 4.2	3.8
31	8.8	-----	5	3.6	-----	11	-----	78	-----	9.2	4.2	-----
Total	271.5	230.0	184.0	133.5	108.8	174.9	3,625	4,366	2,892	761.6	180.5	107.0
Mean	8.76	7.67	5.94	4.31	3.89	5.64	121	141	96.4	24.6	5.82	3.57
Ac-ft	539	456	365	265	216	347	7,190	8,660	5,740	1,510	358	212

Calendar year 1961: Max 143 Min 2.6 Mean 19.7 Ac-ft 14,280  
 Water year 1961-62: Max 268 Min 2.7 Mean 35.7 Ac-ft 25,860

Peak discharge (base, 160 cfs).--Apr. 20 (1700) 388 cfs (3.36 ft); May 9 (2130) 305 cfs (3.03 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 3 to Apr. 2 (no gage-height record Jan. 25 to Mar. 15).

9-1280, Gunnison River below Gunnison tunnel, Colo.

Location.--Lat 38°32', long 107°39', in NW¼ sec.10, T.49 N., R.7 W., on left bank a quarter of a mile downstream from east portal of Gunnison tunnel, 5 miles downstream from Crystal Creek, and 12 miles northeast of Montrose.

Drainage area.--3,980 sq mi, approximately.

Records available.--October 1903 to September 1962. Monthly discharge only for some periods, published in WSP 1313. Published as "at east portal of Gunnison tunnel" 1905-6 and as "at River Portal" 1907-11.

Gage.--Water-stage recorder. Datum of gage is 6,526.06 ft above mean sea level, datum of 1929. Apr. 9, 1905, to Aug. 20, 1915, staff gage at site 300 ft upstream from diversion dam at east portal of Gunnison tunnel at different datum. Aug. 21, 1915, to Jan. 19, 1943, staff gage at site 500 ft downstream from diversion dam at east portal of Gunnison tunnel at different datum. Jan. 20, 1943, to Sept. 30, 1956, water-stage recorder at same site at datum 1.0 ft higher.

Average discharge.--59 years, 1,479 cfs, unadjusted (1,071,000 acre-ft per year).

Extremes.--Maximum discharge during year, 10,000 cfs May 13 (gage height, 10.96 ft); minimum daily, 109 cfs Sept. 18.

1903-62: Maximum discharge observed, 19,000 cfs June 15, 1921 (gage height, about 15.8 ft, present datum), from rating curve extended above 14,000 cfs; no flow Sept. 25, 26, 1936, Oct. 8, 1949, Sept. 5, 6, 15, 16, 1950.

Remarks.--Records good except those for period of ice effect, which are poor. Natural flow of stream affected by transmountain diversions, transbasin diversion (see below), Taylor Park Reservoir (see elsewhere in this report), diversions for irrigation of about 63,000 acres, and return flow from irrigated areas. Record of diversion through Gunnison tunnel for irrigation of about 75,000 acres in Uncompahgre Valley during the water year 1962 is given below:

Month	Diversion in acre-feet	Month	Diversion in acre-feet
October.....	4,390	April.....	37,840
November.....	0	May.....	58,400
December.....	0	June.....	54,120
	- - - - -	July.....	57,160
Calendar year 1961....	293,000	August.....	59,240
	- - - - -	September.....	49,400
January.....	0		
February.....	0		
March.....	2,010	Water year 1961-62....	322,600

Cooperation.--Record of diversion through Gunnison tunnel furnished by Uncompahgre Valley Water Users Association.

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

1.0	98	3.0	880	8.0	5,460
1.5	240	4.0	1,500	11.0	10,100
2.0	420	6.0	3,190		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	688	922	735	480	510	380	550	4,160	2,820	6,010	720	205
2	892	946	670	460	520	410	700	3,800	2,960	5,430	670	247
3	730	802	644	440	540	420	880	* 3,900	3,360	4,810	* 600	275
4	710	784	640	420	570	430	1,100	4,520	* 3,790	4,470	624	264
5	730	886	520	450	580	440	1,300	5,220	4,080	4,020	620	212
6	725	778	464	470	560	420	1,300	6,060	4,450	3,540	528	190
7	705	725	484	500	580	450	1,500	6,900	4,670	3,340	436	328
8	690	772	484	520	610	500	970	7,500	4,380	3,220	342	300
9	796	* 856	500	500	630	460	640	8,190	4,270	* 3,010	334	275
10	1,160	856	470	480	660	440	760	9,060	4,610	2,690	468	247
11	* 1,020	832	450	430	710	420	838	8,980	5,190	2,440	416	292
12	970	880	350	340	760	420	964	9,580	5,660	2,230	428	317
13	934	850	390	400	700	* 420	1,270	9,700	6,690	2,320	373	264
14	898	660	430	470	600	430	1,910	* 8,350	7,920	2,120	320	250
15	904	656	470	* 470	500	430	2,530	6,810	7,020	1,820	292	184
16	910	832	520	460	520	440	3,080	5,570	6,130	1,560	359	166
17	898	856	560	420	560	450	2,380	4,770	5,050	1,320	416	187
18	910	772	520	440	480	460	* 4,380	4,250	* 4,470	1,170	412	109
19	898	670	480	460	420	480	5,180	3,700	4,810	1,190	448	125
20	862	616	480	500	440	470	5,800	3,840	5,820	1,230	500	196
21	844	735	520	540	430	460	5,990	4,100	6,450	1,070	484	508
22	838	735	520	520	400	450	4,920	3,700	6,750	952	460	480
23	910	725	500	480	410	440	4,260	3,130	6,460	880	356	345
24	838	720	490	470	400	440	4,580	2,910	6,120	1,000	275	275
25	784	730	490	460	410	470	5,530	3,060	6,020	1,240	190	356
26	760	778	490	450	400	520	5,870	2,920	6,010	1,320	181	400
27	772	725	480	450	380	600	5,660	3,460	5,730	1,230	* 240	352
28	808	644	460	470	350	560	5,400	3,520	5,740	1,030	250	376
29	784	596	470	480	-	540	5,810	3,140	5,530	892	222	338
30	784	624	490	490	-----	520	4,920	2,840	5,850	766	292	278
31	880	-----	500	500	-----	500	-----	2,670	-----	745	233	-----
Total	26,032	22,963	15,671	14,420	14,630	14,270	90,972	160,310	158,810	69,065	12,489	8,341
Mean	840	765	506	465	522	460	3,032	5,171	5,294	2,228	403	278
Ac-ft	51,630	45,550	31,080	28,600	29,020	28,300	180,400	318,000	315,000	137,000	24,770	16,540

Calendar year 1961: Max 4,150 Min 26 Mean 701 Ac-ft 507,400  
 Water year 1961-62: Max 9,700 Min 109 Mean 1,666 Ac-ft 1,206,000

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 10 to Apr. 6 (no gage-height record Jan. 10-18).



## GUNNISON RIVER BASIN

9-1285, Smith Fork near Crawford, Colo.

Location.--Lat 38°44', long 107°31', in sec.24, T.15 S., R.91 W., on left bank 20 ft upstream from county bridge, 0.4 mile upstream from Second Creek, 6 miles northeast of Crawford, and 6½ miles upstream from Iron Creek.

Drainage area.--42 sq mi, approximately.

Records available.--October 1935 to September 1962. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Altitude of gage is 7,200 ft (by barometer). Prior to Nov. 16, 1938, staff gage at same site and datum.

Average discharge.--27 years, 43.2 cfs (31,280 acre-ft per year).

Extremes.--Maximum discharge during year, 465 cfs May 6; maximum gage height, 4.86 ft Apr. 19; minimum daily discharge, 5.8 cfs Sept. 19.

1935-62: Maximum discharge, about 1,050 cfs June 6, 1957; maximum gage height, 5.56 ft June 8, 1957; minimum discharge not determined.

Remarks.--Records good except those for periods of ice effect, which are poor. Diversions for irrigation of a few acres of hay meadows above station. Saddle Mountain ditch diverts water above station for irrigation of about 800 acres below. One small ditch diverts from Virginia Creek to Iron Creek drainage, and Head and Ferrier ditch diverts water from Curecanti Creek drainage.

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. 3, May 15)

Oct. 1 to May 15

May 16 to Sept. 30

2.6	3.0	3.4	4.5	2.3	4.0	3.5	82
2.8	7.5	3.7	85	2.6	15	3.7	108
2.9	11	4.2	200	2.9	31	4.0	186
3.1	20	4.8	410	3.2	54		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	25	13	10	7.5	8.5	7	31	175	91	67	19	9.0
2	23	12	9.6	7	9.5	7.5	41	160	103	60	18	8.2
3	21	12	9.6	7	10	8	53	170	128	56	18	7.4
4	20	13	8	7.5	12	7.5	64	230	138	61	19	7.4
5	19	9.6	8	8.5	12	7.5	65	300	152	63	16	7.0
6	18	10	8	8.9	12	7.5	62	378	*155	63	*16	7.8
7	18	11	7.5	9.2	11	7.8	62	410	144	60	15	10
8	18	11	7.5	9.2	10	8	55	374	121	57	15	9.8
9	22	12	7	7.5	10	7.5	53	345	112	52	15	9.4
10	21	12	7	6	11	8.6	58	325	121	50	14	9.0
11	20	12	6.5	6.5	12	8	65	322	126	47	13	7.8
12	19	13	6	7	13	8	82	357	121	44	13	7.0
13	18	12	7	7.5	16	8.5	121	353	123	44	13	7.0
14	18	11	8	8	16	9	178	278	119	40	13	6.7
15	18	12	8	*8.2	*13	*10	236	206	105	36	12	6.7
16	17	13	8	7.5	12	10	278	*169	89	34	12	6.4
17	16	12	8	7.5	12	7	308	121	74	32	12	6.1
18	16	12	7.5	7.5	12	7.5	329	94	69	30	12	6.1
19	16	13	7	7.8	11	8.6	361	86	75	29	13	5.8
20	15	*15	8	7.5	11	9.2	370	95	*88	*30	13	9.0
21	15	11	7.5	7.2	11	9.6	329	103	94	28	13	11
22	15	10	7.5	7.8	11	9.6	266	92	92	27	13	9.0
23	*14	10	7.5	7.2	11	10	263	81	89	27	13	7.4
24	13	10	7.5	7.2	11	9.5	311	79	83	27	13	7.0
25	13	10	8	7.5	11	10	322	83	80	26	11	6.7
26	12	11	8.2	7.2	10	14	*318	85	79	28	11	6.4
27	13	9	7.5	7.2	9	22	281	102	73	24	11	7.0
28	13	8.5	7.5	7.2	7	24	272	92	70	23	11	8.6
29	13	9.5	8.2	7.2	-	26	294	82	69	22	9.8	8.6
30	13	10	8.6	7.5	-----	26	221	78	70	20	*9.4	8.2
31	13	-----	8	7.8	-----	28	-----	81	-----	20	9.4	-----
Total	525	339.6	242.2	234.3	315.0	351.4	5,749	5,906	3,053	1,227	415.6	233.5
Mean	16.9	11.3	7.81	7.56	11.2	11.3	192	191	102	39.6	13.4	7.78
Ac-ft	1,040	674	480	465	625	697	11,400	11,710	6,060	2,430	824	463

Calendar year 1961: Max 192 Min 4.6 Mean 27.8 Ac-ft 20,120

Water year 1961-62: Max 410 Min 5.8 Mean 50.9 Ac-ft 36,870

Peak discharge (base, 260 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-19	2200	4.86	450	5-12	2300	4.64	378
5-6	2200	4.83	465				

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 6-8, 13-15, 19, 20, 22-24, 27-29, Dec. 4-25, 27, 28, 31, Jan. 1-5, 9-14, Feb. 1-9, 11, 18, 19, Feb. 26 to Mar. 6, Mar. 8, 11-18, 24-29.

9-1306. West Muddy Creek near Ragged Mountain, Colo.

Location.--Lat 39°08', long 107°35', in NW¼ sec.5, T.11 S., R.91 W., on left bank 100 ft upstream from Gold Creek and 9½ miles north-west of Ragged Mountain.

Drainage area.--6.88 sq mi.

Records available.--October 1955 to September 1962.

Gage.--Water-stage recorder.

Average discharge.--7 years, 5.02 cfs (3,630 acre-ft per year).

Extremes.--Maximum discharge during year, about 260 cfs May 10 (gage height, 5.80 ft, from floodmark); minimum daily determined, 0.3 cfs Sept. 17-19.  
1955-62: Maximum discharge, that of May 10, 1962; no flow at times in 1956, 1959-60.

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

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Mar. 27 to Apr. 1, May 9 to June 22)

2.0	0.2	2.5	2.4	3.5	35
2.2	.4	2.6	3.9	4.0	62
2.3	.7	2.8	8.4	4.8	130
2.4	1.3	3.0	14		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.3	2.7					0.8	31	26	1.1	1.8	0.5
2	2.6	2.0					.9	26	26	8.9	1.6	.4
3	2.2						1.1	32	28	7.2	1.6	.4
4	1.6						.9	52	30	6.2	1.8	.4
5	1.4						.9	78	30	5.6	1.6	.4
6	1.3						.9	89	29	5.6	1.3	* .4
7	1.2						.9	99	28	5.2	1.2	.7
8	1.3						.9	108	* 27	4.3	* 1.1	.5
9	5.6						.9	126	25	3.9	1.1	.4
10	3.8						.9	126	25	3.6	1.2	.4
11	3.9						.9	110	26	3.2	.9	.4
12	2.4						1.0	90	26	3.2	.9	.4
13	2.2					0.6	1.2	75	26	3.4	.9	.4
14	2.1						3.0	65	25	3.3	.9	.4
15	2.1						5.0	55	24	3.0	.8	.4
16	2.0	1.5	1	0.5	0.6		9.0	50	21	2.7	.7	.4
17	1.8	(*)					15	40	18	2.4	1.2	.3
18	1.8						25	30	16	2.3	1.5	.3
19	* 1.6						35	35	16	* 4.3	3.4	.3
20	1.5						40	30	16	3.8	2.4	.5
21	1.5						35	* 28	17	2.7	1.3	.6
22	2.6						28	26	17	2.4	1.6	1.6
23	2.6						* 38	24	15	2.3	1.7	.7
24	2.2						50	25	14	2.7	1.1	.6
25	2.0						53	26	12	4.5	.8	.5
26	2.0					* .7	48	26	* 12	6.7	.7	.5
27	2.2					.8	44	36	10	3.3	.7	.6
28	2.6					1.0	52	31	10	2.7	.6	1.0
29	2.2					.8	47	27	9.7	2.2	.6	1.1
30	2.4					.8	31	25	10	2.2	.5	.8
31	2.4					.8		26		2.0	.5	
Total	69.4	46.7	31	15.5	16.8	19.9	570.2	1,647	614.7	126.8	38.0	16.3
Mean	2.24	1.56	1	0.5	0.6	0.64	19.0	53.1	20.5	4.09	1.23	0.54
Ac-ft	138	93	61	31	33	39	1,130	3,270	1,220	252	75	32

Calendar year 1961: Max 38 Min 0.2 Mean 3.21 Ac-ft 2,320  
Water year 1961-62: Max 126 Min - Mean 8.80 Ac-ft 6,370

Peak discharge (base, 40 cfs).--Apr. 28 (1800) 87 cfs (4.27 ft); May 10 (time unknown) about 260 cfs (5.80 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 22-26, 28, 29, Nov. 2, Apr. 13-21. No gage-height record Nov. 3 to Mar. 26 (stage-discharge relation affected by ice during part of period), May 11-21.

## GUNNISON RIVER BASIN

9-1312, West Muddy Creek near Somerset, Colo.

Location.--Lat 39°05'25", long 107°30'15", in N½ sec.24, T.11 S., R.91 W., on right bank 300 ft downstream from Cow Creek, 1½ miles southeast of West Muddy ranger station, and 13 miles north of Somerset.

Drainage area.--37.1 sq mi.

Records available.--October 1961 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 8,020 ft (from topographic map).

Extremes.--Maximum discharge during year, about 900 cfs May 11; minimum daily, 0.4 cfs Sept. 14.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Small diversions above station for irrigation of hay meadows. Some regulation by Overland Reservoir (capacity, 6,280 acre-ft) on Cow Creek above station. Diversion above station for use outside Muddy Creek drainage by Overland ditch.

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

0.1	0	0.9	34
.2	.5	1.0	48
.3	1.0	1.3	112
.4	3.5	1.8	275
.6	13	2.4	560
.8	25		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	26	12					20	194	134	149	12	1.8
2	30	12					25	185	140	158	11	1.2
3	24	10					35	204	146	152	9.5	1.2
4	22	12					50	*291	149	143	9.5	1.2
5	20	12					45	385	143	123	10	1.0
6	16	12					50	520	146	115	9.0	*1.0
7	14	12					45	540	140	68	6.2	2.2
8	14	12				12	40	550	*132	61	*5.3	2.0
9	30	14					45	580	120	45	4.4	1.0
10	36	12					60	620	118	34	4.0	.8
11	30	12					70	660	118	19	3.2	.8
12	34	12					80	540	110	12	3.2	.6
13	26	12					90	450	102	12	3.0	.5
14	22	10					100	370	118	14	3.0	.4
15	18	10					130	320	155	12	2.0	.7
16	18	12	9	8	10		160	280	149	18	1.5	.8
17	16	*10					180	230	146	11	2.2	.9
18	16	10					220	200	97	12	4.0	1.0
19	16	9.5					240	180	53	*14	7.1	1.0
20	16	9.0					300	160	52	14	10	1.2
21	16	10					250	*150	72	11	6.2	2.2
22	24	9.0					270	130	100	9.0	6.2	6.6
23	24	10					340	*130	107	9.5	8.5	6.2
24	14	12				14	400	143	104	12	6.2	4.8
25	*14	10					450	143	100	12	4.0	4.8
26	14	10					370	137	*100	29	4.4	4.8
27	12	10					315	191	104	16	5.3	4.0
28	14	10				(*)	342	161	118	12	2.2	6.6
29	12	10					295	149	132	12	3.0	9.0
30	12	10					214	132	140	12	2.8	8.0
31	12	-----					-----	126	-----	11	2.2	-----
Total	612	327.5	279	248	280	404	5,231	9,051	3,545	1,331.5	171.1	78.3
Mean	19.7	10.9	9	8	10	13	174	292	118	43.0	5.52	2.61
Ac-ft	1,210	650	553	492	555	801	10,380	17,950	7,030	2,640	339	155

Calendar year 1961: Max - Min - Mean - Ac-ft -  
 Water year 1961-62: Max 660 Min 0.4 Mean 59.1 Ac-ft 42,760

Peak discharge (base, 250 cfs).--Apr. 25 (1800) 520 cfs (2.32 ft); May 11 (time unknown) about 900 cfs.

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 1 to Apr. 25 (stage-discharge relation affected by ice during part of period), May 8-23.

9-1325. North Fork Gunnison River near Somerset, Colo.

Location.--Lat 38°55'45", long 107°26'55", in sec.9, T.13 S., R.90 W., on right bank 1½ miles east of Somerset and 4 miles upstream from Hubbard Creek.

Drainage area.--521 sq mi.

Records available.--October 1933 to September 1962. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 6,038.6 ft above mean sea level, datum of 1929.

Average discharge.--29 years, 439 cfs (317,800 acre-ft per year).

Extremes.--Maximum discharge during year, 4,880 cfs May 13 (gage height, 4.95 ft); minimum daily, 44 cfs Dec. 12.

1933-62: Maximum discharge, 7,860 cfs June 4, 1957 (gage height, 6.14 ft); minimum daily, 17 cfs Nov. 10, 1950.

Remarks.--Records good except those for periods of ice effect, which are poor. Natural flow of stream affected by small diversions for irrigation in nearby drainage areas, irrigation of about 3,000 acres above station, storage in Overland Reservoir (capacity, 6,280 acre-ft), and Paonia Reservoir (capacity, 18,300 acre-ft). Month-end contents of Paonia Reservoir are given below.

Month-end contents, water year October 1961 to September 1962

Date	Contents (acre-feet)	Date	Contents (acre-feet)
Sept. 30.....	0	Apr. 30.....	a13,000
Oct. 31.....	0	May 31.....	a18,300
Nov. 30.....	0	June 30.....	a18,300
Dec. 31.....	0	July 31.....	18,000
Jan. 31.....	0	Aug. 31.....	14,360
Feb. 28.....	a800	Sept. 30.....	7,880
Mar. 31.....	a3,000		

a No elevation record; contents estimated.

Cooperation.--Records of contents of Paonia Reservoir furnished by North Fork Conservancy District.

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, Feb. 9-26, Mar. 6-11, 17-28, Sept. 26-30)

0.5	65	1.5	390	3.0	1,550
.6	80	2.0	670	4.0	2,950
.9	155	2.5	1,050	4.7	4,200

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	280	164	131	70	70	60	284	2,100	1,910	1,420	213	202
2	248	161	128	70	70	70	758	2,020	2,010	1,320	202	210
3	236	115	128	65	70	75	1,190	2,150	2,080	1,180	199	206
4	228	134	122	60	85	90	893	2,500	2,120	1,170	232	210
5	228	128	94	65	85	120	500	2,760	2,220	1,040	206	210
6	236	122	85	70	85	155	447	3,010	*2,230	990	*185	210
7	244	122	80	70	85	118	561	3,250	2,060	926	185	220
8	240	125	80	70	90	74	528	3,640	1,820	878	188	213
9	336	125	75	60	92	70	506	3,640	1,760	821	182	202
10	345	120	70	55	98	66	556	3,760	1,940	737	176	199
11	296	118	60	48	102	66	580	3,570	2,110	658	182	196
12	284	122	44	46	128	55	580	4,200	2,110	616	188	192
13	268	118	55	50	146	65	664	4,040	2,180	622	199	188
14	260	115	*60	55	140	55	894	3,170	2,160	539	202	188
15	260	120	65	*50	*131	85	1,150	2,590	1,990	484	202	185
16	260	143	70	50	128	*130	1,810	*2,060	1,700	446	210	185
17	260	140	80	50	122	72	*2,240	1,860	1,400	420	210	185
18	252	128	80	50	110	71	1,800	1,670	1,310	400	220	185
19	244	112	70	55	100	125	1,630	1,580	1,480	*381	216	188
20	232	*102	80	60	100	264	1,920	1,840	*1,680	368	213	210
21	220	122	80	65	96	329	2,480	1,920	1,790	340	210	220
22	236	100	70	60	92	77	2,440	1,700	1,790	322	210	210
23	*199	120	70	55	90	76	2,480	1,460	1,680	309	206	188
24	182	115	70	55	90	76	2,700	2,100	1,640	322	206	192
25	173	118	70	50	86	82	2,840	1,640	1,650	314	210	176
26	164	122	70	60	86	110	*2,940	1,670	1,630	430	210	90
27	167	120	70	60	75	173	2,700	2,160	1,550	345	206	82
28	170	122	75	60	70	236	2,620	1,840	1,530	300	206	92
29	161	131	80	65	-	292	2,710	1,730	1,480	264	202	92
30	158	134	70	70	-----	276	2,300	1,640	1,480	240	*206	86
31	161	-----	70	70	-----	272	-----	1,680	-----	228	199	-----
Total	7,228	3,738	2,452	1,839	2,722	3,885	45,701	74,950	54,490	18,830	6,281	5,412
Mean	233	125	79.1	59.3	97.2	125	1,523	2,418	1,816	607	203	180
Ac-ft	14,340	7,410	4,860	3,650	5,400	7,710	90,650	148,700	108,100	37,350	12,460	10,730

Calendar year 1961: Max 1,980 Min 36 Mean 292 Ac-ft 211,400  
Water year 1961-62: Max 4,200 Min 44 Mean 623 Ac-ft 451,400

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 6 to Feb. 8, Feb. 27 to Mar. 5, Mar. 12-16.



## GUNNISON RIVER BASIN

9-1327. Hubbard Creek near Paonia, Colo.

Location.--Lat 39°03'25", long 107°37'40", in NE¼ sec.35, T.11 S., R.92 W., on left bank 100 ft upstream from Overland ditch crossing, 2 miles southwest of Hubbard Park, and 13 miles north of Paonia.

Drainage area.--1.24 sq mi.

Records available.--October 1960 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 9,710 ft (from topographic map).

Extremes.--Maximum discharge, 22 cfs June 30 (gage height, 3.30 ft); minimum daily determined, 0.2 cfs for many days in September. 1960-62: Maximum discharge, that of June 30, 1962; minimum daily, 0.1 cfs Oct. 1-8, 1961.

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

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

2.3	0.2	2.7	1.7
2.4	.3	2.8	3.0
2.5	.4	3.0	8.5
2.6	.9	3.2	18

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.2						0.4	1.6	6.0	14	1.2	0.3
2	1.1						.4	1.5	9.4	13	1.0	.3
3	1.1						.4	1.5	11	13	.9	.3
4	1.1						.4	2.2	13	12	1.0	.3
5	1.1						.4	4.7	13	11	.7	.2
6	1.1						.4	7.0	13	11	.6	*.3
7	1.3						.4	8.2	13	13	.5	.3
8	1.4						.4	9.0	11	12	*.5	.3
9	1.5						.4	9.8	12	10	.6	.3
10	1.4						.4	12	13	9.0	.6	.3
11	1.3						.4	12	13	7.9	.4	.3
12	1.1						.4	13	14	7.6	.4	.2
13	1.1					0.3	.4	11	14	8.5	.4	.2
14	1.3						.4	7.6	* 15	6.3	.4	.2
15	1.4						.4	6.0	13	5.2	.4	.3
16	1.4	0.8	0.5	0.4	0.3		.8	4.7	9.8	4.7	.4	.3
17	1.4						1.5	4.0	8.2	4.2	.4	.3
18	1.2						1.7	3.2	8.2	3.7	.4	.2
19	1.1						2.2	4.7	9.4	*4.0	.4	.2
20	.9						2.6	7.6	12	3.0	.4	.3
21	.9						2.4	7.0	13	2.6	.4	.3
22	.9						1.7	4.7	13	2.2	.5	.3
23	1.0						2.1	4.7	13	2.5	.4	.3
24	* 1.2						* 2.9	7.6	13	2.7	.5	.2
25	1.3						4.0	7.6	13	2.9	.4	.2
26	1.4					.3	3.2	7.6	13	3.7	.3	.2
27	1.2					*.4	2.4	7.6	* 14	2.1	.3	.3
28	1.0					.4	2.6	4.9	16	1.5	.3	.4
29	.9					.4	2.6	4.2	16	1.3	.3	.7
30	1.0					.4	2.0	4.4	18	1.2	.3	.3
31	1.0					.4		5.2		1.3	.3	
Total	36.3	24.0	15.5	12.4	8.4	9.6	40.7	196.8	373.0	197.1	15.6	8.6
Mean	1.17	0.8	0.5	0.4	0.3	0.31	1.36	6.35	12.4	6.36	0.50	0.29
Ac-ft	72	48	31	25	17	19	81	390	740	391	31	17

Calendar year 1961: Max 11 Min - Mean 1.20 Ac-ft 870

Water year 1961-62: Max 18 Min - Mean 2.57 Ac-ft 1,860

Peak discharge (base, 20 cfs).--June 14 (1630) 20 cfs (3.29 ft); June 30 (0100) 22 cfs (3.30 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 2-6, 10-12. No gage-height record Oct. 23 to Mar. 26 (stage-discharge relation affected by ice during most of period).

## GUNNISON RIVER BASIN

235

9-1328. Middle Hubbard Creek near Paonia, Colo.

Location.--Lat 39°02'55", long 107°37'10", in SW¼ sec.36, T.11 S., R.92 W., on left bank 100 ft upstream from Overland ditch crossing, 2 miles southwest of Hubbard Park, and 12 miles north of Paonia.

Drainage area.--1.65 sq mi.

Records available.--October 1960 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 9,650 ft (from topographic map).

Extremes.--Maximum discharge during year, 36 cfs June 21 (gage height, 4.10 ft); minimum daily determined, 0.2 cfs for many days.  
1960-62: Maximum discharge, that of June 21, 1962; minimum daily determined, 0.2 cfs for many days in each year.

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

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

2.8	0.1	3.3	3.1
2.9	.3	3.5	6.8
3.0	.7	3.7	14
3.1	1.2	3.8	18
3.2	2.0	4.0	29

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.3						0.2	1.0	5.2	18	1.0	0.4
2	1.0						2	1.0	6.6	16	.9	.4
3	1.0						2	1.0	9.4	16	.8	.4
4	1.1						2	1.6	11	14	.9	.4
5	1.3						2	2.8	11	12	.8	.4
6	1.4						2	4.3	12	14	.7	*.4
7	1.5						2	5.0	*13	14	.6	.5
8	1.8						2	6.0	11	11	*.6	.5
9	1.8						2	6.8	12	9.4	.7	.4
10	1.4						2	7.8	15	7.4	.7	.4
11	1.3						2	9.0	18	6.4	.6	.4
12	1.2						2	9.4	20	6.2	.6	.4
13	1.2					0.2	.3	7.8	21	6.6	.7	.4
14	1.5						.4	5.8	*22	5.4	.6	.4
15	1.7						.7	4.3	20	4.3	.5	.4
16	1.7	0.6	0.4	0.3	0.2		.9	3.6	14	3.8	.5	.4
17	1.7						1.0	3.0	10	3.1	.6	.4
18	1.5						1.3	2.8	11	2.8	.5	.3
19	1.4						1.5	3.6	14	2.6	.6	.3
20	1.2						1.7	5.6	18	*2.0	.6	.5
21	1.0						1.6	5.4	22	1.6	.6	.6
22	1.0						1.2	4.0	20	1.4	.8	.5
23	.9						1.2	4.1	22	1.6	.7	.4
24	*.9						*1.8	*5.8	20	1.6	.7	.4
25	1.0						1.9	6.2	20	1.8	.5	.4
26	1.1					.2	1.7	6.2	19	2.0	.5	.4
27	.9					*.2	1.4	6.4	21	1.6	.5	.5
28	.8					.3	1.4	4.8	*22	1.4	.5	.8
29	.7					.3	1.4	4.0	22	1.2	.5	1.0
30	.8					.3	1.2	4.0	25	1.0	.5	.6
31	.8					.2		4.3		1.0	.4	
Total	37.9	18.0	12.4	9.3	5.6	6.5	25.0	147.4	487.2	191.2	19.7	13.7
Mean	1.22	0.6	0.4	0.3	0.2	0.21	0.83	4.75	16.2	6.17	0.64	0.46
Ac-ft	75	36	25	18	11	13	50	292	966	379	39	27

Calendar year 1961: Max 11 Min - Mean 1.30 Ac-ft 940  
Water year 1961-62: Max 25 Min - Mean 2.67 Ac-ft 1,930

Peak discharge (base, 20 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-12	1700	3.99	28	7-6	1800	3.94	25
6-21	1800	4.10	36				

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 2-5, 10, 11, 23. No gage-height record Oct. 24 to Mar. 27 (stage-discharge relation affected by ice during most of period), July 20 to Aug. 8.

## GUNNISON RIVER BASIN

9-1329, West Hubbard Creek near Paonia, Colo.

Location.--Lat 39°01'55", long 107°36'50", in SE¼ sec.1, T.12 S., R.92 W., on left bank 75 ft upstream from Overland ditch crossing, 3 miles south of Hubbard Park, and 11 miles north of Paonia.

Drainage area.--2.59 sq mi.

Records available.--October 1960 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 9,640 ft (from topographic map).

Extremes.--Maximum discharge during year, 51 cfs June 12 (gage height, 4.27 ft); minimum not determined.  
1960-62: Maximum discharge, that of June 12, 1962; minimum not determined.

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

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Mar. 28 to Apr. 14, June 5-7, 14)

2.8	.5	3.2	4.8
2.9	1.0	3.4	11
3.0	1.8	3.8	28
3.1	3.0	4.0	38

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.5						0.8	3.9	11	29	3.0	1.2
2	2.4						.8	3.7	15	26	2.5	1.2
3	2.0						1.0	3.7	22	24	2.4	1.2
4	2.0						1.0	4.4	27	23	2.4	1.2
5	2.0						1.0	6.8	31	20	2.0	1.2
6	2.0						1.0	1.0	30	20	1.9	* 1.2
7	2.2					0.8	1.0	13	* 30	19	1.8	1.4
8	2.5						1.0	15	27	16	* 1.7	1.2
9	3.0						1.0	17	28	15	1.7	1.2
10	3.4						1.0	19	30	13	1.6	1.1
11	3.2						1.0	21	32	11	1.6	1.1
12	2.5						1.1	21	36	10	1.6	1.0
13	2.5						1.4	19	36	12	1.6	1.0
14	2.5						1.7	13	* 34	9.6	1.5	1.0
15	2.8						2.2	9.6	32	7.9	1.4	1.0
16	2.8	1	0.8	0.6	0.7		2.3	8.3	24	7.0	1.5	1.0
17	2.8						2.6	7.6	19	6.8	1.4	1.0
18	2.5						3.4	6.2	19	6.2	1.5	.9
19	2.4						4.1	7.6	23	5.6	1.5	.9
20	2.3						4.6	11	30	* 5.1	1.5	1.1
21	2.2					1.0	4.6	11	36	4.6	1.6	1.2
22	2.2						3.9	7.9	36	4.1	1.6	1.1
23	1.8						4.1	7.9	36	4.6	1.5	.9
24	* 1.6						* 5.1	11	36	5.4	1.4	.9
25	1.4						6.2	11	35	4.8	1.3	.8
26	1.4					1.0	5.9	13	34	5.4	1.4	.8
27	1.4					* 1.0	4.6	13	34	4.6	1.3	.9
28	1.2					1.2	4.8	9.0	* 35	3.9	1.2	1.5
29	1.0					.9	4.8	7.9	34	3.2	1.2	1.8
30	1.2					-----	4.3	8.3	36	3.4	1.2	1.2
31	1.2	-----				-----	.8	9.6	-----	3.4	1.2	-----
Total	66.9	31	24.8	18.6	19.6	27.8	82.3	330.4	888	333.6	51.0	33.2
Mean	2.16	1	0.8	0.6	0.7	0.90	2.74	10.7	29.6	10.8	1.65	1.11
Ac-ft	133	61	49	37	39	55	163	655	1,760	662	101	86

Calendar year 1961: Max 26 Min - Mean 2.59 Ac-ft 1,870

Water year 1961-62: Max 36 Min - Mean 5.23 Ac-ft 3,780

Peak discharge (base, 40 cfs).--June 12 (1830) 51 cfs (4.27 ft); June 23 (1800) 44 cfs (4.11 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 3-6, 23-28. No gage-height record Oct. 29 to Mar. 27 (stage-discharge relation affected by ice during most of period).

9-1345. Leroux Creek near Cedaredge, Colo.

Location.--Lat 38°55'35", long 107°47'35", in NW¼ sec.16, T.13 S., R.93 W., on right bank 200 ft upstream from headgate of Overland ditch, 400 ft upstream from Cow Creek, and 7 miles northeast of Cedaredge.

Drainage area.--43 sq mi, approximately.

Records available.--October 1936 to September 1956, October 1960 to September 1962. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Altitude of gage is 7,160 ft (by barometer).

Average discharge.--22 years, 48.6 cfs (35,180 acre-ft per year).

Extremes.--Maximum discharge during year, 628 cfs May 9 (gage height, 3.77 ft); minimum daily, 5 cfs Dec. 12.  
1936-56, 1960-62: Maximum discharge, 1,310 cfs May 26, 1942 (gage height, 4.95 ft), from rating curve extended above 650 cfs; maximum gage height, 5.10 ft May 10, 1937 (backwater from diversion dam); minimum daily discharge, 1.8 cfs Nov. 10, 1950.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. One small diversion and several small reservoirs above station for irrigation below.

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

0.9	6	1.9	90
1.1	11	2.4	200
1.4	26	3.0	360
1.6	43	3.3	450

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	20	16	7.6	6.0			12	110	228	144	43	37
2	* 17	* 14	7.4	6.0			15	130	280	120	40	37
3	16	11	7.4				19	150	324	100	42	36
4	16	13	7				22	180	342	90	50	34
5	15	12	6.5				21	238	339	85	46	34
6	15	12	6.5				23	270	* 327	79	* 42	34
7	14	12	6.5				24	300	312	76	38	33
8	14	12	7			8	22	354	290	69	36	31
9	24	12	6.5				25	405	275	64	32	30
10	18	13	6				32	426	270	56	32	28
11	17	13	5.5				37	402	278	51	31	28
12	20	11	5				51	417	288	52	31	28
13	23	10	5.5				74	324	282	51	31	27
14	29	10	6.5				100	282	262	44	39	25
15	32	11	7				120	248	240	38	39	25
16	29	12	7				124	205	212	36	38	24
17	33	13	6.8	6.5			* 150	* 180	168	40	38	22
18	31	12	6.8				165	148	146	44	35	30
19	27	11	6.6				202	190	162	* 43	35	30
20	24	11	6.6				225	270	* 182	43	35	32
21	22	13	6.6				195	255	198	42	38	30
22	21	11	6.6				150	188	190	44	36	28
23	18	10	6.4				182	190	175	46	35	23
24	18	9	6.4				218	250	165	53	32	21
25	16	7.8	6.4				240	250	155	52	33	18
26	17	8.0	6.4				9	248	245	146	58	36
27	18	8.5	6.4				* 10	195	262	138	48	37
28	16	8	6.2				11	210	198	136	43	38
29	18	8	6.2				9.2	195	170	134	40	38
30	18	7.6	6.2				7.8	126	182	162	41	35
31	16	-----	6.0				8.9	-----	205	-----	42	* 35
Total	632	331.9	201.5	200.5	196	260.9	3,422	7,624	6,806	1,834	1,146	838
Mean	20.4	11.1	6.50	6.47	7	8.42	114	246	227	59.2	37.0	27.9
Ac-ft	1,250	658	400	398	389	517	6,790	15,120	13,500	3,640	2,270	1,660

Calendar year 1961: Max 296 Min - Mean 31.3 Ac-ft 22,650

Water year 1961-62: Max 426 Min 5 Mean 64.4 Ac-ft 46,590

Peak discharge (base, 600 cfs).--May 9 (2000) 628 cfs (3.77 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 3-24, 27-29, Dec. 4-16. No gage-height record Jan. 3 to Mar. 27 (stage-discharge relation affected by ice during part of period), May 2-4.



## GUNNISON RIVER BASIN

9-1347. Cow Creek near Cedaredge, Colo.

Location.--Lat 38°55'35", long 107°47'25", in N½ sec.16, T.13 S., R.93 W., on right bank at mouth 300 ft upstream from Overland ditch diversion headgate and 7 miles northeast of Cedaredge.

Drainage area.--6.90 sq mi.

Records available.--October 1960 to September 1962.

Gage.--Water-stage recorder.

Extremes.--Maximum discharge during year, 292 cfs May 8 (gage height, 3.43 ft), from rating curve extended above 61 cfs; no flow for many days.  
1960-62: Maximum discharge, that of May 8, 1962. No flow many days in 1961-62.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Natural flow of stream affected by one small diversion above station to Dever Creek drainage. Most of flow is water imported by Overland ditch from Overland Reservoir (capacity, 6,280 acre-ft) in West Muddy Creek drainage. Overland ditch also intercepts intermediate tributaries to North Fork Gunnison River during high flows.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used May 16-20)

1.3	0	2.3	13
1.4	.2	2.5	23
1.5	.5	2.6	33
1.6	1.0	2.8	70
2.0	5.0	3.1	165

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.1	0.2	0.1		0	0.1	1.0	31	44	27	32	19
2	**1	*.2	.1		0	.1	4.0	33	46	27	29	17
3	.1	.2	.1		0	.1	8	36	52	27	29	17
4	.1	.2	.1		0	.1	7	70	50	26	31	15
5	.1	.2	.1		0	.1	6.2	90	38	25	30	13
6	.1	.2	.1		0	.2	7.0	124	*38	28	*30	13
7	.1	.2	.1		0	.2	7.3	130	38	30	30	17
8	.1	.1	.1		0	.2	7.0	148	33	28	31	17
9	.5	.1	.1		0	.2	7.6	100	28	27	31	14
10	.8	.1	.1		.1	.2	8.8	80	24	21	30	7.3
11	.6	.1	0		.1	.1	12	70	27	22	30	4.5
12	.4	.1	0		.2	.1	15	60	30	27	30	3.3
13	.4	.1	0		.2	.1	20	50	30	30	29	1.0
14	.3	.1	0		.1	.1	30	40	26	33	27	.5
15	.3	.1	0		.1	.1	46	30	21	28	26	.1
16	.2	.1	0		.1	.3	48	20	18	18	26	0
17	.2	.1	0		.1	.3	*48	*15	14	13	27	0
18	.1	.1	0		0	.4	70	13	14	22	28	.5
19	.1	.1	0		0	.4	92	16	20	*30	30	.5
20	.1	.1	0		0	.3	130	36	*21	31	31	1.0
21	.1	.1	0		0	.3	81	29	22	30	31	.5
22	.1	.1	0		0	.2	55	29	22	30	31	.1
23	.1	.1	0		0	.2	73	26	21	30	31	0
24	.1	.1	0		0	.3	114	42	19	34	31	0
25	.1	.1	0		0	.4	104	38	17	34	31	0
26	.1	.2	0		0	.5	98	33	16	44	30	0
27	.1	.1	0		0	*.5	84	46	22	36	11	0
28	.1	.1	0		0	.5	87	32	28	36	13	.1
29	.1	.1	0		-	.5	70	29	29	30	16	.2
30	.2	.1	0		-----	.4	36	33	30	30	19	.1
31	.2	-----	0		-----	.4	-----	48	-----	32	*20	-----
Total	6.1	3.8	1.0	0	1.0	7.9	1,376.9	1,577	838	886	851	161.7
Mean	0.20	0.13	0.03	0	0.04	0.25	45.9	50.9	27.9	28.6	27.5	5.39
Ac-ft	12	7.5	2.0	0	2.0	16	2,730	3,130	1,660	1,760	1,690	321

Calendar year 1961: Max 84 Min 0 Mean 10.2 Ac-ft 7,420  
Water year 1961-62: Max 148 Min 0 Mean 15.6 Ac-ft 11,330

\* Discharge measurement made on this day.

\*\* Field estimate made on this day.

Note.--Stage-discharge relation affected by ice Nov. 2-4, Mar. 28 to Apr. 4. No gage-height record Nov. 27 to Mar. 27 (stage-discharge relation affected by ice during part of periods), May 9-17, Sept. 13-30.

## GUNNISON RIVER BASIN

239

9-1362. Gunnison River near Lazear, Colo.

Location--Lat 38°47'00", long 107°50'15", in NE¼ sec.1, T.15 S., R.94 W., on left bank 300 ft downstream from North Fork Gunnison River and 3 miles west of Lazear. Prior to Aug. 23, 1962, at site 20 ft downstream at same datum.

Drainage area--5,260 sq mi, approximately.

Records available--May to September 1962.

Gage--Water-stage recorder. Altitude of gage is 5,090 ft (from topographic map).

Extremes--Maximum discharge during water year, 14,800 cfs May 13 (gage height, 6.30 ft); minimum daily during period May to September, 252 cfs Sept. 19.

Remarks--Records good except those for period of no gage-height record, which are fair. Natural flow of stream affected by transmountain and transbasin diversions, storage reservoirs, and diversions for irrigation of about 150,000 acres, part of which is in Uncompahgre River basin.

Rating table, period May 1 to Sept. 30, 1962 (gage height, in feet, and discharge, in cubic feet per second)

1.0	240	4.0	5,100
1.4	410	4.0	9,000
2.0	1,000	6.0	13,500
3.0	2,400		

Discharge, in cubic feet per second, May to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1								7,500	4,540	7,600	868	306
2								6,800	4,860	6,880	813	330
3								6,600	5,450	6,160	725	342
4								7,200	5,960	5,660	703	346
5								8,000	6,400	5,100	747	334
6								9,000	*6,760	4,510	650	306
7								10,500	7,000	4,210	*561	350
8								12,000	6,600	3,940	480	424
9								13,000	6,120	3,700	417	386
10								14,200	6,520	3,300	507	362
11								14,000	7,280	2,920	507	362
12								*14,200	7,680	2,640	498	410
13								14,500	8,480	2,680	473	386
14								13,000	9,900	2,560	410	350
15								10,000	8,960	2,190	362	342
16								8,500	8,080	1,920	392	302
17								7,500	6,800	*1,630	445	306
18								*6,200	5,800	1,490	473	298
19								5,800	6,000	1,400	489	252
20								6,000	*7,080	1,440	543	282
21								*6,200	7,920	1,310	552	445
22								5,620	8,320	1,170	534	670
23								4,630	8,200	1,100	*473	543
24								4,300	7,800	1,110	374	410
25								4,510	7,760	1,320	330	398
26								4,480	7,600	1,540	282	570
27								5,450	*7,320	1,540	306	525
28								5,730	7,400	1,240	342	570
29								5,030	7,480	1,080	326	525
30								4,510	7,400	956	334	473
31		-----			-----		-----	4,210	-----	890	346	-----
Total								249,170	213,470	85,186	15,262	11,905
Mean								8,038	7,116	2,748	492	397
Ac-ft								494,200	423,400	169,000	30,270	23,610

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

\* Discharge measurement made on this day.

Note.--No gage-height record May 1-21.

## GUNNISON RIVER BASIN

9-1378. George Creek near Grand Mesa, Colo.

Location.--Lat 38°57', long 108°02', in NW¼ sec.5, T.13 S., R.95 W., on left bank 200 ft upstream from falls on Cedar Park ditch, 3½ miles upstream from confluence with Sara Creek, 7½ miles northwest of Cedaredge, and 8 miles southwest of Grand Mesa.

Drainage area.--8.3 sq mi, approximately.

Records available.--October 1957 to September 1962.

Gage.--Water-stage recorder.

Average discharge.--5 years, 7.14 cfs (5,170 acre-ft per year).

Extremes.--Maximum discharge during year, 51 cfs Apr. 20 (gage height, 1.48 ft); minimum not determined.  
1957-62: Maximum discharge, 75 cfs May 11, 1958 (gage height, 1.72 ft); minimum not determined.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Natural flow of stream affected by storage reservoirs, diversions above station for municipal water supply of town of Delta, and three small diversions above station for irrigation below.

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

0.4	2.0	0.7	8.5
.5	3.5	1.0	21
.6	5.5	1.4	45

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.5	3.2					3.9	20	19	12	6.7	6.7
2	5.5	2.9					6.1	19	19	11	6.7	6.7
3	* 5.3	* 4.0					10	20	19	11	7.3	6.7
4	5.1	3.5					12	22	20	10	7.9	7.3
5	4.5	3.0					11	24	18	10	8.9	7.9
6	4.3				2.5		11	25	17	8.9	8.5	6.7
7	4.5						10	26	17	9.3	* 8.5	* 9.3
8	5.3					3.0	8.2	27	16	9.3	8.9	10
9	8.9						11	28	16	8.9	8.2	11
10	5.8						13	30	15	8.5	7.9	11
11	5.8						13	30	* 13	8.2	7.3	8.5
12	6.1						16	30	12	8.9	7.9	9.3
13	6.1						22	28	12	9.7	7.3	10
14	6.1						27	24	11	8.9	6.4	9.7
15	5.8		2.5	2.0			30	21	8.2	7.9	6.1	8.2
16	5.8						31	18	11	7.9	6.7	8.2
17	5.8						35	* 17	11	5.8	7.0	7.0
18	5.5	3.0					38	15	11	* 6.7	7.6	6.7
19	5.5						37	15	10	8.5	8.2	6.4
20	5.3					3.5	39	15	9.7	9.3	8.9	8.5
21	5.3						34	14	8.9	12	8.2	9.7
22	5.1						28	14	8.2	11	8.2	8.5
23	5.1						30	16	7.6	11	8.2	7.9
24	5.1						31	16	7.3	11	7.6	7.6
25	4.9						33	16	7.3	11	7.3	7.9
26	4.9					3.4	32	16	7.3	10	6.7	7.9
27	5.1					3.8	* 27	22	7.3	9.3	7.0	8.2
28	4.9					* 4.0	26	21	7.3	9.7	7.6	9.7
29	4.9					3.5	25	20	8.5	9.3	7.0	7.9
30	4.3					3.0	22	19	13	8.5	5.5	7.0
31	3.5	-----			-----	2.8	-----	19	-----	6.7	6.4	-----
Total	165.6	91.6	77.5	62.0	79.0	100.5	672.2	647	367.6	290.2	232.6	248.1
Mean	5.34	3.05	2.5	2.0	2.82	3.24	22.4	20.9	12.3	9.36	7.50	8.27
Ac-ft	328	182	154	123	157	199	1,330	1,280	729	576	461	492

Calendar year 1961: Max 19 Min -

Water year 1961-62: Max 39 Min -

Mean 5.01 Ac-ft 3,630

Mean 8.31 Ac-ft 6,010

\* Discharge measurement made on this day.

Note.--No gage-height record Nov. 3 to Mar. 28 (stage-discharge relation affected by ice during most of period).

9-1392. Ward Creek near Grand Mesa, Colo.

Location.--Lat 38°59', long 107°58', on line between secs.25 and 26, T.12 S., R.95 W., on left bank 300 ft upstream from headgate of Lake Fork and Surface Creek Canal, 3½ miles upstream from William Creek, 4½ miles south of Grand Mesa, and 6 miles northwest of Cedaredge.

Drainage area.--14 sq mi, approximately.

Records available.--October 1957 to September 1962.

Gage.--Water-stage recorder. Prior to June 4, 1958, at site half a mile upstream at different datum.

Average discharge.--5 years, 12.2 cfs (8,830 acre-ft per year).

Extremes.--Maximum discharge during year, 55 cfs May 12 (gage height, 2.53 ft); minimum not determined.

1957-62: Maximum discharge, about 150 cfs May 25, 1958; minimum daily determined, 1 cfs Nov. 10-15, 1959.

Remarks.--Records good except those for period of no gage-height record, which are poor. Flow regulated by numerous small storage reservoirs. At times water is exported from Hotel Lake above station to Baron Lake in Kiser Creek basin.

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

1.6	2.5	2.0	13
1.7	4.0	2.2	23
1.8	6.2	2.5	49

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6.9	4.0					2.8	28	33	24	20	24
2	*6.5	3.5					3.0	26	38	23	20	24
3	5.8	*2.5					3.2	27	41	18	20	24
4	4.0	2.5					3.4	32	40	17	20	24
5	3.2	2.5					3.4	34	39	17	19	24
6	3.2				2.0		3.4	38	37	17	19	*24
7	3.2						3.4	39	35	18	*19	24
8	3.4					2.4	3.2	41	34	17	19	26
9	4.4						3.4	42	32	16	20	27
10	3.7						3.8	44	33	15	20	27
11	3.8						4.0	43	*33	14	20	28
12	4.0						4.7	45	31	*18	20	28
13	4.2						5.8	48	31	18	20	28
14	4.7						7.8	47	29	18	20	27
15	4.9						11	45	28	18	20	27
16	4.9		2.0	1.5			12	40	27	17	20	27
17	4.9						14	*35	24	17	20	26
18	4.7	2.5					16	32	24	18	20	26
19	4.2						18	34	22	18	20	26
20	4.0						20	31	21	18	20	27
21	3.8						18	26	*24	18	21	27
22	3.8						17	23	24	18	20	26
23	4.4						20	24	21	18	20	26
24	10						*22	24	20	18	20	26
25	10						24	22	19	18	24	25
26	13						24	18	21	18	24	25
27	13						24	22	21	19	24	24
28	14						34	20	23	20	24	24
29	14						33	20	24	20	24	21
30	14					*2.6	29	28	26	20	24	20
31	8.8					2.6	-----	31	-----	20	24	-----
Total	197.4	77.5	62.0	46.5	59.6	77.6	391.3	1,009	855	563	645	762
Mean	6.37	2.58	2.0	1.5	2.13	2.50	13.0	32.5	28.5	18.2	20.8	25.4
Ac-ft	392	154	123	92	118	154	776	2,000	1,700	1,120	1,280	1,510

Calendar year 1961: Max 40 Min - Mean 8.77 Ac-ft 6,350  
 Water year 1961-62: Max 48 Min - Mean 13.0 Ac-ft 9,420

\* Discharge measurement made on this day.

Note.--No gage-height record Nov. 3 to Mar. 30 (stage-discharge relation affected by ice during most of period).



## GUNNISON RIVER BASIN

9-1402. Kiser Creek near Grand Mesa, Colo.

Location.--Lat 39°00', long 107°56', in N½ sec.19, T.12 S., R.94 W., on left bank a quarter of a mile upstream from unnamed tributary, 2½ miles south of Grand Mesa, 5½ miles upstream from Cottonwood Creek, and 7 miles northwest of Cedaredge.

Drainage area.--5.3 sq mi, approximately.

Records available.--October 1957 to September 1962.

Gage.--Water-stage recorder.

Average discharge.--5 years, 8.91 cfs (6,450 acre-ft per year).

Extremes.--Maximum discharge during year, 55 cfs Aug. 21 (gage height, 3.27 ft); minimum not determined.

1957-62: Maximum discharge, 83 cfs June 7, 1958 (gage height, 3.40 ft); from rating curve extended above 33 cfs; minimum not determined.

Remarks.--Records good except those for period of no gage-height record, which are poor. No diversion above station. Flow regulated by numerous small storage reservoirs. At times water is imported from Hotel Lake in Ward Creek basin to Baron Lake above station.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Mar. 31 to Apr. 4, Sept. 24-30)

2.4	1.0	2.8	12
2.5	2.0	2.9	18
2.6	3.8	3.0	27
2.7	6.8	3.2	58

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.5	1.7					1.6	7.3	7.3	14	40	33
2	*1.5	1.8					1.7	6.5	8.9	13	31	31
3	1.5	*1.6					1.9	7.3	8.9	13	28	33
4	1.5	1.4					1.9	8.4	8.9	13	24	24
5	1.6	1.2					2.2	10	8.9	13	25	23
6	1.6						2.2	11	8.4	12	25	*37
7	1.5						2.4	11	7.3	15	*37	35
8	1.6				0.8	1.2	2.2	12	8.4	15	37	24
9	1.9						2.5	13	12	15	38	22
10	1.7						2.7	12	14	22	41	22
11	1.8						2.9	13	*14	22	30	22
12	1.8						3.1	13	13	22	30	22
13	1.8						3.6	11	13	20	30	21
14	1.9						4.4	9.9	12	11	38	21
15	1.9		0.8	0.6			5.9	8.4	11	11	41	4.8
16	2.0						6.5	7.8	11	11	48	2.9
17	1.9	1.2					7.8	*6.8	9.9	25	51	2.7
18	1.9						8.9	6.2	8.4	*30	40	15
19	1.8						9.4	7.3	8.4	41	40	16
20	1.8						11	7.8	7.8	46	38	6.8
21	1.7						9.9	7.3	*8.9	31	44	5.9
22	1.7				1.0		7.8	6.2	9.4	30	40	5.9
23	1.7					1.4	9.4	6.5	9.4	28	38	5.6
24	1.7						*11	7.3	8.9	44	38	5.3
25	1.7						11	6.5	8.4	41	37	2.4
26	1.7						10	7.3	7.8	27	37	1.9
27	1.8						9.9	7.3	8.4	26	38	2.0
28	1.7						9.4	6.5	13	20	38	2.2
29	1.8						8.4	6.2	13	19	40	2.0
30	1.9					(*)	6.8	6.5	14	20	38	1.9
31	1.8					1.4		7.3		38	38	
Total	53.7	37.7	24.8	18.1	25.0	40.4	178.4	264.6	302.7	708	1,138	453.3
Mean	1.73	1.26	0.8	0.6	0.89	1.30	5.95	8.54	10.1	22.8	36.7	15.1
Ac-ft	107	75	49	36	50	80	354	525	600	1,400	2,260	899

Calendar year 1961: Max 50 Min - Mean 7.39 Ac-ft 5,350

Water year 1961-62: Max 51 Min - Mean 8.89 Ac-ft 6,440

\* Discharge measurement made on this day.

Note.--No gage-height record Nov. 3 to Mar. 30 (stage-discharge relation affected by ice most of period).

9-1407. Cottonwood Creek near Grand Mesa, Colo.

Location.--Lat 38°58', long 107°57', in SW¼ sec.30, T.12 S., R.94 W., on left bank 300 ft upstream from culvert on county highway, 3½ miles upstream from mouth, 5 miles south of Grand Mesa, and 5½ miles northwest of Cedaredge.

Drainage area.--2.5 sq mi, approximately.

Records available.--October 1957 to September 1962.

Gage.--Water-stage recorder and timber weir.

Average discharge.--5 years, 1.52 cfs (1,100 acre-ft per year).

Extremes.--Maximum discharge during year, 26 cfs Apr. 17 (gage height, 1.86 ft); no flow for many days.  
1957-62: Maximum discharge, about 35 cfs May 26, 1958; no flow for many days in 1959-62.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Flow regulated by numerous small storage reservoirs.

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

0.4	0	0.8	2.3
.5	.1	1.1	6.2
.6	.2	1.3	9.2
.7	1.2	1.6	17

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.3	0.3					1.5	8	5.2	6.3	0.1	0
2	*.2	.2					2.2	6.5	5.9	6.1	.1	0
3	.2	*.2					2.6	7	6.7	4.0	.1	0
4	.1	.2					2.8	7.5	7.2	3.6	.1	0
5	.1	.2					3.0	8	6.7	4.0	.1	0
6	.1				0.2		3.3	9	6.2	4.5	0	0
7	.1						3.0	9	5.3	3.9	*0	*0
8	.1					0.4	3.0	10	5.2	3.3	0	0
9	.8						3.6	12	4.8	3.2	0	0
10	.3						4.1	13	4.1	3.0	0	0
11	.4						4.9	13	*3.7	3.0	0	0
12	.7						5.9	13	3.1	3.0	0	0
13	.8						7.1	12	2.7	3.0	0	0
14	1.0						8.9	11	2.3	2.4	0	0
15	1.0						12	10	2.4	2.3	0	0
16	1.0		0.1	0.1			12	9.5	2.7	2.4	0	0
17	.9						15	*9	2.2	2.2	0	0
18	.8	.2					15	7.0	1.8	*1.9	0	0
19	.7						16	4.4	1.0	1.0	0	0
20	.6				.3		16	4.5	.8	.7	0	0
21	.5					.5	12	4.2	*.8	.2	0	.1
22	.5						9.7	3.7	.8	.1	0	.1
23	.3						11	3.7	5.2	.1	0	0
24	.3						*10	4.0	5.9	.2	0	0
25	.2						9.5	4.4	5.8	.4	0	0
26	.2					.5	9	5.0	5.8	.5	0	0
27	.3					.6	9	7.0	5.7	.2	0	0
28	.4					.6	9	6.5	5.6	.1	0	.2
29	.2					.7	9	5.6	5.7	.1	0	.5
30	.2					*.8	7	5.3	7.0	.1	0	.2
31	.3					1.1		5.2		.1	0	
Total	13.6	6.1	3.1	3.1	7.4	15.3	237.1	238.0	128.3	65.9	0.5	1.1
Mean	0.44	0.20	0.1	0.1	0.26	0.49	7.90	7.68	4.28	2.13	0.02	0.04
Ac-ft	27	12	6.1	6.1	15	30	470	472	254	131	1.0	2.2

Calendar year 1961: Max 11 Min 0 Mean 1.10 Ac-ft 798  
Water year 1961-62: Max 16 Min 0 Mean 1.97 Ac-ft 1,430

\* Discharge measurement or observation of no flow made on this day.

Note.--No gage-height record Nov. 3 to Mar. 30 (stage-discharge relation affected by ice during most of period), Apr. 24 to May 17.

## GUNNISON RIVER BASIN

9-1412. Youngs Creek near Grand Mesa, Colo.

Location--Lat 38°58', long 107°55', in S½ sec.32, T.12 S., R.94 W., on left bank 200 ft upstream from bridge, a quarter of a mile downstream from Horse Creek, 4½ miles north of Cedaredge, and 6 miles southeast of Grand Mesa.

Drainage area--10 sq mi, approximately.

Records available--October 1957 to September 1962.

Gage--Water-stage recorder.

Average discharge--5 years, 7.38 cfs (5,340 acre-ft per year).

Extremes--Maximum discharge during year, 61 cfs May 10 (gage height, 2.42 ft); minimum not determined.  
1957-62: Maximum discharge, 86 cfs June 6, 1958 (gage height, 2.77 ft); minimum not determined.

Remarks--Records good except those for periods of ice effect or no gage-height record, which are poor. Flow regulated by numerous small storage reservoirs. At times water is diverted from Eureka Reservoirs No. 1 and 2 above station to Milk Creek in Surface Creek basin. Three small diversions above station for irrigation below.

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

0.8	0.7	1.6	11
1.0	1.5	2.0	30
1.2	3.0	2.4	58
1.4	5.6		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.7						b 3.0	24	24	23	7.8	7.8
2	* 1.5	(*)					4.2	22	30	22	7.5	7.8
3	1.6						6.3	22	35	20	7.0	8.3
4	1.6						7.5	26	37	19	6.8	9.2
5	1.5						6.6	36	37	17	6.1	6.6
6	1.4						7.3	44	38	16	7.5	7.3
7	1.4						7.5	45	34	16	* 7.8	* 6.1
8	1.5				1.2	1.8	6.6	47	31	15	11	5.1
9	3.5						7.8	48	31	13	12	5.0
10	2.9						9.2	52	32	14	9.5	5.1
11	2.6						10	51	* 32	14	8.6	5.0
12	2.9						14	49	32	13	8.6	4.5
13	3.1						17	49	31	14	5.3	4.0
14	3.6						21	53	29	13	5.0	4.6
15	3.9			(*)	(*)		28	40	26	13	3.8	4.8
16	3.9	1.3	1.2	1.1			31	33	24	12	3.9	4.8
17	3.6						34	* 29	21	11	4.8	6.1
18	3.0						38	25	19	* 13	4.6	6.6
19	2.6						38	27	17	14	5.1	6.6
20	2.2						40	31	18	13	5.1	7.3
21	1.9					2.4	35	30	* 18	13	5.3	6.1
22	1.8				1.5		26	25	19	13	7.8	4.8
23	1.5						31	23	19	12	7.5	4.3
24	1.4						* 38	23	18	13	6.6	3.0
25	1.4						40	23	17	13	6.1	2.6
26	1.4						3.0	41	22	17	5.4	2.0
27	1.4						* 3.4	35	28	19	6.3	1.9
28	1.3						3.6	35	25	20	6.3	3.1
29	1.2						b 2.6	35	23	20	7.3	3.3
30	1.3						b 2.2	28	22	27	7.3	2.3
31	1.3						b 2.6	22	22	8.9	8.3	
Total	65.9	39.0	37.2	34.1	37.5	68.4	681.0	1,019	772	432.9	212.0	156.0
Mean	2.13	1.3	1.2	1.1	1.34	2.21	22.7	32.9	25.7	14.0	6.84	5.20
Ac-ft	131	77	74	68	74	136	1,350	2,020	1,530	859	420	309

Calendar year 1961: Max 26 Min 0.9 Mean 4.58 Ac-ft 3,320

Water year 1961-62: Max 53 Min - Mean 9.74 Ac-ft 7,050

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Oct. 24 to Mar. 27 (stage-discharge relation affected by ice most of period).

## GUNNISON RIVER BASIN

245

9-1430. Surface Creek near Cedaredge, Colo.

Location.--Lat 38°59', long 107°51', in NW¼ sec.25, T.12 S., R.94 W., on left bank 5 ft downstream from private bridge, 1½ miles downstream from Caesar Creek, and 7 miles northeast of Cedaredge.

Drainage area.--28 sq mi, approximately.

Records available.--June 1939 to September 1962. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Altitude of gage is 8,180 ft (by barometer).

Average discharge.--23 years, 42.6 cfs (30,840 acre-ft per year).

Extremes.--Maximum discharge during year, 298 cfs May 9 (gage height, 2.65 ft); minimum daily, 3.6 cfs Jan. 10.

1939-62: Maximum discharge, 578 cfs May 12, 1941 (gage height, 3.62 ft), from rating curve extended above 300 cfs; maximum gage height, 5.10 ft Apr. 13, 1958 (ice jam); minimum discharge not determined.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Flow regulated by many small reservoirs. Some water imported from Leon Lake in Plateau Creek drainage.

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

0.7	2.5	1.7	61
.9	7.0	2.0	106
1.1	14	2.3	180
1.4	32	2.5	245

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9.7	7.9	5.2	4.3	4.6	4.4	6.2	6.2	11.2	16.2	5.6	4.2
2	* 8.8	* b 7.5	5.2	4.5	4.6	4.4	7.0	5.7	14.2	14.2	5.9	3.9
3	9.1	b 6.5	5.2	4.8	4.6	4.4	7.6	7.0	19.5	13.0	6.1	3.8
4	9.4	b 6.5	5.2	4.8	4.6	4.4	8.5	11.0	19.2	12.1	5.9	6.4
5	9.4	b 7	5.0	4.5	4.6	4.4	7.9	14.8	20.4	11.2	5.7	6.5
6	9.1	b 8	5.2	4.5	5	4.4	8.2	17.7	20.4	10.6	5.3	5.8
7	11	b 8.5	5.2	4.5	5	4.4	8.5	18.9	20.1	9.6	* 6.0	* 5.6
8	11	7.9	5.2	4.3	5	4.4	8.2	20.1	21.0	8.9	6.1	3.4
9	16	7.3	5.2	4.1	5	4.4	8.5	21.4	20.1	8.4	6.8	3.3
10	13	6.8	5.0	3.6	5	4.4	1.0	19.8	20.4	7.1	6.8	3.4
11	10	6.5	5.0	4.0	5.5	4.6	12	19.5	* 22.0	6.6	7.0	3.4
12	11	6.2	4.8	4.0	5.5	4.6	16	19.5	22.4	8.4	6.9	3.3
13	12	b 6	5.2	4.0	5.5	4.6	23	15.9	21.7	8.6	6.9	2.8
14	14	b 5.5	5.2	3.8	5.5	4.6	33	12.1	20.4	8.6	7.4	2.8
15	15	b 6	5.0	3.8	5.5	4.6	51	9.4	19.5	8.3	7.4	2.3
16	14	5.8	4.8	4.0	5	* 4.6	6.0	8.6	18.3	7.8	7.0	2.2
17	13	5.5	4.5	4.4	5	4.5	7.3	* 7.8	15.3	7.0	6.9	2.2
18	12	b 5.5	4.5	4.4	5	4.5	9.4	7.0	13.0	* 6.6	6.1	3.2
19	10	b 5.5	4.5	4.4	5	4.5	10.8	8.8	13.0	6.5	6.1	3.4
20	10	6.0	4.5	4.4	5	4.5	12.8	11.4	13.8	6.4	6.4	3.4
21	9.1	5.8	4.5	4.4	4.4	4.5	11.0	11.0	* 15.0	8.6	5.9	3.5
22	9.1	b 5.5	4.3	4.2	4.4	4.5	9.2	10.1	15.6	8.6	5.9	2.8
23	8.8	5.5	4.5	4.2	4.4	4.5	12.1	11.2	15.6	8.4	6.8	2.5
24	20	5.2	4.5	4.2	4.4	4.5	* 16.8	13.5	15.3	8.4	6.8	2.5
25	21	5.2	4.5	4.2	4.4	5.0	17.4	13.0	14.5	8.4	6.0	3.2
26	25	5.5	4.5	4.4	4.2	5.8	14.8	13.0	15.3	7.4	5.8	3.4
27	26	5.2	4.3	4.4	4.2	6.8	12.8	14.2	15.0	6.8	5.7	1.7
28	23	5.2	4.5	4.4	4.0	7.6	13.8	10.3	15.0	5.2	5.9	1.8
29	22	5.2	4.5	4.4	-	6.5	11.0	9.9	14.8	4.7	6.1	1.6
30	22	5.2	4.3	4.4	-----	6.0	7.1	9.2	18.6	4.7	5.9	1.2
31	10	-----	4.3	4.4	-----	5.8	-----	10.3	-----	5.7	5.9	-----
Total	423.5	185.9	148.3	132.7	134.9	151.1	1,938.6	3,883	5,206	2,630	1,950	995
Mean	13.7	6.20	4.78	4.28	4.82	4.87	64.6	125	174	84.8	62.9	33.2
Ac-ft	840	369	294	263	268	300	3,850	7,700	10,330	5,220	3,870	1,970

Calendar year 1961: Max 131 Min 2.4 Mean 28.7 Ac-ft 20,780  
 Water year 1961-62: Max 224 Min 3.6 Mean 48.7 Ac-ft 35,270

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Jan. 10 to Mar. 16 (stage-discharge relation affected by ice part of period).



## GUNNISON RIVER BASIN

9-1435, Surface Creek at Cedaredge, Colo.

Location.--Lat 38°54', long 107°55', in sec.20, T.13 S., R.94 W., on left bank at Cedaredge, 500 ft east of State Highway 65 and 8½ miles upstream from mouth.

Drainage area.--43 sq mi, approximately.

Records available.--October 1916 to September 1962. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 6,500 ft (by barometer). Prior to June 8, 1917, staff gage at same site at datum 0.5 ft higher.

Average discharge.--46 years, 27.5 cfs (19,910 acre-ft per year).

Extremes.--Maximum discharge during year, 254 cfs May 9 (gage height, 1.89 ft); minimum daily, 3.5 cfs Nov. 3.  
1916-62: Maximum discharge, 1,190 cfs May 13, 1941 (gage height, 2.50 ft), from rating curve extended above 640 cfs; no flow Sept. 25, 1939, and practically no flow at times in some winters.

Remarks.--Records good except those for periods of ice effect, which are poor. Natural flow of stream affected by diversions to and from nearby streams, many small storage reservoirs, diversions for irrigation, and return flow from irrigated areas.

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

0.5	3.7	1.0	47
.6	8.0	1.4	116
.7	14	1.7	185

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	12	8.6	6.0	5.5	6	5	9.3	72	79	81	20	23
2	* 10	* 8.0	6.0	5.5	6.5	5.5	12	69	97	76	23	25
3	8.6	3.5	6.0	5.5	7	5.5	13	72	106	69	26	23
4	9.3	5	5.5	5.5	7	5.5	14	103	114	65	23	21
5	8.6	6	5.5	5.5	7	5	14	133	120	67	21	17
6	8.6	7	5.5	5	6.5	5.5	14	167	114	65	* 20	* 13
7	11	9	5	5	6.5	5.5	15	167	101	62	26	12
8	12	10	5.5	5	7	6.0	14	172	108	60	26	14
9	20	9	5.0	4.6	8.0	6.0	14	175	97	59	35	18
10	16	7	4.6	4.4	8.6	6.0	20	155	99	54	38	19
11	11	6.5	4.2	4.0	8.6	5.5	20	139	* 110	53	22	16
12	13	5.5	4.0	4.6	9.3	5.5	26	133	106	54	17	14
13	13	5.5	4.6	5	8.0	6.0	39	108	103	53	16	16
14	16	5.5	* 5.0	5.5	* 7.0	6.5	53	99	97	47	17	16
15	18	6	5.5	* 5.5	7.0	7	76	92	95	43	17	15
16	18	7.5	5.5	5	7.0	* 9	93	92	86	40	26	14
17	16	7.0	5.5	5	7.0	6	103	* 76	76	34	32	14
18	14	7	5	5	6.5	6	120	60	74	28	28	14
19	12	6.5	5	5	6	6.0	129	70	88	* 26	27	14
20	11	6.5	5.5	5.5	6.5	6.0	139	84	93	25	31	15
21	12	7	5	5.5	6.5	5.5	116	76	* 97	25	33	17
22	12	6.5	4.8	5	6	5.1	93	70	99	22	35	14
23	9.3	7	4.8	5	6.0	5.1	112	74	97	23	42	13
24	11	7	4.8	5	5.5	6.5	* 141	84	90	30	46	13
25	7.0	6.5	4.8	5	5.5	6.5	152	79	84	31	35	13
26	6.0	7.0	4.8	5.5	5.5	7.5	137	77	86	34	34	12
27	6.5	6.5	5.5	5.5	5	10	114	99	77	34	34	13
28	13	6.5	5.5	5.5	4.6	12	118	72	77	30	33	18
29	15	6.5	5.5	5.5	-	10	106	69	79	26	35	18
30	15	6.5	6.0	5.5	-----	8.6	79	72	93	24	38	12
31	12	-----	6.0	5.5	-----	8	-----	81	-----	23	38	-----
Total	376.9	203.6	161.9	160.1	187.6	203.8	2,105.3	3,091	2,842	1,363	894	481
Mean	12.2	6.79	5.22	5.16	6.70	6.57	70.2	99.7	94.7	44.0	28.8	16.0
Ac-ft	748	404	321	318	372	404	4,180	6,130	5,640	2,700	1,770	954

Calendar year 1961: Max 110 Min 1.3 Mean 20.8 Ac-ft 15,060  
Water year 1961-62: Max 175 Min 3.5 Mean 33.1 Ac-ft 23,940

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 3-15, 18-24, 27-29, Dec. 4-22, Jan. 2 to Feb. 8, Feb. 18, 19, 22, Feb. 25 to Mar. 5, Mar. 11-18, 31.

9-1442. Tongue Creek at Cory, Colo.

Location.--Lat 38°47', long 108°00', in S½ sec.34, T.14 S., R.95 W., on left bank at downstream side of bridge, 500 ft upstream from North Delta Canal headgate, half a mile west of Cory, and 1 mile upstream from mouth.

Drainage area.--200 sq mi, approximately.

Records available.--October 1957 to September 1962.

Gage.--Water-stage recorder.

Average discharge.--5 years, 31.4 cfs (22,730 acre-ft per year).

Extremes.--Maximum discharge during year, 524 cfs Sept. 21 (gage height, 4.86 ft); minimum daily, 5.6 cfs Sept. 6.  
1957-62: Maximum discharge, 748 cfs June 7, 1958 (gage height, 5.32 ft); minimum daily, 1.1 cfs Aug. 2, 6, 1961.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Natural flow of stream affected by many small storage reservoirs, diversions for irrigation, and return flow from irrigated areas. Diversions to and from nearby streams.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used July 1 to Sept. 30)

2.0	5.0	3.0	84
2.2	11	3.5	170
2.4	21	4.0	290
2.6	36	4.5	450

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	22	23	20	16	20	16	20	71	57	22	14	13
2	22	*24	20	16	20	16	25	69	60	25	16	11
3	*22	22	20	16	22	18	29	54	60	22	16	11
4	21	22	20	17	23	17	42	74	56	22	18	12
5	20	21	19	18	24	16	31	102	56	20	12	74
6	20	20	20	19	24	18	28	120	61	20	*11	56
7	20	21	20	20	26	18	30	130	58	22	11	*11
8	20	21	20	20	39	18	25	120	52	22	10	12
9	59	22	20	19	42	18	25	110	44	22	11	14
10	31	22	18	16	42	18	46	100	39	20	11	18
11	25	22	16	12	37	16	57	95	*45	16	28	19
12	24	22	12	14	34	16	53	100	44	13	14	18
13	24	20	14	14	30	17	81	100	36	14	16	16
14	24	20	*16	13	*24	16	140	90	34	14	14	19
15	24	20	18	*12	22	17	201	77	33	19	12	18
16	25	21	18	10	25	*18	260	65	30	18	98	18
17	25	22	18	12	25	18	224	60	30	*16	10	19
18	23	20	18	14	21	17	299	*42	27	16	11	19
19	23	20	16	16	20	18	296	27	20	14	12	20
20	22	20	17	18	21	18	302	29	19	16	14	24
21	22	21	18	20	20	18	238	27	*18	12	14	56
22	20	20	18	20	20	18	84	24	18	14	15	30
23	20	20	16	20	20	18	100	26	16	15	16	30
24	22	20	14	18	19	16	152	22	17	17	16	33
25	22	22	14	16	19	16	174	20	15	18	16	33
26	21	23	16	16	18	18	142	20	14	20	16	30
27	20	21	18	16	16	18	*105	48	15	17	16	27
28	20	20	16	17	14	26	95	58	14	20	18	56
29	20	20	16	18	-	22	90	50	14	20	18	45
30	22	21	16	18	-----	20	90	47	54	20	14	42
31	22	-----	16	20	-----	19	-----	52	-----	17	12	-----
Total	727	633	538	511	694	553	3,491	2,029	1,056	563	423.6	697.0
Mean	23.5	21.1	17.4	16.5	24.8	17.8	116	65.5	35.2	18.2	13.7	23.2
Ac-ft	1,440	1,260	1,070	1,010	1,380	1,100	6,920	4,020	2,090	1,120	840	1,380

Calendar year 1961: Max 59 Min 1.1 Mean 11.0 Ac-ft 8,000  
Water year 1961-62: Max 309 Min 5.6 Mean 32.6 Ac-ft 23,630

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 10 to Jan. 6, Jan. 10-21, 24-30, Feb. 28 to Mar. 2. No gage-height record Apr. 29, May 6-14.

## GUNNISON RIVER BASIN

9-1462. Uncompahgre River near Ridgway, Colo.

Location.--Lat 38°11'05", long 107°44'40", in NE¼ sec.4, T.45 N., R.8 W., on right bank 15 ft upstream from bridge, 0.7 mile upstream from Dallas Creek, and 2 miles north of Ridgway.

Drainage area.--150 sq mi, approximately.

Records available.--October 1958 to September 1962.

Gage.--Water-stage recorder. Datum of gage is 6,877.58 ft above mean sea level (levels by Bureau of Reclamation).

Extremes.--Maximum discharge during year, 991 cfs June 30 (gage height, 4.35 ft); minimum daily, 32 cfs Jan. 10.  
1958-62: Maximum discharge, 1,270 cfs June 17, 1960 (gage height, 4.75 ft); minimum daily, 32 cfs Jan. 6, 7, 1960, Jan. 10, 1962.

Remarks.--Records good except those for periods of ice effect, which are poor. Diversions for irrigation above station. Water is imported above station by Red Mountain ditch from Mineral Creek in San Juan River basin.

Cooperation.--One discharge measurement furnished by Bureau of Reclamation.

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

1.5	28	3.0	325
1.9	70	4.0	780
2.3	130	4.5	1,120

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	113	100	68	46	48	40	55	180	318	736	217	69
2	* 109	89	64	44	54	40	62	170	368	625	208	69
3	109	70	64	44	60	42	63	217	396	561	232	69
4	106	83	59	45	66	40	70	* 308	392	543	232	68
5	103	79	54	45	62	42	71	353	424	507	214	60
6	98	71	51	46	60	45	74	372	489	489	* 191	65
7	94	* 75	50	46	64	48	71	424	* 530	525	168	71
8	96	80	52	49	68	46	66	460	468	507	158	73
9	163	80	52	48	73	46	64	538	538	494	158	76
10	119	80	48	32	78	45	64	552	600	452	147	* 76
11	110	84	45	34	84	42	* 60	516	692	436	145	73
12	106	87	34	34	87	40	63	543	* 816	432	140	70
13	100	78	36	35	78	42	76	516	816	428	134	68
14	102	71	39	35	65	40	106	400	780	356	128	68
15	103	70	43	36	63	* 41	165	302	625	339	121	65
16	102	74	48	36	64	* 42	208	259	484	318	114	69
17	100	76	48	36	62	42	238	226	400	* 292	114	68
18	98	71	49	38	56	42	277	217	412	283	117	65
19	97	65	48	41	54	44	318	211	590	289	123	65
20	97	66	50	42	54	44	325	232	742	274	114	87
21	93	69	* 50	42	* 51	44	286	250	* 780	271	114	188
22	100	64	50	42	48	44	214	220	764	265	116	161
23	91	66	46	44	49	45	238	202	742	271	106	128
24	87	68	48	44	49	46	299	220	660	289	103	109
25	84	69	48	44	49	51	332	247	635	280	100	103
26	83	71	50	44	46	54	336	250	640	268	100	100
27	83	70	46	42	45	64	286	353	645	268	100	104
28	83	66	46	42	38	71	268	308	676	256	98	110
29	80	64	48	42	-	60	280	293	670	241	94	110
30	87	68	48	44	-----	58	229	262	798	238	82	108
31	102	-----	46	46	-----	54	-----	271	-----	* 232	73	-----
Total	3,104	2,224	1,528	1,298	1,675	1,444	5,271	9,862	17,890	11,765	4,261	2,615
Mean	100	74.1	49.3	41.5	59.8	46.6	176	318	596	380	137	87.2
Ac-ft	6,160	4,410	3,030	2,550	3,320	2,860	10,450	19,560	35,480	23,340	8,450	5,190

Calendar year 1961: Max 747 Min 34 Mean 153 Ac-ft 110,800

Water year 1961-62: Max 816 Min 32 Mean 172 Ac-ft 124,800

Peak discharge (base, 1,000 cfs).--No peak above base.

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 10, 12, 13, 19, 23-25, 27, 28, Dec. 31 to Jan. 3, Jan. 10-12, 15-18, Jan. 22 to Feb. 1, Feb. 28 to Mar. 5, Mar. 11-14.

9-1464. West Fork Dallas Creek near Ridgway, Colo.

Location.--Lat 38°04'30", long 107°51'10", in SE¼ sec.9, T.44 N., R.9 W., on right bank 100 ft downstream from unnamed tributary, 5 miles upstream from confluence with East Fork Dallas Creek, and 7½ miles southwest of Ridgway.

Drainage area.--13.2 sq mi.

Records available.--October 1955 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 8,400 ft (from topographic map).

Average discharge.--7 years, 12.8 cfs (9,270 acre-ft per year).

Extremes.--Maximum discharge during year, about 60 cfs June 30 or July 1 (gage height unknown); maximum gage height, 3.97 ft sometime during period Mar. 20 to Apr. 11 (ice jam); minimum daily discharge, 3.0 cfs Jan. 10. 1955-62: Maximum discharge, 187 cfs July 2, 1957 (gage height, 3.40 ft), from rating curve extended above 47 cfs; maximum gage height, 3.97 ft sometime during period Mar. 20 to Apr. 11, 1962; minimum daily discharge, 2.4 cfs Jan. 14, 1961.

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

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used July 19 to Sept. 30)

1.8	3.3	2.3	27
1.9	6.3	2.4	34
2.0	10	2.6	50
2.2	21		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9.2	7.6	5.7	4.6	3.3	4.2	4.6	1.4	1.8	4.6	2.0	9.2
2	9.2	7.1	5.7	4.6	3.3	4.2	5.0	1.4	1.8	4.2	1.9	9.8
3	*8.8	6	5.7	4.6	3.4	3.9	5.0	*1.5	1.9	4.2	2.0	9.8
4	8.8	8.4	5.5	4.8	3.3	3.9	5.5	1.6	*2.0	4.4	2.0	9.4
5	8.8	7	5.5	4.8	3.3	3.9	6	1.8	2.0	4.2	2.0	9.4
6	8.8	6.5	5.5	4.8	3.3	3.6	6	1.9	2.1	4.4	2.0	9.8
7	8.4	7	5.0	4.8	3.3	3.3	6	2.2	2.2	4.2	*1.9	9.8
8	9.2	*7.6	4.8	3.9	3.3	3.3	5.5	2.5	2.2	4.0	1.9	9.4
9	1.0	7.6	4.6	3.6	3.3	3.3	5.0	2.7	2.3	4.0	1.8	9.0
10	8.8	7	4.4	3.0	3.6	3.3	5.0	2.8	2.5	4.2	1.8	9.0
11	8.8	7.1	4.2	3.6	3.6	3.3	*5.0	2.8	*2.8	*3.8	1.8	*7.6
12	8.8	7.1	3.8	4.6	3.9	3.2	5.5	3.0	2.9	3.4	1.8	7.1
13	8.4	6.5	4.2	4.4	3.8	3.2	6	3.0	3.1	3.0	1.8	7.1
14	8.4	6	4.6	4.2	3.8	3.2	8	2.4	3.2	2.8	1.6	7.1
15	8.4	6	5.0	4.0	3.6	*3.8	1.2	2.0	3.3	2.8	1.5	6.7
16	8.4	6.7	5.0	4.0	3.6	4.0	1.6	1.9	2.9	2.8	1.5	7.1
17	8.4	6.3	5.4	4.0	4.2	4.0	1.7	1.7	2.5	3.0	1.5	7.1
18	8.0	6	5.4	3.9	4.0	3.9	1.8	1.5	2.5	3.0	1.3	7.1
19	8.4	6	5.4	3.6	4.0	3.6	2.0	1.5	3.3	2.8	1.2	6.7
20	8.4	6	5.1	3.6	3.6	3.6	2.0	1.6	*3.6	2.6	1.2	1.3
21	8.0	6.3	*4.8	3.6	3.8	3.6	1.8	1.6	3.5	2.8	1.2	2.3
22	8.4	5.5	4.5	3.6	3.8	3.6	1.6	1.5	3.5	2.8	1.3	2.0
23	7.6	6	5.1	3.6	3.6	3.6	1.8	1.4	3.7	2.8	1.3	1.5
24	7.1	6	5.4	3.9	3.6	3.6	1.9	1.5	3.4	2.6	1.2	1.2
25	7.1	6.0	5.4	3.6	3.6	4.0	1.9	1.6	3.6	2.4	1.1	1.0
26	7.1	6.0	4.5	3.6	3.6	4.4	2.0	1.5	3.9	2.4	1.1	1.0
27	7.1	5.5	4.8	3.3	3.6	5.0	1.9	1.8	4.0	2.2	1.1	1.0
28	7.1	5.5	5.7	3.3	3.4	5.5	1.9	1.6	4.2	2.2	1.0	1.1
29	7.1	5.0	5.4	3.3	-	5.0	1.8	1.6	4.4	2.2	2.7	1.0
30	8.0	5.7	4.8	3.3	-----	4.8	1.5	1.6	5.0	2.0	9.7	9.7
31	7.6	-----	4.8	3.3	-----	4.6	-----	1.6	-----	2.0	9.7	-----
Total	256.6	193.0	155.7	121.8	100.5	120.4	362.1	595	901	998	467.1	292.9
Mean	8.28	6.43	5.02	3.93	3.59	3.88	12.1	18.9	30.0	31.9	15.1	9.76
Ac-ft	509	383	309	242	199	239	718	1,160	1,790	1,960	926	581

Calendar year 1961: Max 42 Min 2.4 Mean 12.0 Ac-ft 8,660  
 Water year 1961-62: Max 50 Min 3.0 Mean 12.4 Ac-ft 9,020

Peak discharge (base, 30 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-13	0500	2.39	33	a	unknown	unknown	†60
6-14	0100	2.40	36				

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 3, 5-7, 10, 13-15, 18-20, 22-24, 27-29, Dec. 4-16, Jan. 1-6, 9-17, Feb. 3, 13-15, 18, 19, 21, 22, 28, Mar. 12-17. No gage-height record Mar. 20 to Apr. 15, June 28 to Aug. 6.

† About.  
 a 6-30 or 7-1.



## GUNNISON RIVER BASIN

9-1465. East Fork Dallas Creek near Ridgway, Colo.

Location.--Lat 38°05'40", long 107°48'40", in SE $\frac{1}{4}$ NE $\frac{1}{4}$  sec.2, T.44 N., R.9 W., on right bank 300 ft below private bridge, 2 miles upstream from Beaver Creek, and 5 miles southwest of Ridgway.

Drainage area.--16.8 sq mi.

Records available.--October 1947 to September 1953, October 1960 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 7,980 ft (from topographic map). Prior to Oct. 1, 1960, water-stage recorder at two sites three-quarters of a mile downstream at different datums. Datum raised 3.00 ft Oct. 1, 1949.

Average discharge.--8 years, 23.8 cfs (17,230 acre-ft per year).

Extremes.--Maximum discharge during year, 209 cfs July 1 (gage height, 3.65 ft), from rating curve extended above 96 cfs; maximum gage height, 4.28 ft Dec. 13 (ice jam); minimum daily discharge, 3.6 cfs Mar. 11-13.  
1947-53, 1960-62: Maximum discharge, 297 cfs June 18, 1949 (gage height, 3.43 ft, site and datum then in use), from rating curve extended above 100 cfs; maximum gage height, that of Dec. 13, 1961; minimum daily discharge determined, that of Mar. 11-13, 1962.

Remarks.--Records good except those for periods of ice effect, which are poor. One small diversion above station diverts water to Beaver Creek drainage for irrigation of about 50 acres of hay meadows.

Rating tables, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used June 30, July 1)

Oct. 1 to Feb. 28

Mar. 1 to Sept. 30

2.0	9.5	1.9	3.5	2.7	57
2.2	17	2.1	9.5	3.0	110
2.4	28	2.4	26	3.5	230

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	25	17	14	7.5	6	5.0	3.8	14	22	173	52	27
2	25	17	13	7.5	6	5.2	4.4	14	24	136	51	26
3	*24	17	12	7	6	5.0	4.5	*14	27	130	50	25
4	23	18	12	7	6	4.5	4.8	15	*31	140	52	24
5	23	17	11	7.5	6	4.5	4.8	16	34	130	52	25
6	22	16	10	7.5	6	4.5	5.0	18	40	138	*51	25
7	21	16	10	7.5	6	4.2	4.8	20	43	132	49	26
8	20	*17	9.5	7	6.5	4.0	4.5	22	42	126	47	25
9	20	16	9	6	6.5	4.0	4.8	27	49	118	46	24
10	18	15	8.5	5	7	4.0	4.5	32	60	112	46	*23
11	18	15	8	5.5	7.5	3.6	*5.2	33	83	108	46	22
12	17	15	7	6	7	3.6	5.0	36	*94	106	45	21
13	17	14	6	6.5	6.5	3.6	5.8	37	*94	96	44	21
14	17	13	6.5	6	6	*4.0	6.7	35	104	72	41	20
15	16	14	7.5	6	5.5	4.6	8.4	32	86	74	40	20
16	16	15	8	6	5.5	4.4	9.5	28	64	70	40	21
17	16	15	8	6	6	4.0	11	25	49	*77	37	21
18	16	13	8	6	6	3.8	13	22	47	77	37	19
19	16	13	8	6.5	6	4.2	15	21	79	74	40	19
20	16	14	8.5	7	6	4.2	16	22	*114	69	38	33
21	16	15	*8.5	6.5	*6	4.2	15	24	116	70	37	50
22	17	14	8.5	6	5.5	3.8	13	22	124	72	38	50
23	16	13	8	5.5	5.5	3.8	14	21	142	69	37	40
24	16	13	8	5.5	6	3.8	15	22	136	77	35	34
25	15	14	8.5	5.5	5.5	3.8	16	*25	128	69	33	30
26	15	14	8.5	5.5	5.0	4.0	17	24	126	63	32	28
27	16	12	8	5.5	4.8	4.8	17	28	130	58	32	28
28	17	12	7.5	5.5	4.0	4.8	17	24	144	56	31	26
29	17	13	8	5.5	-	4.5	17	24	146	55	30	24
30	17	14	8	5.5	-----	4.2	15	21	182	53	29	22
31	17	-----	8	6	-----	3.8	-----	21	-----	53	28	-----
Total	565	441	274.0	193.5	166.3	130.4	297.5	739	2,567	2,853	1,266	799
Mean	18.2	14.7	8.84	6.24	5.94	4.21	9.92	23.8	85.6	92.0	40.8	26.6
Ac-ft	1,120	875	543	384	330	259	590	1,470	5,090	5,660	2,510	1,580

Calendar year 1961: Max 120 Min 4.4 Mean 24.2 Ac-ft 17,540  
Water year 1961-62: Max 189 Min 3.6 Mean 28.2 Ac-ft 20,410

Peak discharge (base, 120 cfs)--June 14 (0300) 122 cfs (3.06 ft); July 1 (0230) 209 cfs (3.65 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 3, 5-8, 10-24, 27-29, Dec. 3 to Mar. 1, Mar. 8, 9, 11-18, 22-26, Mar. 31 to Apr. 2.

9-1465.5. Beaver Creek near Ridgway, Colo.

Location--Lat 38°07'00", long 107°49'00", in SW¼SW¼ sec.25, T.45 N., R.9 W., on left bank 10 ft below private bridge, 300 ft upstream from mouth, and 4 miles southwest of Ridgway.

Drainage area--12.0 sq mi.

Records available--October 1960 to September 1962.

Gage--Water-stage recorder and concrete control since Sept. 24, 1962. Altitude of gage is 7,680 ft (from topographic map).

Extremes--Maximum discharge during year, 10 cfs July 18 (gage height, 2.35 ft); minimum daily determined, 1.3 cfs Sept. 18, 19. 1960-62: Maximum discharge, 23 cfs Aug. 17, 1961 (gage height, 2.87 ft) from rating curve extended above 10 cfs; minimum daily, 1.0 cfs Oct. 1, 2, 1960.

Remarks--Records fair except those for periods of ice effect or no gage-height record, which are poor. Two small diversions above station for irrigation of 130 acres of hay meadows. Small diversion from East Fork Dallas Creek for irrigation of about 50 acres of hay meadows above station.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Sept. 24-30)

1.8	1.1
1.9	2.1
2.1	5.1
2.4	10

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.4	3.8	3.4				3.0	5.9	6.1	6.4	5.9	2.4
2	3.4	3.4	3.4				3.6	5.9	5.9	5.9	5.7	2.1
3	* 3.3	3.0	3.4				3.4	* 6.2	5.9	6.9	5.6	2.0
4	3.3	3.3	2.6				3.4	5.6	* 5.6	7.4	6.4	2.1
5	3.2	3.0	2.4				3.4	5.4	5.4	8.6	6.1	2.0
6	3.2	2.8					3.6	5.0	5.7	9.0	* 5.9	2.1
7	3.0	* 3.0					3.4	4.8	5.9	9.2	5.7	2.0
8	3.2	3.0					3.3	4.8	5.1	9.4	5.7	1.7
9	5.0	3.8					3.3	4.8	4.2	8.8	5.9	1.7
10	4.0	3.8					3.3	4.6	3.8	8.8	5.3	* 1.6
11	3.8	3.6			2.6	2.4	* 3.4	4.4	3.8	8.8	5.1	1.5
12	3.8	3.9					3.6	4.0	3.6	9.0	5.0	1.6
13	3.6	3.0					3.6	5.0	5.6	8.6	4.5	1.5
14	3.6	3.0					3.9	5.9	7.6	7.2	2.6	1.5
15	3.6	3.0					4.2	7.0	8.8	7.0	2.7	1.6
16	3.6	3.6		1.8			4.4	6.4	8.8	7.4	3.0	1.5
17	3.6	3.8					4.4	7.2	8.4	* 7.9	3.4	1.5
18	3.4	3.2	2.2				4.6	7.4	7.2	8.8	3.3	1.3
19	3.4	2.4					5.0	7.4	7.7	9.0	3.6	1.3
20	3.4	3.0					5.1	7.6	* 9.0	8.6	3.9	1.7
21	3.4	3.6	(*)		* 2.5	2.4	5.1	7.4	8.6	8.1	3.8	2.1
22	3.6	2.6			1.8	2.2	5.3	7.9	7.4	7.9	2.8	1.6
23	3.4	3.0			2.0	2.4	5.3	7.9	8.1	7.4	2.7	1.7
24	3.4	3.0			2.0	2.4	5.3	7.6	8.1	7.7	2.4	1.7
25	3.3	3.4			2.0	2.4	5.1	* 7.4	7.7	7.6	2.4	2.0
26	3.3	3.6			2.0	2.8	5.0	7.6	5.9	7.2	2.2	1.8
27	3.4	3.2			2.0	3.4	4.6	9.2	5.3	7.0	2.1	2.0
28	3.4	3.0			1.8	3.9	3.9	7.9	5.1	6.9	2.1	2.1
29	3.4	3.0			-	3.3	5.0	7.2	4.6	6.4	2.1	2.1
30	3.6	3.6			-----	3.2	5.9	6.2	5.7	6.7	2.1	2.1
31	3.9	-----			-----	2.4	-----	5.9	-----	6.5	2.4	-----
Total	108.9	97.4	72.4	55.8	68.1	78.8	126.4	197.5	190.6	242.1	122.4	53.9
Mean	3.51	3.25	2.34	1.8	2.43	2.54	4.21	6.37	6.35	7.81	3.95	1.80
Ac-ft	216	193	144	111	135	156	251	392	378	480	243	107

Calendar year 1961: Max 8.3 Min 1.6 Mean 3.58 Ac-ft 2,590  
 Water year 1961-62: Max 9.4 Min - Mean 3.87 Ac-ft 2,810

Peak discharge (base, 15 cfs)--No peak above base.

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 3, 5-8, 18-20, 22-24, 27-29, Dec. 4, 5, Feb. 22-25, Mar. 22, 25, 26, 31, Apr. 1. No gage-height record Nov. 14-16, Dec. 6 to Feb. 21, Feb. 26 to Mar. 20 (stage-discharge relation affected by ice most of periods).

## GUNNISON RIVER BASIN

9-1466. Pleasant Valley Creek near Noel, Colo.

Location.--Lat 38°08'50", long 107°55'00", in SE¼SW¼ sec.13, T.45 N., R.10 W., on right bank 3 miles north of Noel and 7 miles upstream from mouth.

Drainage area.--7.88 sq mi.

Records available.--October 1955 to September 1962.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 8,680 ft (from topographic map).

Average discharge.--7 years, 2.55 cfs (1,850 acre-ft per year).

Extremes.--Maximum discharge during year, 159 cfs Apr. 17 (gage height, 3.27 ft); minimum daily, 0.1 cfs many days.  
1955-62: Maximum discharge, about 500 cfs July 29, 1957 (gage height, 4.60 ft), from rating curve extended above 140 cfs; no flow at times in 1958-59.

Remarks.--Records good except those for period of no gage-height record, which are poor. Diversions above station for irrigation.

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

1.5	0	2.1	7.5
1.6	.1	2.3	13
1.7	.7	2.5	25
1.8	1.8	2.6	35
1.9	3.3	3.0	105

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.1	0.1					0.6	6.6	0.9	0.1	0.1	0.1
2	.1	.1					1.4	6.8	.6	.1	.1	.1
3	*.1						2.2	*6.6	.6	.1	.1	.1
4	.1						6.2	6.4	*.5	.1	.1	.1
5	.1						7.1	5.7	.4	.1	.1	.1
6	.1						6.0	5.1	.3	.1	.1	.1
7	.1						6.2	4.5	.3	.1	*.1	.1
8	.1	(*)				0.1	6.8	3.9	.3	.1	.1	.1
9	.2						5.7	3.3	.2	.1	.1	.1
10	.1						5.7	2.8	.2	.1	.1	.1
11	.1						6.2	2.7	.1	*.1	.1	*.1
12	.1						10	2.2	.1	.1	.1	.1
13	.1						25	2.0	.1	.1	.1	.1
14	.1						53	1.5	.1	.1	.1	.1
15	.1					(*)	80	1.2	.1	.1	.1	.1
16	.1	.1	0.1	0.1	0.1	.1	*72	1.1	.1	.1	.1	.1
17	.1					.1	67	1.1	.1	.1	.1	.1
18	.1					.1	47	1.2	.1	.1	.1	.1
19	.1					.1	40	1.0	.1	.1	.1	.1
20	.1					.1	31	.9	.1	.1	.1	.1
21	.1					.1	14	.8	.1	.1	.1	.2
22	.1					.1	12	.7	.1	.1	.1	.1
23	.1					.1	12	.7	.1	.1	.1	.1
24	.1					.1	12	.6	.1	.4	.1	.1
25	.1					.1	9.8	.6	.1	.1	.1	.1
26	.1					.1	14	.6	.1	.1	.1	.1
27	.1					.2	12	2.2	.1	.1	.1	.1
28	.1					.5	9.8	1.6	.1	.1	.1	.1
29	.1					.5	9.5	1.6	.1	.1	.1	.1
30	.1					.4	8.8	1.1	.1	.1	.1	.1
31	.1					.5		1.4		.4	.1	
Total	3.2	3.0	3.1	3.1	2.8	4.7	593.0	78.5	6.3	3.7	3.1	3.4
Mean	0.10	0.1	0.1	0.1	0.1	0.15	19.8	2.53	0.21	0.12	0.10	0.11
Ac-ft	6.3	6.0	6.1	6.1	5.6	9.3	1,180	156	12	7.3	6.1	6.7

Calendar year 1961: Max 80 Min 0.1 Mean 1.96 Ac-ft 1,420

Water year 1961-62: Max 80 Min 0.1 Mean 1.94 Ac-ft 1,410

Peak discharge (base, 50 cfs)--Apr. 17 (1530) 159 cfs (3.27 ft).

\* Discharge measurement made on this day.

Note.--No gage-height record Nov. 3 to Mar. 15 (stage-discharge relation affected by ice during part of period).

9-1470, Dallas Creek near Ridgway, Colo.

Location--Lat 38°10'30", long 107°45'40", in SE¼ sec.5, T.45 N., R.8 W., on right bank 20 ft downstream from highway bridge, 1½ miles upstream from mouth, and 1½ miles northwest of Ridgway.

Drainage area--90 sq mi, approximately.

Records available--March 1922 to October 1927, October 1955 to September 1962. Monthly discharge only for some periods, published in WSP 1313.

Gage--Water-stage recorder. Altitude of gage is 6,980 ft (from topographic map). Mar. 1, 1922, to Oct. 31, 1927, staff gage at different datum.

Average discharge--12 years, 40.6 cfs (29,390 acre-ft per year).

Extremes--Maximum discharge during year, 304 cfs Apr. 17 (gage height, 3.88 ft); maximum gage-height, 4.38 ft Dec. 14 (backwater from ice); minimum daily discharge, 1.0 cfs May 25, 26, 31.  
1922-27, 1955-62: Maximum discharge observed, 1,120 cfs Aug. 15, 1923 (gage height, 4.40 ft, datum then in use), from rating curve extended above 160 cfs; minimum daily, 0.8 cfs Oct. 14, 1955, May 10-13, 18, 1956.

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 4,500 acres above and 700 acres below station. One small diversion from Leopard Creek (Dolores River basin).

Note--Records for August and September 1960 are in error. Revised records for this period are on file in District Office and will be published in a later water supply paper.

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

Oct. 1 to Feb. 6

Feb. 7 to Sept. 30

2.5	13	1.9	0.9	2.6	23
2.7	26	2.0	1.4	2.8	44
2.9	47	2.2	5.2	3.0	80
		2.4	12	3.5	195

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	39	27	18	14	16	14	19	58	1.3	122	57	20
2	*39	25	16	14	16	14	20	57	1.3	88	42	16
3	35	22	18	14	17	15	22	*43	2.1	70	36	14
4	33	24	18	14	16	15	24	39	*1.4	82	37	14
5	32	26	17	15	16	15	28	39	1.3	70	36	11
6	30	26	16	15	17	16	28	39	1.2	72	*33	10
7	30	*28	16	15	18	18	27	37	1.4	84	36	10
8	30	26	17	15	19	16	27	29	1.2	86	36	11
9	39	24	16	15	25	16	26	24	1.4	80	40	10
10	31	23	14	10	34	16	27	22	1.6	60	42	*11
11	29	23	13	11	29	16	*26	21	2.5	52	42	11
12	28	24	12	12	32	16	28	21	7.2	64	38	12
13	28	22	13	13	25	15	42	16	14	70	39	12
14	28	20	14	13	22	16	92	13	28	43	29	13
15	27	20	15	12	22	*19	120	9.0	32	42	30	14
16	26	20	16	12	21	18	*138	7.2	25	38	33	15
17	26	22	16	12	20	17	*155	4.6	16	*33	44	16
18	24	20	15	13	20	17	122	4.2	12	40	42	16
19	24	18	16	15	20	17	*132	3.6	9.4	55	44	15
20	24	19	17	14	20	17	122	3.2	*27	42	38	19
21	24	20	*18	14	*19	17	84	3.2	42	36	36	42
22	24	18	17	15	18	16	64	2.5	50	36	36	43
23	24	19	16	15	18	17	64	1.9	70	40	42	29
24	23	19	16	15	17	17	64	1.2	60	60	38	26
25	23	18	16	15	18	18	64	*1.0	52	62	31	22
26	23	20	16	14	16	19	76	1.0	55	60	28	20
27	24	19	15	14	15	22	60	1.8	47	50	28	24
28	24	18	15	14	14	24	52	1.2	70	46	24	28
29	24	18	15	14	-	22	62	1.2	72	46	23	29
30	24	18	15	15	-----	20	62	1.1	116	52	22	30
31	31	-----	15	15	-----	17	-----	1.0	-----	68	23	-----
Total	870	646	487	428	560	532	1,877	506.9	821.3	1,849	1,105	570
Mean	28.1	21.5	15.7	13.8	20.0	17.2	62.6	16.4	27.4	59.6	35.6	19.0
Ac-ft	1,730	1,280	966	849	1,110	1,060	3,720	1,010	1,630	3,670	2,190	1,130

Calendar year 1961: Max 140 Min 1.5 Mean 31.1 Ac-ft 22,520  
Water year 1961-62: Max 155 Min 1.0 Mean 28.1 Ac-ft 20,340

\* Discharge measurement made on this day.

Note--Stage-discharge relation affected by ice Nov. 3, 4, 6-8, 13-16, 18-20, 22-24, 27-29, Dec. 2, Dec. 5 to Jan. 18, Jan. 23 to Feb. 6, Feb. 8, 22-24, Feb. 26 to Mar. 6, Mar. 8-19, 25, 26, 31, Apr. 1. No gage-height record Feb. 17-21.



## GUNNISON RIVER BASIN

9-1471. Cow Creek near Ridgway, Colo.

Location.--Lat 38°08'20", long 107°38'20", in N½ sec.21, T.45 N., R.7 W., on left bank 400 ft upstream from Cobbs Gulch and 6½ miles southeast of Ridgway.

Drainage area.--41.1 sq mi.

Records available.--October 1955 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 7,900 ft (from topographic map).

Average discharge.--7 years, 65.6 cfs (47,490 acre-ft per year).

Extremes.--Maximum discharge during year, 440 cfs June 11 (gage height, 4.48 ft); minimum not determined.

1955-62: Maximum discharge, 1,360 cfs June 28, 1957 (gage height, 7.70 ft); minimum daily, 2.0 cfs Jan. 9, 1957.

Remarks.--Records fair except those for periods of ice effect, which are poor. No diversion 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 10-15)

2.2	12	3.0	87
2.3	16	3.5	185
2.5	30	4.0	300
2.7	48	4.5	440

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.		
1	44	23	13	7.5	8	7.5	14	84	163	292	55	17		
2	* 36	16					16	84	181	248	50	17		
3	35	18					17	94	189	250	53	16		
4	32	23					18	* 121	* 193	235	49	16		
5	32	20					17	147	223	219	43	16		
6	30	20					17	165	258	213	* 40	18		
7	29	* 18					16	193	245	213	39	20		
8	29	17					14	219	217	205	37	17		
9	47	18					13	272	242	189	36	16		
10	34	18					12	305	265	179	36	* 16		
11	34	17					13	310	305	173	35	15		
12	32	17					18	348	338	177	34	15		
13	30	15					34	302	356	159	32	14		
14	32	16	9	7.5	8	(*)	54	* 230	332	139	30	15		
15	32	16				7	78	175	290	123	28	14		
16	31	17				7.5	92	145	230	115	28	15		
17	31	16				7.5	* 100	125	193	* 109	29	14		
18	29	15				7.5	123	117	* 230	105	32	14		
19	28	15				7.5	139	117	295	107	32	13		
20	27	15				7.5	139	141	338	100	31	36		
21	25	15				(*)	7.5	113	143	338	92	30	66	
22	27							7.5	89	119	345	84	32	40
23	24							7.5	96	113	325	89	28	25
24	23							8	123	145	318	89	26	23
25	21							9	137	167	295	81	23	22
26	21							12	133	167	300	76	21	20
27	21							18	115	187	312	71	21	22
28	20							20	121	149	292	68	20	21
29	19							15	121	135	305	64	18	19
30	21							12	96	125	325	60	18	18
31	24							11	-----	141	-----	60	17	-----
Total	900	500	319	232.5	224	277.0	2,088	5,285	8,238	4,384	1,002	610		
Mean	29.0	16.7	10.3	7.5	8	8.94	69.6	170	275	141	32.3	20.3		
Ac-ft	1,790	992	633	461	444	549	4,140	10,480	16,340	8,700	1,990	1,210		

Calendar year 1961: Max 378 Min 4.0 Mean 54.6 Ac-ft 39,510  
Water year 1961-62: Max 356 Min - Mean 65.9 Ac-ft 47,730

Peak discharge (base, 500 cfs).--No peak above base.

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 3, 5-8, 10, 11, Nov. 13 to Mar. 27 (no gage-height record Nov. 20 to Mar. 14), Mar. 31, Apr. 1.

9-1475. Uncompahgre River at Colona, Colo.

Location.--Lat 38°19'50", long 107°46'40", in NW¼ sec.17, T.47 N., R.8 W., on right bank 15 ft downstream from county highway bridge, a quarter of a mile north of Colona, and 1 mile upstream from Beaton Creek.

Drainage area.--437 sq mi.

Records available.--April 1903 to November 1905, April to June 1906 (gage heights and discharge measurements only), October 1912 to September 1962. Monthly discharge only for some periods, published in WSP 1313. Published as "near Colona" 1904-6, 1922-34.

Gage.--Water-stage recorder. Datum of gage is 6,318.80 ft above mean sea level, datum of 1929. Supplementary water-stage recorder on left bank at same datum. Prior to June 24, 1921, staff or chain gages and June 24, 1921, to Oct. 28, 1938, water-stage recorder, at several sites within 5 miles of present site at various datums. Oct. 29, 1938, to Aug. 2, 1949, water-stage recorder at present site at datum 3.00 ft higher and Aug. 3 to Sept. 30, 1949, at datum 1.00 ft higher.

Average discharge.--52 years (1903-5, 1912-62), 274 cfs (198,400 acre-ft per year).

Extremes.--Maximum discharge during year, 1,330 cfs June 30 (gage height, 4.65 ft); minimum daily, 43 cfs Sept. 19, 1903-5, 1912-62; Maximum daily discharge, 4,080 cfs June 13, 14, 1921; minimum daily, 12 cfs Sept. 19, 1956.

Remarks.--Records fair. Natural flow of stream affected by water diverted from West Fork Cimarron Creek, Mineral Creek (San Juan River basin), and Leopard Creek (Dolores River basin), diversions for irrigation of about 19,000 acres (part of which is below station), and return flow from irrigated areas.

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	223	216	118	95	80	80	104	315	517	1,070	266	76
2	202	195	115	85	85	74	118	320	524	990	246	72
3	202	130	112	75	92	78	122	326	510	930	242	69
4	195	177	104	75	104	74	141	* 350	* 496	870	250	66
5	189	168	84	75	100	75	171	434	531	758	234	56
6	* 186	144	86	75	92	80	165	489	573	732	223	59
7	189	150	84	80	98	86	153	545	620	749	206	66
8	183	* 165	82	85	118	82	135	573	566	700	192	69
9	270	168	84	80	120	82	122	767	604	* 724	189	69
10	242	156	76	55	162	80	125	821	660	668	177	70
11	220	159	70	50	177	70	112	812	821	620	168	66
12	216	168	60	55	174	65	120	890	1,100	596	162	62
13	192	150	70	60	147	* 65	* 162	840	1,120	566	159	60
14	192	120	* 90	70	* 112	65	258	* 684	* 1,080	545	147	62
15	189	130	100	70	106	60	356	676	880	524	138	62
16	186	150	110	65	112	60	428	652	724	489	128	60
17	186	156	110	65	106	70	440	604	604	454	150	62
18	186	153	100	* 70	92	78	440	573	* 559	428	153	53
19	180	122	90	75	82	86	482	545	692	428	159	43
20	180	128	90	80	90	90	496	552	870	398	144	58
21	177	135	95	80	81	88	416	559	920	374	144	186
22	174	118	95	65	74	87	310	517	970	368	144	174
23	171	130	90	* 60	76	87	310	461	1,010	350	144	135
24	171	128	95	55	74	87	368	475	960	368	132	112
25	165	128	100	55	80	92	404	510	920	368	125	104
26	162	128	100	55	66	115	410	496	970	344	120	98
27	165	130	100	60	69	135	350	545	920	320	* 115	100
28	162	125	100	60	55	156	338	531	980	295	110	128
29	156	112	90	65	-	135	386	496	930	280	104	135
30	165	122	100	70	-----	112	332	468	1,070	* 275	90	128
31	198	-----	100	75	-----	102	-----	461	-----	285	84	-----
Total	5,874	4,361	2,900	2,140	2,824	2,696	8,274	17,287	23,701	16,866	5,045	2,560
Mean	189	145	93.5	69.0	101	87.0	276	558	790	544	163	85.3
Ac-ft	11,650	8,650	5,750	4,240	5,600	5,350	16,410	34,290	47,010	33,450	10,010	5,080

Calendar year 1961: Max 1,150 Min 50 Mean 239 Ac-ft 173,200  
 Water year 1961-62: Max 1,120 Min 43 Mean 259 Ac-ft 187,500

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 11 to Feb. 2 (no gage-height record Jan. 13-18), Mar. 11-17.

## GUNNISON RIVER BASIN

9-1495. Uncompahgre River at Delta, Colo.

Location.--Lat 38°45', long 108°05', in SW¼ sec.13, T.15 S., R.96 W., on left bank 40 ft upstream from The Denver and Rio Grande Western Railroad Co. bridge at west edge of Delta and 1½ miles upstream from mouth.

Drainage area.--1,110 sq mi, approximately.

Records available.--April 1903 to October 1931 (no winter records in most years), September 1938 to September 1962. Monthly discharge only for some periods, published in WSP 1313. Published as "near Delta" 1907-24.

Gage.--Water-stage recorder. Datum of gage is 4,929.92 ft above mean sea level, datum of 1929. Prior to Oct. 31, 1923, staff gage at several sites a quarter to 2 miles upstream at various datums. Apr. 26, 1924, to Nov. 2, 1931, water-stage recorder at site 50 ft upstream at different datum. Sept. 1, 1938, to May 5, 1941, water-stage recorder at site 330 ft downstream at same datum. May 9, 1941, to Apr. 25, 1946, chain gage at site 250 ft downstream at same datum. Apr. 26, 1946, to Feb. 17, 1960, water-stage recorder at site 150 ft downstream at same datum.

Average discharge.--26 years (1907-8, 1920-21, 1938-62), 275 cfs (199,100 acre-ft per year).

Extremes.--Maximum discharge during year, 1,490 cfs May 10 (gage height, 6.12 ft); minimum daily, 54 cfs Mar. 18, 21, 22.

1903-31, 1938-62: Maximum discharge recorded, 3,730 cfs May 5, 1941 (gage height, 5.90 ft, site and datum then in use), from rating curve extended above 1,900 cfs; no flow at times in 1908; minimum daily determined since beginning of diversion through Gunnison tunnel, 7 cfs July 10-15, 17, 21, 24-28, 1910.

Remarks.--Records fair. Natural flow of stream affected by water diverted from Gunnison River (see record of diversion with record for Gunnison River below Gunnison tunnel elsewhere in this report) and other adjacent basins, diversions for irrigation of about 90,000 acres above station, and return flow from irrigated areas.

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,050	381	163	120	128	84	148	914	262	562	238	169
2	590	398	158	110	125	88	142	508	266	590	187	178
3	*414	315	155	110	135	88	103	480	305	330	190	184
4	386	250	150	110	155	84	94	474	325	218	198	178
5	376	270	140	110	172	82	92	574	315	194	184	175
6	340	246	132	120	163	80	106	710	345	190	*187	175
7	315	230	132	130	150	80	145	830	452	242	184	*202
8	300	230	130	145	163	74	142	914	425	330	181	218
9	486	*234	132	138	181	72	108	1,090	414	330	175	218
10	546	210	110	120	181	72	128	1,180	518	258	181	238
11	442	218	110	100	258	66	198	914	*626	210	172	258
12	398	222	110	110	285	62	112	914	858	145	178	254
13	376	226	120	130	280	*67	96	963	984	202	187	258
14	355	190	*130	140	*187	78	148	746	794	210	172	275
15	340	178	160	*130	169	67	340	408	540	169	166	266
16	335	194	170	120	169	62	680	285	486	160	166	258
17	335	202	170	120	155	60	*590	242	403	*175	172	262
18	300	190	160	130	142	54	498	*210	275	*194	184	262
19	266	178	150	140	120	55	234	169	381	198	175	242
20	242	172	160	150	125	55	452	158	668	206	181	246
21	238	181	160	160	125	54	686	178	*764	187	184	480
22	230	181	160	150	115	54	285	190	800	184	178	540
23	*258	172	150	130	106	58	163	175	680	190	175	518
24	242	178	150	120	92	76	175	166	728	198	166	513
25	230	184	150	110	94	56	403	172	722	218	166	513
26	226	187	160	110	96	58	568	187	602	238	169	381
27	226	181	150	120	94	64	*614	258	557	222	175	330
28	230	181	150	120	94	76	447	345	535	210	169	365
29	246	172	160	120	-	166	758	295	335	206	166	386
30	285	175	140	120	-----	258	1,340	258	376	206	166	381
31	330	-----	130	120	-----	160	-----	246	-----	315	166	-----
Total	10,933	6,526	4,502	3,863	4,259	2,510	10,000	15,153	15,741	7,487	5,538	8,923
Mean	353	218	145	125	152	81.0	333	489	525	242	179	297
Ac-ft	21,690	12,940	8,930	7,660	8,450	4,980	19,830	30,060	31,220	14,850	10,980	17,700

Calendar year 1961: Max 1,490 Min 67 Mean 288 Ac-ft 208,200  
 Water year 1961-62: Max 1,340 Min 54 Mean 261 Ac-ft 189,300

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 10 to Jan. 7, Jan. 10-31.

9-1520, Kahnah Creek near Whitewater, Colo.

Location.--Lat 38°59', long 108°14', in sec.34, T.12 S., R.97 W., on right bank at downstream side of private bridge, a quarter of a mile downstream from intake of pipeline for Grand Junction water supply and 12 miles east of Whitewater.

Drainage area.--55.0 sq mi.

Records available.--October 1917 to September 1921, September 1922 to September 1962. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder and concrete control. Prior to Sept. 30, 1932, staff gage and Sept. 30, 1932, to Oct. 14, 1935, water-stage recorder, at site 300 ft upstream at different datum.

Average discharge (combined flow).--44 years, 40.3 cfs (29,180 acre-ft per year).

Extremes (combined flow).--Maximum discharge during year, 559 cfs May 12; minimum daily, 7.6 cfs Mar. 14, 15.

1917-21, 1922-62: Maximum discharge observed, 1,640 cfs June 6, 1921 (gage height, 4.5 ft, site and datum then in use), from rating curve extended above 700 cfs; minimum daily, 4.3 cfs Dec. 19, 1939.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions above station for municipal supply of Grand Junction and by Raber ditch for irrigation of about 60 acres below station. Records of these diversions furnished by State engineer and monthly figures are adjusted to show total flow of stream. Regulation by a few small reservoirs above station.

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

0.3	0.5	0.9	24
.4	1.0	1.1	45
.5	2.5	1.4	100
.6	5.5	2.0	285
.7	9.5	2.5	500

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	13	6.7	1.9	0.9	1.0	1.0	2.2	68	130	46	9.1	16
2	11	5.9	1.9	.9	1.0	1.0	3.7	64	159	39	7.9	16
3	* 10	5.5	1.9	.9	1.0	1.0	4.6	66	168	33	8.3	24
4	9.5	5.2	1.4	*.9	1.0	1.0	6.7	84	156	28	8.7	25
5	9.5	4.6	b 2.0	.9	1.0	1.0	5.5	128	135	21	7.9	* 20
6	9.1	b 4.6	*b 1.6	1.0	1.0	* 1.2	7.1	204	120	23	9.1	20
7	8.7	b 4.4	b 1.8	1.0	1.2	1.2	5.5	260	110	30	* 13	22
8	8.7	b 4.0	b 1.8	1.0	1.4	.9	4.0	325	108	30	17	20
9	16	4.0	1.6	1.2	1.6	1.0	4.0	341	108	30	22	20
10	9.5	3.7	1.6	1.4	1.8	.9	6.3	* 353	102	29	23	16
11	8.3	4.0	1.6	1.0	2.0	2.0	7.1	345	102	29	21	16
12	8.7	4.0	1.8	.8	1.8	3.0	8.7	385	108	35	22	17
13	9.1	b 3.2	* 2.2	.8	1.4	4.0	14	357	* 115	35	25	15
14	9.5	b 3.4	1.6	.8	1.0	3.0	21	226	100	33	25	15
15	10	b 3.6	1.6	.8	*.8	2.4	28	165	84	31	26	14
16	11	b 3.4	1.6	.6	.8	2.0	* 32	* 130	70	26	28	13
17	13	b 3.2	1.4	.6	.7	1.2	33	105	58	23	28	7.9
18	13	3.1	1.4	.8	1.9	1.0	40	92	51	22	27	6.3
19	13	b 3.0	1.4	.8	3.7	.9	44	130	46	* 24	25	5.9
20	12	b 2.8	1.4	1.0	.6	1.0	50	171	45	25	18	9.5
21	9.5	2.8	1.2	.8	.7	.9	45	132	45	23	17	11
22	8.3	b 2.8	1.0	.8	2.5	.9	37	94	44	23	18	11
23	7.1	b 2.8	.9	.6	1.2	.9	38	96	40	27	17	8.7
24	6.3	3.1	.9	.6	1.0	.9	50	112	37	29	19	7.5
25	5.9	3.1	.9	.8	.8	1.0	74	92	34	28	18	6.7
26	5.2	3.4	.9	.8	.9	1.4	86	90	32	24	18	6.3
27	* 5.5	* 3.1	.8	.8	2.4	3.1	86	112	29	21	16	7.1
28	5.9	2.4	.8	.8	4.0	4.6	90	100	28	13	16	8.7
29	5.9	2.4	.8	.8	-	2.4	90	96	* 28	10	16	9.5
30	5.9	2.4	.8	.8	-----	1.9	* 72	102	46	10	18	7.9
31	6.7	-----	.8	1.0	-----	2.0	-----	115	-----	10	19	-----
Total	284.8	110.6	43.3	26.7	40.2	50.7	995.4	5,140	2,438	810	563.0	403.0
Mean	9.19	3.69	1.40	0.86	1.44	1.64	33.2	166	81.3	26.1	18.2	13.4
Ac-ft	565	219	86	53	80	101	1,970	10,200	4,840	1,610	1,120	799

Adjusted for diversions

Mean	16.9	10.8	8.91	8.59	8.75	8.79	41.7	176	91.8	36.2	28.5	22.3
Ac-ft	1,040	642	548	528	486	541	2,480	10,830	5,470	2,230	1,760	1,330

Observed

Calendar year 1961:	Max 278	Min 0.1	Mean 17.8	Ac-ft 12,890
Water year 1961-62:	Max 385	Min 0.6	Mean 29.9	Ac-ft 21,640

Adjusted

Calendar year 1961:	Mean 25.8	Ac-ft 18,670
Water year 1961-62:	Mean 38.5	Ac-ft 27,880

\* Discharge measurement made on this day

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 9 to Feb. 15, Feb. 27 to Mar. 6, Mar. 12-18 (stage-discharge relation affected by ice most of periods).



## GUNNISON RIVER BASIN

9-1525. Gunnison River near Grand Junction, Colo.

Location.--Lat 38°59', long 108°27', near center of sec.14, T.2 S., R.1 E., Ute meridian, on right bank 180 ft upstream from bridge on State Highway 141, 0.4 mile downstream from Whitewater Creek, 0.5 mile south of Whitewater, and 8 miles southeast of Grand Junction.

Drainage area.--7,870 sq mi, approximately.

Records available.--October 1894 to December 1895 (gage heights only), October 1896 to September 1899, October 1901 to October 1906, October 1916 to September 1962. Monthly discharge only for some periods, published in WSP 1313. Published as "at Whitewater" 1901-6.

Gage.--Water-stage recorder. Datum of gage is 4,628.12 ft above mean sea level, datum of 1929. Prior to Apr. 11, 1895, staff gage 13 miles downstream near mouth at different datum. Apr. 11, 1895, to July 6, 1901, and Apr. 10, 1902, to October 1906 staff or chain gage at present site at datum 1.04 ft lower. Apr. 1, 1917, to June 24, 1934, staff gage and June 25, 1934, to Sept. 30, 1939, water-stage recorder, at site 11½ miles downstream at datum 72.98 ft lower.

Average discharge.--54 years (1896-99, 1901-6, 1916-62), 2,631 cfs (1,905,000 acre-ft per year).

Extremes.--Maximum discharge during year, 17,000 cfs May 13 (gage height, 10.48 ft); minimum daily, 580 cfs Aug. 27.

1896-99, 1901-6, 1916-62: Maximum discharge observed, 35,700 cfs May 23, 1920 (gage height, 14.95 ft, site and datum then in use), from rating curve extended above 22,000 cfs; minimum daily, 106 cfs July 20, 1934.

Remarks.--Records good except those for period of ice effect or no gage-height record, which are poor. Records show flow that enters Colorado River from Gunnison River basin except for about 40 cfs diverted below gage during irrigation season. Natural flow of river affected by diversions for irrigation of about 233,000 acres above station, storage reservoirs, and return flow from irrigated lands.

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

3.0	700	5.0	3,380	9.0	13,100
3.5	1,250	7.0	8,000	10.5	17,200
4.0	1,900				

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,980	1,780	1,190	750	1,000	700	1,260	9,900	5,330	8,820	1,500	610
2	2,040	1,860	1,320	750	1,000	750	1,380	8,620	5,700	8,450	1,330	590
3	1,840	1,770	1,260	750	1,000	770	2,180	8,100	6,320	7,550	1,300	650
4	1,700	1,510	1,200	*800	1,000	800	2,800	8,780	6,880	6,800	1,240	690
5	1,650	1,520	1,190	850	1,100	800	2,720	10,400	7,150	6,320	1,170	*710
6	1,610	1,560	1,050	900	1,000	*840	2,700	11,700	7,500	5,550	1,110	680
7	1,580	1,460	955	900	1,000	944	2,810	13,200	7,750	5,210	*999	670
8	1,510	1,430	955	900	1,000	890	2,760	14,200	7,700	5,120	890	870
9	1,800	1,470	955	800	1,000	820	2,180	14,700	7,050	4,760	760	900
10	2,150	1,550	900	750	1,100	800	1,980	15,600	7,180	4,230	690	922
11	2,210	1,550	750	700	1,200	790	2,320	15,400	8,000	3,730	760	955
12	1,980	1,550	650	650	1,550	740	2,330	15,500	8,880	3,330	740	988
13	1,900	1,600	*650	600	1,670	700	2,760	16,500	*9,500	3,230	800	1,020
14	1,810	1,520	750	700	1,470	700	3,830	15,000	10,700	3,350	770	1,020
15	1,800	1,290	850	800	*1,200	710	5,700	12,200	10,300	2,960	670	999
16	1,800	1,290	900	850	1,150	720	*7,500	*9,880	9,520	2,640	600	999
17	1,810	1,500	950	900	1,170	830	8,500	8,420	8,300	2,310	610	966
18	1,780	1,520	1,000	850	1,090	760	9,700	7,500	6,850	2,100	710	955
19	1,730	1,430	1,000	900	966	760	9,920	6,500	6,550	*1,960	770	922
20	1,700	1,290	950	950	922	790	*11,300	6,500	7,500	1,980	810	860
21	1,670	1,240	900	1,000	880	944	12,500	7,000	8,580	1,970	880	1,130
22	1,610	1,350	900	950	870	1,020	11,100	6,000	9,150	1,760	880	1,740
23	1,640	1,320	850	900	870	790	9,720	5,000	9,200	1,650	880	1,690
24	1,690	1,330	800	900	850	800	9,700	4,600	8,780	1,630	810	1,550
25	1,590	1,340	850	900	840	810	11,000	4,600	8,550	1,690	690	1,420
26	1,520	1,380	900	900	870	810	11,700	5,000	8,380	2,080	630	1,350
27	*1,480	*1,410	850	950	810	944	12,100	5,500	8,320	2,290	580	1,370
28	1,520	1,340	800	1,000	700	1,300	11,100	6,000	8,200	2,040	600	1,390
29	1,580	1,230	800	1,000	-	1,260	11,600	6,420	*8,100	1,780	620	1,610
30	1,590	1,150	850	1,000	-----	1,320	*12,000	5,750	8,400	1,640	600	1,430
31	1,640	-----	800	950	-----	1,340	-----	5,210	-----	1,540	590	-----
Total	53,910	43,540	28,725	26,500	29,278	26,952	199,150	289,680	240,320	110,470	25,989	31,656
Mean	1,739	1,451	927	855	1,046	869	6,638	9,345	8,011	3,564	838	1,055
Ac-ft	106,900	86,360	56,980	52,560	58,070	53,460	395,000	574,600	476,700	219,100	51,550	62,790

Calendar year 1961: Max 7,390

Min 356

Mean 1,527

Ac-ft 1,106,000

Water year 1961-62: Max 16,500

Min 580

Mean 3,031

Ac-ft 2,194,000

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 10 to Feb. 11, Feb. 28 to Mar. 2. No gage-height record May 18-28.

## 9-1635. Colorado River near Colorado-Utah State line

Location.--Lat 39°09', long 108°57', in sec.25, T.10 S., R.104 W., on right bank 4.8 miles downstream from Salt Creek, 6½ miles southwest of Mack, Colo., and 7¼ miles upstream from Colorado-Utah State line.

Drainage area.--17,900 sq mi, approximately.

Records available.--May 1951 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 4,370 ft (from river-profile map).

Average discharge.--11 years, 5,970 cfs (4,322,000 acre-ft per year).

Extremes.--Maximum discharge during year, 40,500 cfs May 14 (gage height, 13.51 ft); minimum daily, 1,700 cfs Jan. 13.

1951-62: Maximum discharge, 56,800 cfs June 9, 1957 (gage height, 16.40 ft); minimum daily, 960 cfs Sept. 7, 1956.

Remarks.--Records good except those for period of ice effect, which are fair. Natural flow of stream affected by transmountain diversions, storage reservoirs, power developments, and diversions for irrigation. (Records include all return flow from irrigated areas.)

Rating table, except period of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Feb. 7-14, Apr. 28 to May 25)

3.0	1,570	7.0	11,000
4.0	3,060	10	23,300
5.0	5,140	14	44,000

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6,140	4,630	3,490	3,110	3,100	2,640	4,600	* 24,200	15,600	25,600	5,000	2,230
2	6,610	4,740	3,530	2,860	3,200	2,740	4,540	20,700	17,000	25,000	4,880	2,290
3	5,740	4,740	3,650	2,620	3,300	3,340	5,040	19,000	18,500	23,200	4,630	2,240
4	5,240	4,650	3,530	2,570	3,300	3,430	6,520	18,800	20,000	21,500	4,600	2,290
5	5,280	4,160	3,490	2,920	3,400	3,320	6,880	20,700	21,300	20,600	4,540	2,290
6	5,090	4,160	3,350	3,080	3,500	3,300	6,850	24,000	22,400	18,900	4,470	* 2,290
7	5,140	3,830	2,880	3,240	4,110	3,510	6,970	27,300	23,300	17,700	4,200	2,280
8	5,090	3,690	3,020	* 3,350	4,090	3,710	6,880	30,300	23,200	16,500	3,890	2,350
9	6,550	3,810	3,130	3,370	4,920	3,630	6,120	32,400	21,500	16,000	3,770	2,520
10	6,000	4,110	3,060	3,100	5,310	3,650	5,280	34,600	20,500	14,500	3,470	2,560
11	5,970	4,180	2,920	2,400	6,200	3,690	5,450	36,300	21,600	13,400	3,410	2,640
12	5,640	4,110	2,460	2,200	6,790	3,610	6,020	37,000	24,200	12,600	3,410	2,640
13	5,400	4,110	2,160	1,700	7,780	3,300	6,670	39,200	26,200	11,800	3,320	2,660
14	5,240	4,110	1,960	1,750	* 6,320	3,240	7,720	38,700	28,400	11,000	3,260	2,660
15	5,240	3,830	2,230	2,500	4,430	3,590	10,200	33,100	* 29,400	10,700	* 3,100	2,590
16	5,160	3,530	2,950	2,700	4,140	3,690	* 13,700	27,800	28,000	9,940	2,780	2,570
17	4,900	3,770	3,350	2,800	4,540	3,710	16,900	23,900	25,000	* 9,300	2,510	2,540
18	4,900	3,950	3,690	2,700	4,070	3,810	19,100	21,200	21,000	8,380	2,620	2,540
19	5,000	4,030	3,260	2,800	3,550	* 3,490	20,800	19,100	19,100	8,110	2,740	2,490
20	4,920	3,910	3,410	3,000	3,630	3,320	23,100	17,500	20,800	7,750	2,760	2,410
21	4,810	3,730	3,490	3,100	3,340	3,450	26,300	17,800	24,000	7,360	2,850	2,710
22	4,690	3,730	3,530	3,300	3,350	3,730	26,800	18,400	25,700	6,850	2,920	3,990
23	4,630	3,810	3,510	3,200	3,320	3,510	23,800	* 17,100	26,000	6,460	2,800	3,870
24	4,540	3,750	3,100	3,000	3,320	3,430	22,800	15,300	24,600	6,200	2,780	3,810
25	4,430	3,830	2,950	2,900	3,300	3,370	24,600	15,200	24,300	6,070	2,660	3,650
26	4,470	3,770	2,880	2,800	3,350	3,430	27,100	16,000	23,600	6,700	2,560	3,510
27	4,390	3,790	3,200	2,700	3,350	3,670	28,600	16,500	23,100	6,760	2,460	3,510
28	4,280	* 3,830	2,990	2,850	2,900	4,520	26,800	19,300	23,600	6,520	2,360	4,030
29	4,430	3,550	2,920	2,950	-	5,360	26,100	18,800	23,600	6,100	2,320	4,030
30	* 4,450	3,510	3,170	3,000	-----	5,040	28,000	17,300	24,100	5,500	2,320	3,830
31	4,220	-----	3,130	3,000	-----	4,900	-----	15,800	-----	5,040	2,220	-----
Total	58,590	119,350	96,390	87,570	115,910	113,130	450,240	733,300	689,600	372,040	101,610	86,020
Mean	5,116	3,978	3,109	2,825	4,140	3,649	15,010	23,650	22,990	12,000	3,278	2,867
Ac-ft	314,600	236,700	191,200	173,700	229,900	224,400	893,000	1,454,000	1,368,000	737,900	201,500	170,600

Calendar year 1961: Max 18,700 Min 1,340 Mean 4,174 Ac-ft 3,022,000

Water year 1961-62: Max 39,200 Min 1,700 Mean 8,558 Ac-ft 6,196,000

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Jan. 11 to Feb. 6 (no gage-height record Jan. 16 to Feb. 1).

## DOLORES RIVER BASIN

9-1650, Dolores River below Rico, Colo.

Location.--Lat 37°38'25", long 108°03'05", in SW¼ sec.15, T.39 N., R.11 W., on left bank at upstream side of bridge on State Highway 145, at Dolores-Montezuma County line, half a mile upstream from Ryman Creek, and 4 miles southwest of Rico.

Drainage area.--105 sq mi.

Records available.--October 1951 to September 1962.

Gage.--Water-stage recorder. Datum of gage is 8,422.23 ft above mean sea level, datum of 1929.

Average discharge.--11 years, 133 cfs (96,290 acre-ft per year).

Extremes.--Maximum discharge during year, 1,190 cfs May 9 (gage height, 5.05 ft); minimum daily, 16 cfs Mar. 13.  
1951-62: Maximum discharge, 2,120 cfs June 10, 1952 (gage height, 6.15 ft); minimum daily, 7.0 cfs Nov. 16, 17, 1956, Feb. 6, 7, 1961.  
Maximum flood known occurred Oct. 5, 1911.

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

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

2.1	18	3.5	250
2.4	44	4.0	490
2.7	83	5.0	1,150
3.0	136		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	74	56	37	28		20	44	244	370	390	70	29
2	65	52	35	28		22	50	295	435	320	65	29
3	63	44	34	28		22	64	435	450	270	60	28
4	60	51	30	30		20	70	568	520	244	60	26
5	* 58	45	30	30		22	68	676	616	229	55	25
6	54	* 43	30	28		24	68	748	* 706	229	55	29
7	52	48	30	28		24	71	839	676	215	50	37
8	58	50	28	26		22	64	874	622	191	* 50	31
9	78	51	26	26		20	* 59	951	670	* 170	46	30
10	71	47	26	24		20	55	1,020	658	160	46	27
11	65	48	24			19	58	986	646	150	46	* 26
12	70	48	18			* 17	74	944	688	150	46	25
13	70	44	20			16	112	853	718	150	46	25
14	85	38	24			18	159	718	718	150	42	25
15	95	46	28			18	202	532	652	140	40	24
16	100	44	32			20	282	410	496	120	42	28
17	100	42	30			20	345	320	380	110	45	29
18	93	37	30			22	445	286	345	110	53	24
19	86	36	* 34			20	532	290	* 450	110	56	23
20	82	38	34			20	550	360	574	100	54	36
21	76	45	30			18	450	370	574	95	52	86
22	82	40	26			18	290	290	562	90	44	86
23	71	40	26			18	315	* 310	520	95	42	52
24	64	40	26			17	440	380	460	100	40	41
25	62	40	28			17	544	400	425	95	38	40
26	56	40	30			20	435	345	415	90	36	37
27	59	32	30			28	370	430	405	85	33	45
28	55	34	30			20	44	395	325	80	33	56
29	51	32	28			47	370	278	415	75	31	50
30	56	38	28			42	* 278	278	475	70	30	40
31	59	-----	28			36	-----	340	-----	75	30	-----
Total	2,170	1,289	890	822	854	711	7,259	16,095	16,036	4,668	1,436	1,089
Mean	70.0	43.0	28.7	26.5	30.5	22.9	242	519	535	151	46.3	36.3
Ac-ft	4,300	2,560	1,770	1,630	1,690	1,410	14,400	31,920	31,810	9,260	2,850	2,160

Calendar year 1961: Max 805 Min 7 Mean 115 Ac-ft 83,390

Water year 1961-62: Max 1,020 Min 16 Mean 146 Ac-ft 105,800

Peak discharge (base, 800 cfs).--May 9 (2000) 1,190 cfs (5.05 ft); June 13 (2000) 860 cfs (4.60 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 19, 20, 22-25, 27-29, Dec. 4 to Mar. 20, Mar. 22, 24-27, 31, Apr. 1, 2. No gage-height record Dec. 17-19, Jan. 11 to Feb. 19, July 9 to Aug. 8.

## DOLORES RIVER BASIN

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9-1665. Dolores River at Dolores, Colo.

Location.--Lat 37°28', long 108°30', in sec.16, T.37 N., R.15 W., on left bank 70 ft downstream from bridge on State Highway 184 in Dolores and a quarter of a mile upstream from Lost Canyon Creek.

Drainage area.--556 sq mi.

Records available.--June 1895 to October 1903, August 1910 to November 1912, October 1921 to September 1962. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 6,918.74 ft above mean sea level, datum of 1929. June 23, 1895, to Oct. 31, 1903, staff gage at site a quarter of a mile upstream at different datum. Aug. 27, 1910, to Nov. 30, 1912, and Apr. 11, 1922, to Mar. 26, 1934, chain gage, staff gage, or water-stage recorder on downstream side of bridge 70 ft upstream at different datums. Mar. 27, 1934, to Oct. 7, 1952, water-stage recorder at site 340 ft upstream at datum 6.17 ft higher.

Average discharge.--51 years, 440 cfs (318,500 acre-ft per year).

Extremes.--Maximum discharge during year, 3,210 cfs May 10 (gage height, 8.80 ft); minimum not determined.

1895-1903, 1910-12, 1921-62: Maximum discharge, 10,000 cfs Oct. 5, 1911 (gage height, 10.2 ft, site and datum then in use), from rating curve extended above 2,800 cfs; minimum daily, 8 cfs Aug. 16, 1896.

Remarks.--Records good except those for Apr. 14 to May 15, June 5-14, which are fair and those for periods of ice effect or no gage-height record, 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)  
(Shifting-control method used Mar. 27 to May 10)

3.2	45	5.0	550
3.6	90	6.0	1,150
4.0	160	8.0	2,600
4.5	310	8.7	3,250

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	
1	176	150	99				140	1,040	1,140	854	261	183	
2	160	142	92				160	1,120	1,250	740	240	178	
3	148	100	93				200	1,410	1,290	655	240	168	
4	140	127	72				190	1,730	1,370	590	237	135	
5	135	126	53				200	2,110	1,550	545	225	127	
6	126	100	(*)			60	250	2,180	1,640	515	225	131	
7	120	107					320	2,540	1,700	535	201	150	
8	120	131					350	*2,520	*1,470	500	219	122	
9	272	135					340	2,760	1,500	450	225	114	
10	207	119					330	2,930	1,570	*385	244	107	
11	170	119					*323	2,720	1,440	346	240	104	
12	158	131					450	2,740	1,580	322	240	*96	
13	164	*119					600	2,560	1,580	338	237	93	
14	174	92			(*)		824	2,100	1,590	334	*240	93	
15	195	104				(*)	1,160	1,630	1,400	289	231	92	
16	*219	119	50	55	90		73	1,580	1,300	1,140	282	228	66
17	228	126				75	1,730	1,070	938	286	258	58	
18	216	86				73	2,070	956	812	296	258	55	
19	204	78				76	2,300	920	884	289	278	48	
20	192	85					80	2,460	1,000	1,090	296	275	55
21	180	119					80	2,190	1,050	*1,160	296	244	127
22	180	90					73	1,460	950	1,120	292	219	192
23	178	84					70	1,410	*880	1,080	278	207	152
24	158	105		(*)			75	1,790	900	950	289	195	122
25	146	120					80	*2,160	1,050	878	234	204	114
26	140	119					95	2,010	956	830	240	201	110
27	140	96					*120	1,650	1,090	800	204	198	114
28	142	92	(*)		(*)		170	1,720	1,030	830	186	*207	148
29	126	84					170	1,600	938	776	192	198	146
30	129	110					150	1,230	950	920	216	195	122
31	154						125		1,040		*286	189	
Total	5,197	3,315	1,709	1,705	2,520	2,485	33,197	48,170	36,278	11,560	7,059	3,522	
Mean	168	110	55.1	55	90	80.2	1,107	1,554	1,209	373	228	117	
Ac-Ft	10,310	6,580	3,390	3,380	5,000	4,930	65,850	95,540	71,960	22,930	14,000	6,990	

Calendar year 1961: Max 2,120 Min 30 Mean 332 Ac-ft 240,400  
 Water year 1961-62: Max 2,930 Min - Mean 429 Ac-ft 310,900

Peak discharge (base, 1,800 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-20	0030	8.51	2,820	5-10	0230	8.80	3,210
4-25	0230	8.01	2,420	6-7	0500	7.03	1,870

\* Discharge measurement made on this day.

Note.--No gage-height record Dec. 12 to Apr. 13 (stage-discharge relation affected by ice during most of period), May 21-24. Stage-discharge relation affected by ice Dec. 6-11.



## DOLORES RIVER BASIN

9-1681. Disappointment Creek near Dove Creek, Colo.

Location.--Lat 37°52', long 108°35', in SE¼ sec.25, T.42 N., R.16 W., a quarter of a mile downstream from ford, 6½ miles southeast of Cedar, and 19 miles northeast of town of Dove Creek.

Drainage area.--145 sq mi, approximately.

Records available.--August 1957 to September 1962.

Gage.--Water-stage recorder.

Average discharge.--5 years, 16.3 cfs (11,800 acre-ft per year).

Extremes.--Maximum discharge during year, 552 cfs Oct. 9 (gage height, 6.15 ft), from rating curve extended above 250 cfs as explained below; no flow for several days.

1957-62: Maximum discharge, 1,770 cfs Aug. 4, 1959 (gage height, 10.30 ft), from rating curve extended above 250 cfs on basis of slope-area measurements at gage heights 7.55 and 10.30 ft; no flow for several days in 1959-62.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Several small reservoirs and ponds above station. Small diversions for irrigation above station.

Rating table, except period of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 1 to Dec. 3, July 8 to Sept. 30)

1.0	0	1.8	10
1.1	.1	2.2	27
1.2	.5	2.7	62
1.4	2.0	3.2	111
1.5	3.2	3.5	155

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.5	3.5	2.6				41	43	24	7.7	0.2	0
2	2.5	* 4.0	2.4				52	* 43	26	5.6	.3	0
3	2.5	2.8	2.5			2.2	56	51	30	5.0	.5	0
4	2.5	3.1	b 1.2				57	64	32	4.5	.1	0
5	* 2.5	2.6	b 1.0				45	77	* 29	3.9	0	0
6	2.1	2.6	b .6		2.2	3.9	45	77	28	3.4	0	0
7	1.8	2.5	b .8			6.3	42	84	28	3.4	0	0
8	47	2.7	b 1.0			5.2	45	84	24	3.2	* 0	0
9	85	3.0				4.3	42	95	21	* 2.8	0	0
10	4	3.0				3.1	* 45	97	21	2.5	0	0
11		2.6					45	82	20	2.1	0	0
12		2.8					52	81	20	2.0	0	* 0
13		2.6			15	(*) 3	61	75	19	2.0	0	0
14		1.7					70	61	18	1.8	0	0
15		1.8					87	46	17	1.8	0	0
16		3.1		0.8		4	103	38	16	1.6	2.5	0
17		2.7				5.9	104	33	14	1.1	1	0
18		2.2			6	6.6	117	29	* 12	1.0	0	0
19		1.8	1			6.6	136	24	11	.9	0	0
20		2.8	(*)		(*)	8.0	142	28	10	.5	8.5	7.5
21	2.8	3.1			4.1	8.0	112	29	10	.3	.5	5
22		1.7			3.6	5.2	76	25	9.7	.4	0	8
23		1.7			4.1	5.4	75	22	8.0	.3	0	.5
24		2.4			4.1	6.8	88	22	7.2	.8	0	0
25		2.8			4.3	8.3	99	22	7.5	.4	0	0
26		2.6			3.8	1.9	122	22	7.2	1.7	0	13
27		2.4			3.4	5.5	87	34	6.8	.8	0	9.3
28		2.2			2.4	8.4	69	32	6.6	.4	0	23
29		2.0			-	6.4	68	28	6.6	.1	0	.7
30		3.2			-----	30	58	22	7.7	.1	0	2
31		-----			-----	24	-----	24	-----	.1	0	-----
Total	211.2	78.0	35.1	24.8	156.8	389.6	2,241	1,494	497.3	62.2	37.1	135.7
Mean	6.81	2.60	1.13	0.8	5.60	12.6	74.7	48.2	16.6	2.01	1.20	4.52
Ac-ft	419	155	70	49	311	773	4,440	2,960	986	123	74	269

Calendar year 1961: Max 177 Min 0 Mean 12.2 Ac-ft 8,840  
Water year 1961-62: Max 142 Min 0 Mean 14.7 Ac-ft 10,630

Peak discharge (base, 400 cfs)--Oct. 9 (0200) 552 cfs (6.15 ft).

\* Discharge measurement or observation of no flow made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Oct. 1-4, Oct. 10 to Nov. 2, Dec. 9 to Feb. 20 (stage-discharge relation affected by ice during most of period), Feb. 26 to Mar. 5, Mar. 11-16, Aug. 17, 21, Sept. 21-23.

9-1712. San Miguel River near Telluride, Colo.

Location.--Lat 37°56'55", long 107°52'35", in NW¼ sec.33, T.43 N., R.9 W., on left bank 0.1 mile upstream from Remine Creek, 0.3 mile downstream from bridge on State Highway 145, 0.5 mile downstream from Prospect Creek, 1.6 miles upstream from South Fork, and 3.5 miles west of Telluride.

Drainage area.--42.8 sq mi.

Records available.--October 1959 to September 1962.

Gage.--Water-stage recorder. Datum of gage is 8,622.81 ft above mean sea level (levels by Bureau of Reclamation).

Extremes.--Maximum discharge during year, 397 cfs June 30 (gage height, 4.34 ft); minimum daily determined, 13 cfs Feb. 28.  
1959-62: Maximum discharge, 605 cfs June 17, 1960 (gage height, 5.01 ft); minimum daily, 12 cfs Mar. 8, 1961.

Remarks.--Records good except those for periods of ice effect, which are poor. Several small diversions for irrigation of hay meadows above station.

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

2.0	17	3.5	190
2.2	25	4.0	310
2.5	48	4.5	445
3.0	110		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	48	35	23			14	20	*64	100	302	72	29
2	45	32	23			14	22	63	124	255	69	29
3	43	28	23			14	24	70	131	242	64	27
4	*41	30	22			14	28	83	128	228	69	27
5	37	30	20			14	27	99	143	210	64	26
6	35	*28				16	27	113	*170	206	58	27
7	34	28				16	24	126	184	210	*58	28
8	37	29				14	22	143	162	202	57	28
9	50	29				14	*23	184	178	192	54	27
10	42	29				15	26	210	215	*184	52	27
11	41	29			19	14	29	220	*258	170	52	*26
12	39	29				*16	32	225	285	170	51	26
13	37	28				14	35	215	290	155	49	25
14	37	27				16	39	188	300	122	46	25
15	38	28				16	45	149	250	119	44	24
16	39	27		15		14	50	122	192	119	44	25
17	39	27				16	57	104	148	116	40	25
18	39	24				16	67	92	149	116	43	24
19	39	26	17			18	78	86	*215	119	42	24
20	38	26	(*)		(*)	17	87	91	288	118	45	34
21	38	26			16	17	86	96	295	116	47	70
22	39	25			16	17	75	91	295	106	43	92
23	35	26			16	17	75	*83	310	102	40	67
24	34	24			16	16	87	91	285	107	38	54
25	33	25			16	16	103	104	278	102	37	46
26	33	25			16	16	102	99	268	97	36	42
27	33	22			14	18	88	126	270	95	34	41
28	32	24			13	20	83	106	272	88	33	39
29	31	22			-	19	83	96	252	84	31	37
30	33	24			-	19	73	87	330	82	30	36
31	35	-----			-----	19	-----	91	-----	75	30	-----
Total	1,174	812	553	465	501	496	1,617	3,717	6,775	4,609	1,472	1,057
Mean	37.9	27.1	17.8	15	17.9	16.0	53.9	120	226	149	47.5	35.2
Ac-ft	2,330	1,610	1,100	922	994	984	3,210	7,370	13,440	9,140	2,920	2,100

Calendar year 1961: Max 433 Min 12 Mean 65.6 Ac-ft 47,510  
Water year 1961-62: Max 330 Min - Mean 63.7 Ac-ft 46,120

Peak discharge (base, 500 cfs).--No peak above base.

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 3, 6-7, 15, 18-20, 24, 27-29, Dec. 4 to Mar. 18 (no gage-height record Dec. 6 to Feb. 19), Mar. 24-26.

## DOLORES RIVER BASIN

9-1721. Leopard Creek at Noel, Colo.

Location.--Lat 38°06'10", long 107°55'10", in SE1SW1/4 sec.36, T.45 N., R.10 W., on right bank 10 ft downstream from abandoned railroad, 0.6 mile west of Noel, and 2 miles upstream from Dead Horse Canyon.

Drainage area.--9.11 sq mi.

Records available.--October 1955 to September 1962.

Gage.--Water-stage recorder and concrete control since Sept. 24, 1962. Altitude of gage is 8,700 ft (from topographic map).

Average discharge.--7 years, 2.89 cfs (2,090 acre-ft per year).

Extremes.--Maximum discharge during year, 55 cfs Apr. 17 (gage height, 3.33 ft); minimum daily, 0.2 cfs for many days.  
1955-62: Maximum discharge, 100 cfs Apr. 30, 1961; (gage height, 3.98 ft); minimum daily, 0.1 cfs for many days in 1956-57, 1959.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor. One diversion above station to Dallas Creek drainage. Small diversions for irrigation of hay meadows above station.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Sept. 24-30)

2.0	0.1	2.5	6.2
2.1	.4	2.7	12
2.2	1.1	3.0	28
2.3	2.2	3.5	72

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.1	2.1	1.6	1.1	0.8	0.4	1.0	1.0	4.0	1.4	0.8	0.2
2	2.1	2.0	1.5	1.1	.7	1.0	1.6	.9	3.3	1.6	.9	.2
3	* 2.1	1.8	1.4	1.1	.8	.8	2.6	* 9.5	3.6	1.5	1.0	.2
4	2.0	2.0	1.4	1.2	.8	.8	4.6	9.7	* 4.0	1.8	1.0	.2
5	2.0	1.8	1.2	1.3	.8	1.2	6	9.4	4.0	1.4	.8	.3
6	2.0	1.8	1.0	1.1	.7	1.2	5.5	8.7	3.5	1.3	.8	.3
7	2.0	1.8	1.0	1.0	.5	1.2	5.5	8.2	2.6	1.1	*.7	.3
8	2.2	* 1.8	1.0	1.0	.5	1.0	6	8.2	2.1	1.0	.6	.2
9	2.7	1.6	1.0	.8	.5	.8	5.5	7.6	2.0	1.0	.5	.2
10	2.0	1.6	1.0	.7	.6	.6	5	7.3	1.5	1.0	.4	.3
11	2.6	1.6	.8	.7	.8	.5	* 4.6	6.8	1.6	* 1.2	.4	*.3
12	2.6	1.6	.4	.8	.8	.6	6.5	6.5	1.9	1.9	.4	.2
13	2.4	1.6	.6	.8	.9	*.6	1.0	6.2	1.2	2.4	.4	.2
14	2.2	1.6	.8	.8	.8	.6	1.6	5.8	1.1	2.2	.3	.2
15	2.0	1.8	1.0	.8	.8	.6	2.6	5.3	1.2	1.8	.3	.2
16	1.9	2.0	1.4	.7	.7	.9	* 3.0	5.1	1.6	1.5	.3	.2
17	1.8	2.0	1.4	.7	.6	.9	2.9	5.1	1.9	1.9	.3	.2
18	1.9	1.8	1.3	.8	.5	1.0	* 2.7	5.5	1.8	1.2	.3	.2
19	1.9	1.8	1.2	.7	.7	1.0	* 2.3	5.1	1.8	1.9	.3	.2
20	2.0	1.8	1.1	.8	.6	.9	2.2	5.1	* 1.6	1.5	.3	.5
21	1.9	1.8	* 1.0	.7	*.6	.8	1.6	4.7	1.4	1.6	.4	.7
22	2.0	1.6	1.0	.6	.6	.6	1.2	4.7	1.6	1.6	.5	.3
23	1.9	1.6	1.0	.6	.6	.5	1.3	4.4	1.4	1.1	.4	.2
24	1.9	1.6	1.0	.8	.6	.6	1.3	* 4.2	1.8	1.3	.4	.2
25	1.9	1.6	1.0	.8	.6	.6	1.2	4.0	2.7	1.4	.3	.3
26	1.8	1.5	1.0	.8	.6	.6	1.5	3.3	1.6	1.1	.3	.3
27	1.9	1.5	1.0	.8	.6	.8	1.2	5.3	1.4	1.0	.3	.3
28	2.0	1.6	1.0	.8	.4	.8	1.2	4.4	1.4	.9	.3	.4
29	2.0	2.1	1.1	.8	-	.6	1.2	4.7	1.8	.8	.2	.3
30	2.1	2.0	1.1	.8	-----	.6	1.2	4.2	1.5	.8	.2	.4
31	2.1	-----	1.1	.8	-----	.6	-----	4.2	-----	.8	2	-----
Total	64.0	52.8	33.4	26.3	18.5	23.7	366.4	192.2	62.9	43.0	14.3	8.2
Mean	2.06	1.76	1.08	0.85	0.66	0.76	12.2	6.20	2.10	1.39	0.46	0.27
Ac-ft	127	105	66	52	37	47	727	381	125	85	28	16

Calendar year 1961: Max 58 Min 0.4 Mean 3.15 Ac-ft 2,280  
Water year 1961-62: Max 30 Min 0.2 Mean 2.48 Ac-ft 1,800

Peak discharge (base, 15 cfs).--Apr. 17 (1600) 55 cfs (3.33 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 3-22, Dec. 5-16, Feb. 27 to Mar. 7. No gage-height record Mar. 24 to Apr. 11, May 1-3.

## DOLORES RIVER BASIN

265

9-1725. San Miguel River near Placerville, Colo.

Location.--Lat 38°02'05", long 108°07'15", in NW¼SW¼ sec.30, T.44 N., R.11 W., on right bank 0.7 mile downstream from Specie Creek and 4 miles northwest of Placerville.

Drainage area.--308 sq mi.

Records available.--January to December 1909, September 1910 to December 1912, April 1930 to September 1934, April 1942 to September 1962. Monthly discharge only for some periods, published in WSP 1313. Published as "at Placerville" 1910-12.

Gage.--Water-stage recorder. Datum of gage is 7,055.80 ft above mean sea level (Bureau of Reclamation bench mark). Jan. 1 to Dec. 31, 1909, staff gage at site 3.3 miles downstream at different datum. Aug. 27, 1910, to Nov. 30, 1912, staff gage and Apr. 25, 1930, to Sept. 30, 1934, water-stage recorder, at site 3.2 miles upstream at different datums. Apr. 1, 1942, to Oct. 21, 1958, at site 0.7 mile upstream at datum 40.64 ft higher.

Average discharge.--26 years (1910-12, 1930-34, 1942-62), 232 cfs (168,000 acre-ft per year).

Extremes.--Maximum discharge during year, 1,030 cfs June 14 (gage height, 4.92 ft); minimum daily, 42 cfs Feb. 28. 1909-12, 1930-34, 1942-62: Maximum discharge, 10,000 cfs Sept. 5, 1909 (result of failure of Trout and Middle Reservoir Dams); minimum daily, 26 cfs Jan. 5, 1960.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 1,700 acres above station. One diversion from Fall Creek for irrigation of about 2,000 acres in Beaver and Saltado Creek basins. One small ditch diverts water from Leopard Creek to Uncompahgre River basin. Slight regulation by Lake Hope and Trout Lake of Western Colorado Power Co. (combined capacity, 5,040 acre-ft).

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

2.3	40	3.7	295	4.5	720
2.8	95	4.0	415	5.0	1,160
3.3	190				

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	205	135	115			b 60	87	*400	392	832	245	107
2	185	127	104			67	96	388	445	736	235	92
3	188	108	112			64	117	406	450	692	232	95
4	*178	129	101			58	140	465	460	685	228	91
5	174	118	96			57	138	520	550	650	218	90
6	167	*113	95			57	127	574	*636	650	202	87
7	172	113	98			58	122	636	692	664	*198	100
8	174	125				54	113	685	615	608	195	101
9	248	124				56	106	784	657	580	183	95
10	178	124				56	118	832	728	*556	176	91
11	192	120				52	*127	856	*776	544	178	94
12	172	122			70	*46	150	864	824	544	178	*91
13	150	110				64	205	816	880	568	172	88
14	188	104				50	292	720	880	410	161	82
15	190	108				56	406	608	760	370	154	78
16	192	113				55	498	514	636	358	148	80
17	188	113				56	550	455	509	346	150	85
18	163	107				54	622	430	482	346	159	75
19	138	104				55	*685	402	*643	362	165	80
20	152	108				57	720	415	808	354	159	127
21	148	118				(*) 56	594	430	*840	342	167	248
22	150	108				b 50	498	406	832	334	163	235
23	140	120				b 50	54	500	*379	840	316	178
24	135	113				b 50	58	600	397	816	338	154
25	133	115				b 55	61	650	410	776	346	135
26	131	110				b 50	67	700	346	792	323	125
27	131	113				b 46	76	600	440	776	309	124
28	129	110				b 42	87	500	397	800	286	125
29	124	106				-	85	550	402	760	274	110
30	131	107				-----	85	450	384	898	265	112
31	140	-----				82	-----	406	-----	258	108	-----
Total	5,086	3,445	2,521	2,015	1,813	1,897	11,051	16,167	20,953	14,246	5,218	3,401
Mean	164	115	81.3	65	64.8	61.2	369	522	698	460	168	113
Ac-ft	10,090	6,830	5,000	4,000	3,600	3,760	21,940	32,070	41,560	28,260	10,350	6,750

Calendar year 1961: Max 1,160 Min 40 Mean 238 Ac-ft 172,300  
 Water year 1961-62: Max 898 Min 42 Mean 241 Ac-ft 174,200

Peak discharge (base, 900 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-17	2030	4.78	952	6-14	0100	4.92	1,030
5-10	2230	4.76	916	6-30	2230	4.88	1,020

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 8 to Feb. 21 (stage-discharge relation affected by ice during most of period), Apr. 23 to May 1.



## DOLORES RIVER BASIN

9-1740, San Miguel River near Nucla, Colo.

Location.--Lat 38°15', long 108°24', in NE¼ sec.10, T.46 N., R.14 W., on right bank 0.4 mile upstream from highway bridge, three-quarters of a mile upstream from Cottonwood Creek, and 8½ miles east of Nucla.

Drainage area.--660 sq mi, approximately.

Records available.--October 1953 to September 1962 (discontinued).

Gage.--Water-stage recorder. Altitude of gage is 5,800 ft (from topographic map).

Average discharge.--9 years, 249 cfs (180,300 acre-ft per year), unadjusted.

Extremes.--Maximum discharge during year, 2,760 cfs Apr. 17 (gage height, 7.00 ft); minimum daily, 3.8 cfs Sept. 19.

1953-62: Maximum discharge, 3,810 cfs Apr. 22, 1958 (gage height, 7.80 ft); minimum daily, 0.5 cfs Oct. 11-22, 1956.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Slight regulation by Little Hope and Trout Lake of Western Colorado Power Co. (combined capacity, 5,040 acre-ft). Natural flow of stream also affected by water exported from Beaver Creek to Naturita Creek drainage for irrigation of about 12,000 acres, diversions for irrigation of about 5,000 acres above station, and diversion by Colorado Cooperative Canal (see table below) 4 miles upstream for irrigation below.

Cooperation.--Data for computation of diversion by Colorado Cooperative Canal furnished by State engineer and Colorado Cooperative Co., Inc.

Monthly diversion, in acre-feet, water year October 1961 to September 1962

Month	Diversion	Month	Diversion
October.....	345	April.....	803
November.....	40	May.....	6,230
December.....	238	June.....	6,800
	- - - - -	July.....	6,730
Calendar year 1961....	25,630	August.....	6,350
	- - - - -	September.....	5,460
January.....	258		
February.....	0		
March.....	0	Water year 1961-62....	33,250

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Apr. 20 to July 13)

2.8	2.6	3.5	63	5.0	655
2.9	5.7	3.9	139	5.5	1,010
3.0	10	4.3	270	6.1	1,620
3.2	26				

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	157	155	56	65	70	55	139	*662	365	790	157	19
2	137	*147	56	50	70	70	186	590	390	674	147	13
3	180	117	117	55	75	75	258	584	420	596	139	8.6
4	*195	139	115	55	85	75	350	648	410	616	147	8.6
5	192	132	105	70	75	80	380	783	488	566	132	7.2
6	177	124	109	85	85	80	380	811	*560	554	155	6.8
7	177	126	107	95	100	75	432	942	629	590	*152	8.1
8	183	132	105	100	100	70	415	1,030	548	530	109	14
9	266	139	107	95	110	70	365	1,140	572	518	99	9.0
10	212	128	109	30	120	70	*476	1,180	642	*464	88	7.2
11	212	132	111	16	130	65	454	1,140	668	426	86	6.1
12	202	139	83	20	130	*60	616	1,110	741	432	81	*5.7
13	155	126	70	55	120	60	804	1,070	755	459	81	5.1
14	189	111	80	65	100	60	1,020	935	811	335	71	5.1
15	202	121	95	65	100	60	1,320	776	714	288	68	4.4
16	202	128	100	55	100	65	1,580	655	584	270	56	4.1
17	202	128	85	50	95	65	*1,560	530	470	254	59	4.1
18	183	119	100	60	90	65	1,600	476	405	250	62	4.1
19	152	111	85	75	85	70	1,500	426	*518	262	79	3.8
20	155	121	*90	80	*85	76	1,550	410	720	262	73	10
21	157	135	90	70	85	74	1,400	426	748	246	77	124
22	155	117	90	70	75	73	900	395	734	234	74	183
23	152	132	50	60	80	73	850	375	769	220	69	132
24	144	124	44	55	80	74	950	*375	727	234	65	*97
25	142	132	50	60	80	79	950	395	674	250	55	90
26	137	121	70	65	70	88	935	320	688	242	43	80
27	139	121	70	60	65	107	920	420	668	216	39	70
28	139	121	55	60	55	152	790	410	700	198	37	100
29	135	115	60	60	-	177	825	410	648	186	26	80
30	139	107	80	65	-----	137	741	375	790	168	22	70
31	155	-----	70	65	-----	128	-----	375	-----	174	22	-----
Total	5,324	3,800	2,614	1,931	2,515	2,528	24,646	20,174	18,556	11,504	2,570	1,180.0
Mean	172	127	84.3	62.3	89.8	81.5	822	651	619	371	82.9	39.3
Ac-ft	10,560	7,540	5,180	3,830	4,990	5,010	48,880	40,010	36,810	22,820	5,100	2,340

Calendar year 1961: Max 1,410 Min 25 Mean 261 Ac-ft 188,800  
 Water year 1961-62: Max 1,600 Min 3.8 Mean 267 Ac-ft 193,100

Peak discharge (base, 1,200 cfs)--Apr. 17 (2300) 2,760 cfs (7.00 ft); May 10 (0400) 1,300 cfs (5.94 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 13 to Mar. 19. No gage-height record Jan. 25 to Feb. 20, Apr. 18-25, Sept. 25-30.

## DOLORES RIVER BASIN

267

9-1755. San Miguel River at Naturita, Colo.

Location.--Lat 38°13'10", long 108°34'00", in SE¼SW¼ sec.19, T.46 N., R.15 W., on left bank 20 ft downstream from bridge on State Highway 97 in Naturita and 1.2 miles downstream from Naturita Creek.

Drainage area.--1,080 sq mi, approximately.

Records available.--October 1917 to September 1929, May 1940 to September 1962. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 5,392.85 ft above mean sea level, datum of 1929. Apr. 26, 1918, to Sept. 2, 1926, chain gage and Sept. 3, 1926, to Sept. 30, 1929, water-stage recorder, at same site at different datums. Oct. 1, 1940, to Dec. 9, 1941, staff gage at same site and datum.

Average discharge.--34 years, 360 cfs (260,600 acre-ft per year).

Extremes.--Maximum discharge during year, 3,180 cfs Apr. 18 (gage height, 6.00 ft); minimum daily, 15 cfs Sept. 12. 1917-29, 1940-62: Maximum discharge, 7,100 cfs Apr. 15, 1942 (gage height, 9.80 ft), from rating curve extended above 3,800 cfs; minimum daily, 5.8 cfs Sept. 25-28, 30, 1956.

Remarks.--Records good except those for period of no gage-height record, which are poor. Natural flow of stream affected by storage reservoirs, diversions for irrigation of about 22,000 acres above station and 4,000 acres below, and return flow from irrigated areas.

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

Oct. 1 to Apr. 30

May 1 to Sept. 30

0.8	15	2.5	330	0.6	9	2.5	345
1.0	31	3.0	530	1.0	45	3.0	535
1.4	81	4.0	1,100	1.5	107	4.0	1,100
1.9	170	5.0	1,950	2.0	205	4.5	1,480

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	208	* 172	114	70	75	60	202	770	406	824	175	33
2	232	166	93	53	77	75	282	* 655	418	698	157	32
3	215	142	104	59	82	99	360	630	454	615	151	27
4	* 208	146	128	59	92	78	471	692	442	630	157	26
5	200	146	116	77	82	82	462	848	* 494	571	143	26
6	188	138	109	90	93	94	440	872	566	558	151	22
7	182	132	107	99	126	96	505	998	635	585	165	24
8	188	140	107	107	125	87	570	1,130	576	540	* 113	26
9	297	150	116	98	150	88	392	1,270	585	* 517	109	30
10	262	140	110	35	422	90	* 570	1,340	635	478	99	24
11	228	144	110	19	350	84	525	1,320	675	442	93	20
12	220	146	90	24	390	74	770	1,250	740	442	88	* 15
13	175	144	75	60	230	* 66	986	1,200	770	478	89	16
14	198	132	85	70	170	81	1,330	1,050	830	369	79	18
15	215	132	99	71	170	68	1,700	866	728	309	75	23
16	215	132	112	59	160	88	1,920	722	605	291	69	25
17	220	140	92	53	130	93	1,790	590	508	270	67	23
18	195	136	110	68	110	90	* 1,900	526	* 430	261	72	25
19	166	123	90	82	110	92	1,790	478	508	270	89	21
20	164	121	* 98	88	* 110	94	1,820	446	722	273	118	32
21	166	138	92	77	99	96	1,550	446	806	264	93	157
22	160	134	96	75	94	94	1,060	426	734	252	89	224
23	162	126	58	68	93	93	1,030	403	764	239	88	173
24	154	134	50	59	90	92	1,100	* 403	740	255	81	125
25	148	142	57	66	98	98	1,120	414	665	276	73	117
26	146	136	75	68	90	119	1,160	360	686	276	61	90
27	144	132	77	63	80	252	1,170	418	660	247	53	86
28	146	132	60	63	67	399	950	458	692	222	48	128
29	146	126	63	63	-	364	980	450	655	207	44	96
30	148	130	86	70	-----	230	902	418	824	181	33	83
31	164	-----	78	70	-----	188	-----	406	-----	193	35	-----
Total	5,860	4,152	2,857	2,083	3,965	3,704	29,807	22,255	18,953	12,033	2,957	1,767
Mean	189	138	92.2	67.2	142	119	994	718	632	388	95.4	58.9
Ac-ft	11,620	8,240	5,670	4,130	7,860	7,350	59,120	44,140	37,590	23,870	5,870	3,500

Calendar year 1961: Max 1,560 Min 28 Mean 286 Ac-ft 207,000  
 Water year 1961-62: Max 1,920 Min 15 Mean 302 Ac-ft 219,000

Peak discharge (base, 1,800 cfs)--Apr. 18 (0100) 3,180 cfs (6.00 ft).

\* Discharge measurement made on this day.

Note.--No gage-height record Dec. 10-14, Feb. 11-20, Sept. 6-8, 10, 11.

## DOLORES RIVER BASIN

9-1770. San Miguel River at Uravan, Colo.

Location.--Lat 38°21'25", long 108°42'40", in SW¼NE¼ sec.2, T.47 N., R.17 W., on right bank 20 ft downstream from bridge on State Highway 141, 300 ft downstream from Tabeguache Creek, and 1½ miles southeast of Uravan.

Drainage area.--1,550 sq mi, approximately.

Records available.--August 1954 to September 1962 (discontinued).

Gage.--Water-stage recorder. Altitude of gage is 5,000 ft (from topographic map). Prior to Sept. 3, 1959, at site 0.5 mile downstream at different datum.

Average discharge.--8 years, 347 cfs (251,200 acre-ft per year).

Extremes.--Maximum discharge during year, 3,260 cfs Apr. 18 (gage height, 7.83 ft); minimum daily, 15 cfs Jan. 12.

1954-62: Maximum discharge, 6,690 cfs Apr. 19, 1958 (gage height, 11.75 ft, site and datum then in use); minimum daily, 14 cfs Sept. 16, 18-20, 1956.

Remarks.--Records good except those for periods of ice effect, which are poor. Natural flow of stream affected by storage reservoirs, diversions for irrigation of about 28,000 acres above station, and return flow from irrigated areas.

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

Oct. 1 to Apr. 7

Apr. 8 to Sept. 30

2.9	13	4.0	125	3.0	40	5.0	520
3.1	25	4.5	280	3.5	85	5.5	810
3.3	40	5.0	500	4.0	161	6.0	1,220
3.7	77	6.0	1,190	4.5	300	7.0	2,200

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	224	192	119	80	82	68	245	920	485	803	203	57
2	231	*186	93	75	87	74	328	*817	480	704	193	55
3	228	162	100	55	90	100	435	796	510	615	181	49
4	*220	142	128	65	100	89	556	873	505	615	193	46
5	214	150	111	65	121	82	568	1,050	*530	590	174	45
6	201	142	102	85	105	98	545	1,100	605	570	161	46
7	195	128	102	100	123	100	586	1,230	662	585	206	50
8	198	135	102	100	220	96	722	1,340	626	560	*130	53
9	639	150	100	102	217	89	530	1,430	620	540	130	57
10	340	145	90	52	256	94	*650	1,500	662	*500	116	54
11	256	145	85	35	486	89	620	1,470	698	460	107	52
12	238	150	80	15	460	75	810	1,380	768	460	106	*50
13	201	145	75	46	530	*62	1,060	1,340	768	485	106	48
14	201	132	85	90	296	85	1,410	1,150	817	408	101	47
15	231	130	100	96	204	68	1,790	936	761	332	95	49
16	231	130	110	96	204	86	2,180	789	638	308	91	51
17	234	145	120	80	189	90	2,050	668	570	293	86	48
18	220	138	110	82	145	96	*2,200	595	490	286	95	49
19	189	123	120	107	125	93	2,100	550	530	293	104	46
20	168	119	*110	130	*128	98	2,150	510	698	296	137	49
21	180	135	100	115	119	98	1,900	515	810	290	130	253
22	171	138	95	89	104	98	1,350	500	722	272	122	304
23	174	123	100	81	100	94	1,290	470	761	262	118	235
24	162	138	70	74	98	94	1,360	*460	734	276	107	176
25	156	142	65	69	104	94	1,430	460	674	296	102	159
26	153	142	75	76	99	117	1,430	430	686	312	90	134
27	153	130	85	77	85	201	1,500	470	668	272	76	132
28	153	130	80	69	72	440	1,190	540	680	250	74	244
29	156	123	75	70	-	500	1,180	535	656	232	71	172
30	156	125	75	73	-----	308	1,100	495	810	216	60	132
31	171	-----	80	77	-----	238	-----	475	-----	219	57	-----
Total	6,644	4,215	2,942	2,426	4,949	4,014	35,265	25,794	19,624	12,600	3,722	2,942
Mean	214	140	94.9	78.3	177	129	1,176	832	654	406	120	98.1
Ac-ft	13,180	8,360	5,840	4,810	9,820	7,960	69,950	51,160	38,920	24,990	7,380	5,840

Calendar year 1961: Max 1,510 Min 30 Mean 307 Ac-ft 222,300  
 Water year 1961-62: Max 2,200 Min 15 Mean 343 Ac-ft 248,200

Peak discharge (base, 2,000 cfs)--Apr. 18 (0300) 3,260 cfs (7.83 ft)

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 9 to Jan. 8, Jan. 11, 12.

9-1775. Taylor Creek near Gateway, Colo.

Location.--Lat 38°31', long 109°07', in sec.24, T.26 S., R.25 E., in Utah, on left bank at downstream side of bridge, a quarter of a mile downstream from South Taylor Creek and 12 miles southwest of Gateway.

Drainage area.--12 sq mi, approximately.

Records available.--October 1944 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 8,120 ft (by barometer). Prior to Aug. 31, 1949, at site 770 ft downstream at datum 6.00 ft lower.

Average discharge.--18 years, 3.54 cfs (2,560 acre-ft per year), unadjusted.

Extremes.--Maximum discharge during year, 218 cfs Apr. 15 (gage height, 4.25 ft); minimum daily, 0.1 cfs July 28, 29.

1944-62: Maximum discharge, 555 cfs Apr. 18, 1948, from rating curve extended above 220 cfs; maximum gage height, 5.72 ft Aug. 6, 1945, site and datum then in use; no flow at times June to August 1946, Sept. 29, 1949.

Remarks.--Records good except those for periods of ice effect, which are poor. Diversions by Hubbard ditch (see table below) above station to John Brown Creek basin began in spring of 1956.

Monthly diversion, in acre-feet, water year October 1961 to September 1962

Month	Diversion	Month	Diversion
October.....	4.0	April.....	219
November.....	1.6	May.....	576
December.....	0	June.....	236
		July.....	53
Calendar year 1961.....	623	August.....	0
		September.....	0
January.....	0		
February.....	0	Water year 1961-62.....	1,090
March.....	0		

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

Oct. 1 to May 7

May 8 to Sept. 30

2.1	0.1	2.4	3.2	2.9	24	3.5	98	1.9	0.10	2.4	5.2
2.2	.6	2.5	5.5	3.2	57	4.0	172	2.0	.70	2.6	10
2.3	1.7	2.7	12					2.2	2.5		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.2	* 1.3	0.8	b 0.6	0.5	b 0.4	b 3.2	1.4	2.9	3.1	0.2	0.3
2	.2	1.0	.8	b .6	.6	b .5	b 4.0	1.4	3.0	2.0	.2	.3
3	.2	.9	b .8	b .6	.6	b .8	b 5.0	1.4	3.1	1.5	.2	.3
4	* .2	.7	b .8	b .6	.6	b 1.0	6.7	1.6	3.2	1.2	.3	.3
5	.2	.6	b .6	b .6	b .6	b 1.2	8.8	1.8	3.3	1.1	.2	* .2
6	.2	.5	b .6	b .6	b .6	1.2	17	2.0	3.5	1.2	.2	.2
7	.2	.6	b .6	b .7	.6	1.2	20	1.6	3.3	1.0	.2	.3
8	2.1	.6	b .6	.8	.7	1.3	29	1.0	3.2	.8	.2	.2
9	7.9	.9	b .6	b .6	.7	1.2	33	9.2	4.0	.6	.2	.2
10	2.0	1.2	b .5	b .4	b .8	b 1.0	37	9.0	4.0	.5	.2	.2
11	1.6	1.2	b .4	b .2	b 1.0	.9	43	7.4	3.6	.4	.2	.2
12	1.0	1.2	b .3	b .2	b 1.2	b .8	66	7.0	3.7	.4	.2	.2
13	.8	.9	b .4	b .3	b 2.4	b .6	92	6.3	3.8	.3	.2	.2
14	.8	.6	b .4	b .2	b 3.6	b .4	118	5.2	3.8	.3	.2	.2
15	1.0	.7	.5	b .2	b 3.0	b .5	134	4.9	4.9	.2	.2	.2
16	1.0	.9	.6	b .2	2.6	b .6	* 121	4.6	3.3	.2	.2	.2
17	.8	b .8	b .6	.3	b 2.4	.7	118	4.3	3.0	.2	.4	.2
18	.7	b .6	b .6	.3	b 2.2	.8	108	4.3	2.3	* .2	.5	.2
19	.7	b .6	b .6	.3	b 2.4	1.0	102	3.7	2.0	.2	.3	.2
20	.6	.7	.6	.4	b 2.4	.9	83	3.5	1.9	.2	.3	.3
21	.6	.7	b .6	b .4	b 2.2	.9	38	3.5	1.8	.2	.4	.5
22	.5	b .6	b .6	b .3	b 2.0	.9	31	3.2	2.0	.2	.4	.2
23	.4	b .6	b .5	b .3	1.7	b .8	36	3.1	1.9	.2	.3	.2
24	.4	.7	b .5	b .3	1.5	b 1.0	37	* 3.0	1.8	.3	.3	.2
25	.4	.6	b .6	b .3	1.5	1.0	35	2.9	1.6	.3	.3	.3
26	.4	.6	b .6	b .3	b 1.2	1.5	43	3.0	* 1.6	.2	.3	.3
27	.4	b .6	b .7	.4	b 1.0	2.3	28	3.3	1.5	.2	.3	.4
28	.6	b .8	b .8	.4	b .6	2.8	28	3.6	1.5	.1	.3	.5
29	.6	b .8	b .8	.4	-	b 2.8	28	3.5	1.7	.1	.3	.3
30	.7	.8	b .8	.4	-----	b 2.6	18	3.3	3.1	.2	.3	.2
31	1.0	-----	b .7	.4	-----	b 2.6	-----	3.2	-----	.2	.3	-----
Total	28.4	23.3	18.9	12.6	41.2	36.2	1,470.7	227.0	84.3	17.8	8.3	7.7
Mean	0.92	0.78	0.61	0.41	1.47	1.17	49.0	7.32	2.81	0.57	0.27	0.26
Ac-ft	56	46	37	25	82	72	2,920	450	167	35	16	15

Calendar year 1961: Max 47 Min 0.1 Mean 1.57 Ac-ft 1,140  
 Water year 1961-62: Max 134 Min 0.1 Mean 5.41 Ac-ft 3,920

Peak discharge (base, 40 cfs).--Apr. 15 (1500) 218 cfs (4.25 ft).

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.



GREEN RIVER BASIN

9-2360. Yampa River near Toponas, Colo.

Location.--Lat 40°03', long 107°04', in NW¼ sec.20, T.1 N., R.86 W., on left bank at Stillwater campground, three-quarters of a mile downstream from Mandall Creek, three-quarters of a mile upstream from Dome Creek, and 14 miles west of Toponas.

Drainage area.--23 sq mi, approximately.

Records available.--October 1952 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 9,710 ft (from river-profile map).

Average discharge.--10 years, 40.9 cfs (29,610 acre-ft per year).

Extremes.--Maximum discharge during year, 224 cfs July 2, (gage height, 4.89 ft); minimum daily, 11 cfs Jan. 10.  
1952-62: Maximum discharge, 436 cfs July 2, 1957 (gage height, 6.39 ft); minimum not determined.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor. Flow regulated by Stillwater Reservoir (capacity, 6,200 acre-ft). No diversion above station.

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	25	22	20	17	15	13	14	28	70	212	75	34
2	24	21	19	16	16	13	14	28	104	223	*70	33
3	25	21	18	16	16	13	14	31	116	208	73	33
4	25	22	18	16	17	14	14	34	122	177	73	34
5	25	20	17	17	16	13	14	41	* 122	156	70	34
6	25	19	18	17	16	14	14	46	126	149	67	35
7	25	18	18	17	17	15	14	50	125	141	64	38
8	25	19	18	16	18	15	13	55	118	132	63	38
9	27	*19	17	13	19	14	14	60	116	* 128	62	37
10	*26	19	16	11	20	14	14	70	125	122	62	39
11	25	20	16	13	20	13	14	75	136	114	59	47
12	25	19	16	14	20	12	14	80	149	113	57	47
13	25	19	16	15	19	12	14	90	160	112	56	53
14	25	18	17	16	17	12	15	80	163	111	48	53
15	25	19	18	16	18	12	17	70	163	107	48	57
16	26	19	18	16	18	13	18	60	159	106	45	55
17	26	19	18	15	17	14	18	*55	155	104	44	52
18	26	19	18	15	17	14	19	50	152	101	43	53
19	26	18	17	16	16	14	21	53	156	101	45	66
20	25	18	18	17	16	14	24	62	165	116	43	74
21	25	19	18	16	16	14	23	64	* 174	114	42	82
22	25	18	17	15	16	* 14	22	58	183	125	42	80
23	23	19	17	14	15	14	25	54	193	122	40	77
24	29	19	18	14	15	14	30	59	196	112	39	75
25	21	19	18	15	15	14	36	63	193	111	39	72
26	21	19	17	15	14	14	35	63	179	109	38	62
27	22	19	16	15	13	14	29	66	160	106	*37	64
28	22	19	17	15	12	14	30	61	155	104	36	57
29	22	18	18	15	-	14	31	59	156	100	34	55
30	22	19	18	15	-----	14	30	56	183	87	34	46
31	22	-----	18	15	-----	14	-----	58	-----	78	34	-----
Total	760	576	543	473	464	422	604	1,779	4,474	3,901	1,582	1,582
Mean	24.5	19.2	17.5	15.3	16.6	13.6	20.1	57.4	149	126	51.0	52.7
Ac-ft	1,510	1,140	1,080	938	920	837	1,200	3,530	8,870	7,740	3,140	3,140

Calendar year 1961: Max 124 Min 11 Mean 31.9 Ac-ft 23,090  
Water year 1961-62: Max 223 Min 11 Mean 47.0 Ac-ft 34,040

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 5 to Dec. 10, Apr. 8. No gage-height record Dec. 11 to Mar. 22 (stage-discharge relation affected by ice most of period), May 6-17.

## GREEN RIVER BASIN

271

9-2375. Yampa River near Oak Creek, Colo.

Location--Lat 40°17', long 106°50', in SE¼ sec.29, T.4 N., R.84 W., on left bank just upstream from Upper Yampa damsite, 1 mile upstream from Morrison Creek, and 6½ miles east of town of Oak Creek.

Drainage area--227 sq mi.

Records available--September 1939 to September 1944, October 1956 to September 1962. Monthly discharge only for some periods, published in WSP 1313.

Gage--Water-stage recorder. Altitude of gage is 7,100 ft (from river-profile map). Prior to Nov. 16, 1939, staff gage at same site and datum.

Average discharge--11 years, 85.9 cfs (62,190 acre-ft per year).

Extremes--Maximum discharge during year, 1,400 cfs Apr. 16 (gage height, 7.56 ft), from rating curve extended above 540 cfs; minimum daily, 30 cfs Sept. 5.  
1939-44, 1956-62: Maximum discharge, that of Apr. 16, 1962; minimum daily, 10 cfs Sept. 12, 1940.

Remarks--Records good except those for period of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 12,000 acres above station. Natural flow of stream affected by 2 diversions for irrigation to Egeria Creek in Colorado River basin and by storage in Stillwater Reservoir (capacity, 6,200 acre-ft).

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Apr. 5-30)

2.9	28	4.5	300
3.0	33	6.0	755
3.2	52	7.0	1,140
3.5	97		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	146	80	50	50	44	36	100	365	162	242	101	35
2	130	70	50	46	42	38	120	348	158	263	*94	31
3	118	65	48	46	42	40	150	322	160	234	90	32
4	110	65	48	48	42	40	*160	332	174	206	118	31
5	108	60	46	50	42	*42	162	375	*164	176	106	30
6	105	50	50	55	42	44	166	442	182	154	94	34
7	103	50	50	55	42	44	176	475	204	140	90	33
8	106	55	48	50	44	44	150	493	190	116	94	32
9	116	*60	46	40	46	44	138	511	172	118	108	32
10	*130	60	46	32	48	44	168	511	154	*112	112	40
11	120	55	44	34	50	44	236	508	166	95	103	40
12	110	50	44	38	50	42	278	544	166	94	99	43
13	110	48	44	42	48	40	412	571	186	106	101	40
14	110	46	44	44	44	38	598	398	200	97	94	38
15	120	48	50	44	42	38	872	300	192	92	88	40
16	130	50	60	*42	44	42	1,020	*250	190	87	83	39
17	130	50	60	38	44	44	797	232	192	80	77	37
18	130	48	60	38	44	48	808	234	186	72	80	34
19	120	44	*55	42	42	50	797	200	152	72	94	32
20	110	48	55	46	40	50	853	200	142	80	92	32
21	100	50	60	42	40	50	766	198	*162	83	78	39
22	95	50	50	38	40	50	535	190	164	83	78	44
23	90	55	50	38	42	50	490	176	172	88	78	44
24	80	55	50	38	42	50	514	152	172	105	80	43
25	75	55	55	40	42	50	544	138	176	92	76	44
26	70	55	50	42	40	55	590	128	164	103	72	43
27	75	50	42	42	38	60	532	138	152	120	70	46
28	75	50	48	42	36	70	*463	148	158	108	*58	49
29	75	50	55	42	42	90	553	176	164	105	52	55
30	75	50	55	42	-----	110	445	162	278	106	44	64
31	80	-----	55	44	-----	110	-----	148	-----	105	37	-----
Total	3,252	1,622	1,568	1,330	1,202	1,597	13,593	9,365	5,254	3,734	2,641	1,176
Mean	105	54.1	50.6	42.9	42.9	51.5	453	302	175	120	85.2	39.2
Ac-ft	6,450	3,220	3,110	2,640	2,380	3,170	26,960	18,580	10,420	7,410	5,240	2,330

Calendar year 1961: Max 240 Min 24 Mean 64.9 Ac-ft 46,990  
Water year 1961-62: Max 1,020 Min 30 Mean 127 Ac-ft 91,910

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 10 to Nov. 9, Dec. 28 to Jan. 5, Jan. 29 to Mar. 5. Stage-discharge relation affected by ice Nov. 10 to Apr. 4.

## GREEN RIVER BASIN

9-2395. Yampa River at Steamboat Springs, Colo.

Location.--Lat 40°29', long 106°50', in sec.17, T.6 N., R.84 W., on right bank 30 ft downstream from First Street Bridge in Steamboat Springs and a quarter of a mile upstream from Soda Creek.

Drainage area.--604 sq mi.

Records available.--May 1904 to October 1906, October 1909 to September 1962. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 6,695.47 ft above mean sea level, datum of 1929. Prior to May 8, 1905, staff gage at bridge a quarter of a mile upstream at datum 4.16 ft higher. May 8, 1905, to Oct. 31, 1906, chain gage on bridge 30 ft upstream at datum 0.44 ft higher. Mar. 8, 1910, to Sept. 11, 1934, water-stage recorder at present site at datum 0.44 ft higher.

Average discharge.--55 years, 473 cfs (342,400 acre-ft per year).

Extremes.--Maximum discharge during year, 4,300 cfs May 13 (gage height, 5.79 ft); minimum daily, 51 cfs Sept. 20.

1904-6, 1909-62: Maximum discharge, 6,820 cfs June 14, 1921 (gage height, 7.08 ft, present datum), from rating curve extended above 4,800 cfs; minimum daily, 4 cfs Sept. 8, 1934, Sept. 10-13, 1944.

Remarks.--Records good except those for periods of ice effect, which are poor. Natural flow of stream affected by 2 diversions for irrigation to Egeria Creek in Colorado River basin, 1 diversion for irrigation from Trout Creek drainage to Oak Creek drainage, irrigation of about 19,700 acres above station, and storage in Stillwater Reservoir (capacity, 6,200 acre-ft).

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

0.7	42	3.0	1,030
.9	63	4.0	1,910
1.2	113	5.0	3,040
1.5	195	6.0	4,500
2.0	400		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	465	285	165	120	130	100	293	1,750	1,860	1,410	* 206	64
2	390	258	162	110	130	110	318	1,610	2,090	1,210	180	63
3	350	195	162	120	140	120	395	1,560	2,310	1,130	165	58
4	350	237	141	130	150	120	495	1,710	2,420	1,010	195	58
5	365	183	130	140	130	* 130	* 490	1,980	2,530	873	183	55
6	385	180	150	150	140	120	524	2,270	2,390	754	159	52
7	425	209	150	150	130	120	560	2,550	* 2,250	716	147	55
8	470	* 223	140	130	130	130	518	2,830	1,920	644	141	55
9	465	230	130	100	130	120	500	3,120	1,950	602	147	52
10	* 455	234	120	60	130	110	536	3,390	2,220	* 518	159	58
11	395	226	120	80	140	110	704	3,540	2,300	460	153	63
12	385	209	120	130	* 140	110	845	3,940	2,410	430	141	64
13	365	174	120	160	190	100	1,120	4,160	2,600	480	144	63
14	375	159	130	160	250	90	1,500	3,380	2,670	415	128	61
15	395	174	140	140	200	100	1,970	2,620	2,470	365	124	60
16	415	180	160	160	150	110	2,560	2,280	2,080	318	113	59
17	410	177	150	* 140	130	128	2,490	2,110	1,700	293	105	56
18	410	174	150	160	120	135	2,670	* 1,860	1,630	262	107	54
19	370	144	* 140	170	120	141	2,980	1,690	* 1,820	262	124	* 52
20	350	159	150	160	130	135	3,300	1,880	2,010	244	147	51
21	328	174	150	140	130	141	3,270	1,930	2,050	230	128	55
22	323	162	110	120	120	133	2,640	1,720	2,040	220	120	78
23	281	177	110	110	110	138	2,290	1,630	1,920	209	120	78
24	281	174	140	120	120	135	2,420	1,580	1,780	230	122	72
25	258	180	160	130	120	138	2,620	1,580	1,770	209	115	70
26	251	177	130	140	120	147	2,710	1,650	1,660	209	111	71
27	281	168	110	140	100	174	2,530	1,790	1,570	244	105	72
28	285	168	120	130	80	223	* 2,290	1,620	1,460	223	* 95	81
29	251	165	140	130	-	262	2,560	1,580	1,380	195	84	90
30	265	168	150	130	-----	297	2,140	1,540	1,590	189	76	109
31	281	-----	150	130	-----	301	-----	1,570	-----	192	72	-----
Total	11,075	5,723	4,300	4,090	3,810	4,428	50,238	68,420	60,850	14,746	4,116	1,929
Mean	357	191	139	132	136	143	1,675	2,207	2,028	476	133	64.3
Ac-ft	21,970	11,350	8,530	8,110	7,560	8,780	99,650	135,700	120,700	29,250	8,160	3,830

Calendar year 1961: Max 2,400 Min 63 Mean 347 Ac-ft 250,900  
 Water year 1961-62: Max 4,160 Min 51 Mean 640 Ac-ft 463,600

Peak discharge (base, 3,000 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-20	2330	5.50	3,820	6-13	2250	4.92	3,030
5-13	0130	5.79	4,300				

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 5 to Mar. 16 (no gage-height record Dec. 14-16, Jan. 10, 11).

## GREEN RIVER BASIN

273

9-2410. Elk River at Clark, Colo.

Location.--Lat 40°43'00", long 106°54'50", in sec.28, T.9 N., R.85 W., on left bank 30 ft downstream from bridge on State Highway 129 in Clark and 1 mile upstream from Cottonwood Gulch.

Drainage area.--206 sq mi.

Records available.--May 1910 to September 1922 (published as "near Clark"), April 1930 to September 1962. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 7,267.75 ft above mean sea level (State Highway Department bench mark). May 1910 to September 1922, chain gage at site 30 ft upstream at datum 0.15 ft lower. Apr. 23, 1930, to Sept. 27, 1934, water-stage recorder at present site at datum 0.15 ft lower.

Average discharge.--44 years, 344 cfs (249,000 acre-ft per year).

Extremes.--Maximum discharge during year, 2,880 cfs May 11 (gage height, 4.83 ft); minimum daily, 35 cfs Jan. 10.

1910-22, 1930-62: Maximum daily discharge, 4,470 cfs June 6, 9, 1912; minimum daily determined, 23 cfs Dec. 25, 1952, but a lesser discharge may have occurred during periods of no gage-height record prior to 1939.

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 230 acres above and about 460 acres below station.

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

0.7	32	1.5	168	3.0	930
.9	53	2.0	340	4.0	1,900
1.2	100	2.5	590	4.9	2,950

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	253	179	112	70	70	45	65	794	1,030	1,420	*196	79
2	220	160	112	65	70	50	68	829	1,130	1,320	188	72
3	223	118	104	65	70	50	76	1,020	1,250	1,230	182	69
4	233	152	100	70	70	50	79	1,320	1,310	1,130	179	66
5	243	116	90	80	75	45	*89	1,560	1,240	1,040	174	62
6	253	124	100	85	75	*40	86	1,760	1,240	970	160	61
7	268	138	100	85	75	45	93	2,030	*1,220	900	155	61
8	268	*133	95	75	80	50	86	2,180	1,030	850	150	61
9	268	142	90	50	85	55	89	2,330	978	790	150	60
10	*258	138	80	35	90	60	93	2,360	1,160	*740	150	60
11	250	138	80	50	100	60	95	2,460	1,330	686	142	56
12	253	131	80	60	90	55	102	2,580	1,380	656	135	53
13	240	118	85	70	*80	50	124	2,300	1,590	620	131	49
14	243	102	90	80	70	50	168	1,820	1,670	575	124	51
15	240	138	90	80	70	50	243	1,490	1,680	495	122	51
16	236	133	90	70	75	55	360	1,340	1,480	450	116	49
17	236	124	90	*65	75	60	505	*1,370	1,170	425	116	48
18	233	118	90	70	70	65	704	1,160	1,010	410	118	47
19	217	106	90	75	70	70	978	1,060	*1,170	415	120	45
20	211	110	95	80	75	70	1,340	1,170	1,460	370	116	45
21	202	135	90	80	70	70	1,630	1,200	1,600	340	108	49
22	196	130	85	70	70	65	1,560	1,120	1,660	320	108	69
23	174	120	90	65	70	60	1,610	1,050	1,630	296	116	54
24	179	120	95	65	65	60	1,740	1,030	1,560	288	120	49
25	160	131	100	70	70	60	1,860	1,070	1,530	272	102	47
26	165	127	90	70	55	70	1,640	1,090	1,540	276	95	45
27	182	118	80	70	45	70	1,500	1,170	1,560	272	91	45
28	185	116	85	70	40	65	*1,580	1,060	1,530	246	*89	49
29	142	110	90	70	-	60	1,330	1,060	1,490	226	86	76
30	171	110	90	70	-----	65	930	922	1,640	214	84	84
31	176	-----	80	70	-----	68	-----	946	-----	202	87	-----
Total	6,778	3,835	2,838	2,150	2,020	1,788	20,823	44,651	41,268	18,444	4,010	1,712
Mean	219	128	91.5	69.4	72.1	57.7	694	1,440	1,376	595	129	57.1
Ac-ft	13,440	7,610	5,630	4,260	4,010	3,550	41,300	88,560	81,850	36,580	7,950	3,400

Calendar year 1961: Max 1,470 Min 28 Mean 236 Ac-ft 170,900  
 Water year 1961-62: Max 2,580 Min 35 Mean 412 Ac-ft 298,100

Peak discharge (base, 1,900 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-24	2000	4.19	2,060	6-14	2100	4.02	1,940
5-11	2000	4.83	2,880				

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 22-24, 29, 30, Dec. 4 to Mar. 30. No gage-height record Dec. 12 to Feb. 13, Mar. 1-6, July 7-10.



## GREEN RIVER BASIN

9-2441. Fish Creek near Milner, Colo.

Location.--Lat 40°20'10", long 107°08'20", in NW¼ sec.11, T.4 N., R.87 W., on left bank 200 ft downstream from highway bridge, a quarter of a mile upstream from Coyote Creek, and 12 miles southwest of Milner.

Drainage area.--34.5 sq mi.

Records available.--October 1955 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 6,930 ft (from topographic map). Prior to Apr. 8, 1958, at site 200 ft upstream at different datum. Apr. 8 to Aug. 14, 1958, at site 200 ft upstream at datum 3.14 ft higher.

Average discharge.--7 years, 14.3 cfs (10,350 acre-ft per year).

Extremes.--Maximum discharge during year, 234 cfs May 12 (gage height, 5.76 ft); minimum daily, 1.0 cfs Aug. 15.  
1955-62: Maximum discharge, 255 cfs Mar. 27, 1960, from rating curve extended above 110 cfs; maximum gage height, 5.76 ft May 12, 1962; minimum daily discharge, 0.7 cfs Sept. 9, 1959, Aug. 21, 22, 28, 1960.

Remarks.--Records poor. Diversions above station for irrigation.

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9.5	9.5	8	7	7	4.2	13	95	32	6.5	2.2	2.8
2	9	8.5	8	6.5	7	4.6	15	87	31	5.5	2.0	2.5
3	9	8	8	6.5	7.5	5.0	16	* 92	33	4.9	2.0	2.5
4	10	7.5	7.5	6.5	8	5.0	18	106	30	4.3	1.9	2.2
5	10	6.5	7.5	7	7.5	5.0	* 20	125	26	3.5	1.7	2.5
6	11	7	7.5	7.5	7.5	* 5.0	24	136	24	3.5	1.6	2.4
7	12	7.5	7	7.5	7.5	5.5	26	156	27	3.7	1.6	1.6
8	12	* 8	7.5	6.5	8	5.5	25	166	* 24	3.2	1.6	1.6
9	* 16	8.5	7.5	5.5	9	5.5	26	162	19	2.7	1.6	1.6
10	16	9	7	5	10	5.5	32	165	18	2.5	1.4	1.6
11	12	9	6.5	5.5	12	5.5	38	158	16	2.4	1.2	1.6
12	12	8.5	6	6	14	5.0	47	159	16	* 2.9	1.2	1.6
13	12	8	7	6.5	* 13	4.5	59	142	15	3.2	1.2	1.7
14	14	8	7.5	7	12	4.6	78	106	12	3.4	1.1	1.8
15	14	8.5	8	7	11	5.0	117	82	12	3.5	1.0	2.1
16	14	9	8.5	7	9	5.5	145	72	13	3.5	1.4	2.4
17	14	9	9	* 6.5	7.5	6.0	159	66	12	3.7	1.4	2.2
18	13	9	9	6.5	6.5	6.5	156	* 61	* 10	3.7	1.6	1.9
19	12	9	* 9	7	5.5	7	156	57	9.2	4.3	2.1	1.8
20	11	9	9	7	6	7	* 136	59	10	3.7	3.2	2.0
21	10	8.5	8.5	6.5	6	7.5	127	54	10	3.5	3.1	2.1
22	10	8	7.5	6	6	7.5	110	50	9.6	3.5	3.2	2.1
23	10	8	7	5.5	6	7.5	115	47	10	3.9	2.9	1.8
24	11	8	7.5	6	6	7.5	122	45	9.2	5.1	2.9	1.7
25	11	8.5	8.5	6.5	6	7.5	136	42	7.2	4.7	2.7	1.6
26	11	9	7	7	6	8.5	141	35	6.2	4.1	2.9	1.6
27	11	9	6.5	7	5.5	10	150	35	5.1	4.5	2.9	2.7
28	11	8.5	6.5	7	4	12	138	34	5.1	3.7	2.9	3.1
29	10	8	7.5	7.5	-	12	150	40	4.9	3.9	2.4	3.4
30	10	8	8	7.5	-----	11	113	34	7.8	* 3.7	* 2.4	3.5
31	10	-----	8	7	-----	12	-----	32	-----	2.5	2.7	-----
Total	357.5	250.5	237.5	205.0	221.0	210.4	2,608	2,700	464.3	117.7	64.0	64.0
Mean	11.5	8.35	7.66	6.61	7.89	6.79	86.9	87.1	15.5	3.80	2.06	2.13
Ac-ft	709	497	471	407	438	417	5,170	5,360	921	233	127	127

Calendar year 1961: Max 65 Min 1.0 Mean 9.28 Ac-ft 6,720

Water year 1961-62: Max 166 Min 1.0 Mean 20.5 Ac-ft 14,880

Peak discharge (base, 180 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-15	1830	5.58	199	5-12	2230	5.76	234
4-27	0330	5.53	202				

\* Discharge measurement made on this day.

Note.--Stage-discharge relation indefinite Oct. 1-8, Oct. 11 to Nov. 2. Stage-discharge relation affected by ice Nov. 3-6, Nov. 9 to Dec. 3, Dec. 19 to Jan. 20, Feb. 14-16, Mar. 7-14, Apr. 8. No gage-height record Nov. 7, 8, Dec. 4-18, Jan. 21 to Feb. 13, Feb. 17 to Mar. 6, Mar. 15 to Apr. 5 (stage-discharge relation affected by ice during most of periods).

9-2443, Grassy Creek near Mount Harris, Colo.

Location.--Lat 40°26'45", long 107°08'38", in SE¼ sec.28, T.6 N., R.87 W., on right bank 60 ft downstream from bridge, 150 ft downstream from small tributary, 2½ miles south of Mount Harris, and 3 miles upstream from mouth.

Drainage area.--25.8 sq mi.

Records available.--October 1958 to September 1962.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 6,580 ft (from topographic map).

Extremes.--Maximum discharge during year, 180 cfs Apr. 13 (gage height, 4.40 ft); no flow for many days.  
1958-62: Maximum discharge, 235 cfs Apr. 6, 1960 (gage height, 5.05 ft); no flow for many days each year.

Remarks.--Records fair except those for period of no gage-height record, which are poor. No diversion above station.

Rating table, except period of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Apr. 14-20)

0.7	0	1.4	5.0
.8	.03	1.6	9.0
.9	.2	1.8	14
1.0	.7	2.0	19
1.1	1.2	2.5	41
1.2	2.0	3.0	70
1.3	3.4	4.0	144

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.2				0	0.1	5	15	1.3	0.9		0
2	.2				0	.2	10	12	1.2	.9		0
3	.1				0	.3	30	* 9.8	1.1	.6		0
4	0				0	.3	48	9.0	1.0	.4		0
5	0				0	.3	*49	8.6	1.0	.4		0
6	0				.1	*.3	48	7.6	*1.1	.4		0
7	0				.2	.3	43	7.0	1.1	.2		0
8	0	(*)			.2	.3	36	6.2	1.0	.3		0
9	* 0				.2	.3	33	5.4	.8	.2		0
10	0				.2	.4	55	4.8	.8	.1		0
11	0				.3	.5	57	4.2	.8	.1		0
12	0				*.3	.5	68	3.9	.7	* 0		0
13	0				.3	.3	83	3.4	.6	0		0
14	0				.3	.2	76	3.3	.5	.1		0
15	0				.2	.2	81	3.1	.4	.1		0
16	0				.2	.3	61	3.0	.5	0		0
17	0			(*)	.2	.5	47	3.1	.6	0		0
18	0				.3	.7	37	*3.7	*.6	0		0
19	0				.3	.9	30	2.7	.4	0		0
20	0				.3	1.0	*25	2.3	.5	0		0
21	0				.3	1.0	21	1.9	.5	0		0
22	0				.3	1.0	18	2.7	.6	0		0
23	0				.2	1.2	16	2.7	.8	0		0
24	0				.2	1.4	14	1.9	1.0	0		0
25	0				.2	1.4	13	1.7	.6	0		0
26	0				.2	1.6	15	1.7	.6	0		0
27	0				.1	1.8	15	1.8	.4	0		0
28	0				.1	2.0	12	2.0	.4	0		0
29	0				-	2.2	21	2.3	.6	0		.1
30	0				-----	2.4	21	1.9	1.0	* 0	(*)	.1
31	0	-----			-----	3.0	-----	1.5	-----	0		-----
Total	0.5	0	0	0	5.2	26.9	1,088	140.2	22.5	4.7	0	0.2
Mean	0.02	0	0	0	0.19	0.87	36.3	4.52	0.75	0.15	0	0.007
Ac-ft	1.0	0	0	0	10	53	2,160	278	45	9.3	0	0.4

Calendar year 1961: Max 12 Min 0 Mean 0.39 Ac-ft 285  
Water year 1961-62: Max 83 Min 0 Mean 3.53 Ac-ft 2,560

Peak discharge (base, 8.0 cfs).--Apr. 13 (1700) 180 cfs (4.40 ft); Apr. 30 (2000) 28 cfs (2.25 ft).

\* Discharge measurement or observation of no flow made on this day.

Note.--No gage-height record Nov. 8 to Apr. 4 (stage-discharge relation affected by ice most of period).

## GREEN RIVER BASIN

9-2445, Elkhead Creek near Clark, Colo.

Location.--Lat 40°44'00", long 107°10'20", in SE¼ sec.17, T.9 N., R.87 W., on left bank 0.5 mile downstream from South Fork, 13 miles west of Clark, and 17 miles north of Hayden.

Drainage area.--45.4 sq mi.

Records available.--October 1942 to March 1943 (monthly discharge only, published in WSP 1313), July 1943 to September 1944, October 1958 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 7,800 ft (from topographic map). Prior to October 1958, water-stage recorder at site 40 ft downstream at different datum.

Average discharge.--5 years (1943-44, 1958-62), 30.9 cfs (22,370 acre-ft per year).

Extremes.--Maximum discharge during year, 795 cfs May 6 (gage height, 5.78 ft), from rating curve extended above 140 cfs; minimum daily, 1.4 cfs Aug. 29, 30, Sept. 3-6.  
1942-44, 1958-62: Maximum discharge, that of May 6, 1962; minimum daily, 0.3 cfs Aug. 23, 28, 29, 1961.

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

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

Oct. 1 to Apr. 29

Apr. 30 to Sept. 30

1.8	4.0	1.5	0.8	2.6	90
1.9	8.0	1.6	2.2	3.0	122
2.0	14	1.7	4.2	3.5	240
		1.8	8.5	4.0	350
		2.0	21	5.0	600
		2.2	38		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9.2	9.8					1.0	146	108	26	3.6	1.6
2	7.2	9.8					1.0	180	108	22	3.4	1.5
3	6.4	7					1.1	280	104	20	3.0	1.4
4	6.8	9					1.2	420	101	18	3.2	1.4
5	6.4	8					1.3	470	100	16	2.8	1.4
6	6.4	7.5					1.4	518	95	15	2.4	1.4
7	6.8	7					1.5	508	* 103	15	2.2	1.6
8	6.4	7					1.8	508	87	13	2.2	1.6
9	7.2	8					1.7	460	78	12	2.4	1.6
10	9.2	8.5					1.9	420	75	11	2.4	1.8
11	9.8	8					2.2	380	72	10	2.1	1.8
12	10	7.5					2.8	350	69	* 10	1.9	1.6
13	9.8	6.5					4.6	300	67	11	1.9	1.6
14	8.0	5.5					7.0	230	64	11	1.8	1.9
15	7.6	5.5					11.0	200	59	9.6	1.8	1.9
16	* 7.2	5.2	5	4	5		1.60	190	55	8.5	1.6	1.9
17	6.8	5.2					2.40	190	55	8.5	1.8	1.9
18	6.8	5.0					3.00	170	50	7.6	1.9	1.8
19	6.0	5.0					3.30	150	* 4.6	7.2	2.6	1.9
20	6.0	5.2				(*)	3.70	150	4.1	5.9	2.6	2.1
21	5.6	5.0					3.70	150	3.9	5.5	1.9	2.6
22	6.0	4.6					3.50	140	3.6	5.1	1.9	3.6
23	5.6	4.6					3.80	140	3.4	4.6	2.6	2.8
24	5.6	4.8					4.00	130	3.2	4.6	2.8	2.6
25	5.0	5.2					3.50	120	2.9	4.6	2.1	2.6
26	5.2	6.0					3.10	120	2.7	4.6	1.9	2.6
27	8.0	6.4					3.30	130	2.5	4.6	1.6	3.0
28	9.2	6.0					2.90	130	2.3	4.2	1.5	3.8
29	6.8	5.6					2.00	120	2.3	4.6	* 1.4	5.9
30	6.8	5.2					1.60	110	3.3	4.0	1.4	4.6
31	8.6	-----					-----	108	-----	* 3.8	1.5	-----
Total	222.4	193.6	155	124	140	265	4,955	7,618	1,838	307.5	68.2	67.8
Mean	7.17	6.45	5	4	5	8.5	165	246	61.3	9.92	2.20	2.26
Ac-ft	441	384	307	246	278	526	9,830	15,110	3,650	610	135	134

Calendar year 1961: Max 197 Min 0.3 Mean 16.3 Ac-ft 11,780  
Water year 1961-62: Max 518 Min 1.4 Mean 43.7 Ac-ft 31,650

Peak discharge (base, 300 cfs).--Apr. 24 or 25 (time and discharge unknown); May 6 (1630) 795 cfs (5.78 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 25, Nov. 3-15, 17-19, 21-24, Nov. 30 to Dec. 20. No gage-height record Dec. 21 to Apr. 29 (stage-discharge relation affected by ice during most of period), May 9-30.

9-2450. Elkhead Creek near Elkhead, Colo.

Location.--Lat 40°40'15", long 107°17'10", in NW¼ sec.8, T.8 N., R.88 W., on right bank 0.2 mile upstream from North Fork Elkhead Creek, 4½ miles northwest of Elkhead, and 12 miles north of Hayden.

Drainage area.--64.2 sq mi.

Records available.--January to November 1910 and May to November 1920 (monthly discharge only, published in WSP 1313; published as "at Hayes Ranch"), April 1953 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 6,830 ft (from topographic map). Prior to Nov. 30, 1920, staff gage or water-stage recorder at site 675 ft upstream at different datum.

Average discharge.--9 years (1953-62), 46.9 cfs (33,950 acre-ft per year).

Extremes.--Maximum discharge during year, 1,030 cfs May 6 (gage height, 6.46 ft); minimum daily, 0.5 cfs Sept. 6. 1910, 1920, 1953-62: Maximum daily discharge, 1,660 cfs May 22, 1920; no flow Sept. 1, 1954, Sept. 12-19, 24, 1955, Aug. 27-29, 1961.

Remarks.--Records fair except those for periods of ice effect, which are poor. No diversion above station.

Rating tables, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Sept. 29, 30)

Oct. 1 to Apr. 15

Apr. 16 to Sept. 30

2.4	3.3	2.1	0.2	2.9	30
2.5	5.8	2.2	.6	3.1	52
2.6	9.5	2.3	2.0	3.5	111
2.7	15	2.4	4.0	4.0	215
		2.5	6.8	5.0	500
		2.7	16	6.0	850

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	14	13					18	280	146	32	3.2	0.7
2	8.8	14					20	314	144	26	2.8	.9
3	6.5	7.6					22	470	138	22	2.6	.9
4	5.8	10					24	630	132	20	2.4	.6
5	5.8	9					26	693	128	18	2.4	.6
6	5.6	10					26	710	* 123	17	1.9	.5
7	5.6	* 11					30	732	132	17	1.6	.6
8	6.5	11				8	34	728	111	14	1.4	.6
9	6.2	9					32	690	100	13	1.6	.6
10	9.5	9					36	612	97	12	1.7	.7
11	* 11	9					44	574	92	11	1.6	.9
12	14	8					55	533	89	* 9.7	1.4	.9
13	13	7					90	455	84	11	1.3	.9
14	12	6.5					130	353	80	12	1.2	.9
15	11	7					190	290	76	11	1.2	.7
16	9.5	7	7	6	7		278	262	68	9.3	1.0	.9
17	8.4	7					350	* 278	68	8.9	.7	.9
18	8.0	7					512	248	65	7.6	.9	.9
19	8.0	6.5					592	215	58	6.8	1.9	.7
20	7.3	8.0					686	218	* 52	6.2	2.2	.7
21	6.9	6.5				10 (*)	732	208	50	5.1	2.0	.6
22	6.5	6					662	208	46	4.6	1.6	1.0
23	7.3	6					682	192	42	4.3	1.7	1.6
24	6.9	6.5					766	179	38	4.3	1.9	1.2
25	5.8	7					742	177	35	4.0	1.7	.9
26	5.6	7.5					637	168	32	4.3	1.7	.7
27	8.8	7.5					* 584	175	29	4.0	1.3	.9
28	13	7				14	637	172	28	3.6	1.2	1.3
29	9.5	7					506	181	26	3.4	*.9	3.2
30	7.6	7					332	158	38	3.4	.9	4.6
31	10	-----					-----	148	-----	* 3.2	.9	-----
Total	264.4	244.6	217	186	196	304	9,475	11,251	2,347	328.7	50.8	31.1
Mean	8.53	8.15	7	6	7	9.8	316	363	78.2	10.6	1.64	1.04
Ac-ft	524	485	430	369	389	603	18,790	22,320	4,660	652	101	62

Calendar year 1961: Max 328 Min 0 Mean 26.5 Ac-ft 19,220

Water year 1961-62: Max 766 Min 0.5 Mean 68.2 Ac-ft 49,380

Peak discharge (base, 800 cfs).--Apr. 24 (2000) 1,020 cfs (6.43 ft); May 6 (2100) 1,030 cfs (6.46 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 4-6, 9-18, Nov. 21 to Apr. 15.



GREEN RIVER BASIN

9-2455. North Fork Elkhead Creek near Elkhead, Colo.

Location.--Lat 40°40'50", long 107°17'10", in NW¼ sec.5, T.8 N., R.88 W., on right bank 70 ft upstream from small tributary, 0.8 mile upstream from mouth, and 13 miles north of Hayden.

Drainage area.--21 sq mi, approximately.

Records available.--January to November 1910 and May to November 1920 (monthly discharge only, published in WSP 1313; published as "at Hayes Ranch"), October 1958 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 6,990 ft (from topographic map). January to November 1910 and May to September 1920, staff gage and October to November 1920, water-stage recorder, at site 0.6 mile downstream at different datum.

Extremes.--Maximum discharge during year, 358 cfs Apr. 20 (gage height, 4.35 ft), from rating curve extended above 140 cfs; no flow for many days.  
1910, 1920, 1958-62: Maximum daily discharge, 542 cfs May 19, 1920; maximum gage height, 4.45 ft Mar. 24, 1960; no flow at times in 1910, 1959-62.

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 100 acres of hay meadows.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Apr. 11 to May 2)

1.7	0	2.3	7.8
1.8	.1	2.4	13
1.9	.3	2.7	35
2.0	1.2	3.0	67
2.1	2.6	3.5	144
2.2	4.6	4.0	244

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.6	2.5					4	74	53	7.8	0.2	0
2	2.8	2.8					5	86	46	6.2	.2	0
3	2.6	2.6					6.5	124	44	5.2	.2	0
4	2.3	2.2					8	158	42	4.2	.2	0
5	2.3	2.4					8	172	39	3.6	.2	0
6	2.3	2.2			2.0		12	180	* 35	3.4	.1	0
7	2.2	* 2.2					15	184	38	3.2	.1	0
8	2.2	2.2				3.0	17	186	29	2.8	0	0
9	2.2	2.4					16	176	27	2.5	0	0
10	2.6	2.6					15	164	26	2.3	.2	0
11	* 3.0	2.4					20	156	28	2.0	.1	0
12	3.4	2.2					30	144	28	* 1.9	0	0
13	3.4	2.2					60	116	28	2.0	0	0
14	3.2	2.2					104	88	27	2.0	0	0
15	2.8	2.0					150	70	24	1.9	0	.2
16	2.6	2.0	2	1.8	2.8		178	59	20	1.8	0	.2
17	2.3	2.0					186	* 61	19	1.6	0	.2
18	2.2	2.0				3.5	206	51	18	1.2	0	.1
19	2.0	1.8					214	50	16	1.3	0	.2
20	1.9	1.8					242	54	* 16	1.1	.2	.1
21	1.9	2.0				(*)	214	51	16	.8	.1	.2
22	1.8	1.8				3.4	198	51	15	.8	.1	1.0
23	1.3	1.6				3.2	210	47	14	.7	.1	.6
24	2.0	1.4			2.4	3.4	224	46	12	.6	.2	.3
25	1.5	1.8				3.2	204	50	11	.5	.1	.4
26	1.9	2.0				3.0	180	46	9.4	.8	.1	.3
27	2.6	1.8				3.4	* 162	51	8.3	.7	0	.4
28	3.0	2.0				3.8	160	46	7.5	.5	0	.5
29	2.3	2.0				4.4	121	52	6.5	.4	* 0	1.8
30	3.0	2.0				4.6	86	43	10	.3	0	1.8
31	3.2	-----				4.4	-----	43	-----	* 2	0	-----
Total	76.4	63.1	62	55.8	67.2	102.8	3,255.5	2,879	712.7	64.3	2.4	8.3
Mean	2.46	2.10	2	1.8	2.4	3.32	109	92.9	23.8	2.07	0.08	0.28
Ac-ft	152	125	123	111	133	204	6,460	5,710	1,410	128	4.8	16

Calendar year 1961: Max 107 Min 0 Mean 8.44 Ac-ft 6,110  
Water year 1961-62: Max 242 Min 0 Mean 20.1 Ac-ft 14,580

Peak discharge (base, 200 cfs).--Apr. 20 (1830) 358 cfs (4.35 ft); May 6 (1800) 265 cfs (4.02 ft).

\* Discharge measurement or observation of no flow made on this day.

Note.--Stage-discharge relation affected by ice Nov. 3 to Dec. 22, Mar. 26 to Apr. 13. No gage-height record Dec. 23 to Mar. 21 (stage-discharge relation affected by ice during most of period).

9-2486. East Fork of Williams Fork above Willow Creek, Colo.

Location.--Lat 40°15'40", long 107°17'35", in NE¼ sec.5, T.3 N., R.88 W., on right bank 3½ miles south of Willow Creek store, 3.8 miles upstream from Willow Creek, and 16 miles south of Hayden.

Drainage area.--108 sq mi.

Records available.--October 1956 to September 1962.

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

Average discharge.--6 years, 124 cfs (89,770 acre-ft per year).

Extremes.--Maximum discharge during year, about 1,450 cfs May 12 (gage height, 6.85 ft); minimum daily, 20 cfs Jan. 10.

1956-62: Maximum discharge, about 1,500 cfs June 25, 1957; maximum gage height, 6.85 ft May 12, 1962; minimum daily discharge determined, 18 cfs Feb. 27, 1961.

Remarks.--Records good except those for periods of ice effect, indefinite stage-discharge relation, or no gage-height record, which are poor. Diversions for irrigation of about 800 acres above station.

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

Oct. 1 to May 13

May 14 to Sept. 30

3.5	22	5.0	305	3.8	33	5.2	315
3.7	37	5.5	510	4.0	51	5.6	510
4.0	75	6.1	880	4.4	100	6.0	790
4.5	165			4.8	185		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	96	66	38	30	26	28	38	348	382	355	73	43
2	82	56	38	26	28	30	44	333	440	307	70	42
3	80	42	36	26	28	30	48	364	492	279	70	40
4	85	48	36	26	28	30	50	*465	517	261	70	39
5	90	40	36	28	26	28	55	602	492	240	65	39
6	96	44	34	30	26	28	55	775	462	219	64	37
7	99	46	34	30	*28	30	55	838	415	202	62	38
8	105	*48	32	28	28	*32	50	880	*347	192	60	39
9	*126	50	30	24	30	34	50	e 1.000	368	180	60	38
10	106	50	28	*20	32	36	55	e 1.050	430	170	58	39
11	92	50	28	22	36	34	65	e 1.100	486	158	54	37
12	89	44	26	24	34	32	80	e 1.150	580	153	55	36
13	84	40	30	26	32	30	*95	e 950	629	*156	56	35
14	90	40	34	26	32	28	117	706	622	147	52	35
15	97	44	36	26	32	30	172	538	552	132	50	36
16	101	42	34	24	32	32	232	440	440	124	48	36
17	103	39	32	24	30	34	261	391	351	118	48	36
18	99	37	32	26	28	34	319	*360	*347	113	50	34
19	90	36	36	28	28	34	444	400	405	109	62	34
20	87	40	36	30	30	34	525	510	450	104	58	36
21	80	42	34	28	32	32	475	486	480	94	54	41
22	80	36	32	24	32	32	408	410	517	91	53	47
23	66	38	32	22	32	32	460	331	474	91	51	38
24	69	40	34	24	32	34	560	360	425	102	51	36
25	62	40	32	26	30	36	638	396	410	91	47	36
26	66	40	28	26	28	38	638	391	396	88	44	34
27	70	40	26	26	26	44	540	396	386	84	43	35
28	69	40	28	26	26	42	560	331	368	80	43	36
29	60	38	30	26	-	40	520	303	378	78	42	39
30	72	38	32	26	-----	38	388	275	420	*75	*43	37
31	66	-----	32	26	-----	38	-----	319	-----	74	43	-----
Total	2,657	1,294	1,006	804	832	1,034	7,997	17,198	13,461	4,667	1,699	1,128
Mean	85.7	43.1	32.5	25.9	29.7	33.4	267	555	449	15.1	54.8	37.6
Ac-ft	5,270	2,570	2,000	1,590	1,650	2,050	15,860	34,110	26,700	9,260	3,370	2,240

Calendar year 1961: Max 668 Min 18 Mean 93.8 Ac-ft 67,950

Water year 1961-62: Max 1,150 Min 20 Mean 147 Ac-ft 106,700

Peak discharge (base, 450 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-24	2100	6.00	789	6-3	2130	5.78	636
5-12	2130	6.85	+1,450	6-13	2130	6.08	846
5-20	2130	5.77	629	6-21	2130	5.77	629

\* Discharge measurement made on this day.

e Stage-discharge relation indefinite.

Note.--Stage-discharge relation affected by ice Nov. 3-16, Nov. 19 to Dec. 12, Mar. 9-12. No gage-height record Dec. 13 to Mar. 8, Mar. 13 to Apr. 13 (stage-discharge relation affected by ice during part of periods).

† About.

## GREEN RIVER BASIN

9-2490. East Fork of Williams Fork near Pagoda, Colo.

Location.--Lat 40°18'45", long 107°19'15", in SW¼ sec.18, T.4 N., R.88 W., on right bank 20 ft downstream from private road bridge, half a mile upstream from Dowden Gulch, 1¼ miles downstream from Willow Creek, and 5½ miles southeast of Pagoda.

Drainage area.--150 sq mi, approximately.

Records available.--October 1953 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 6,830 ft (from topographic map).

Average discharge.--9 years, 117 cfs (84,700 acre-ft per year).

Extremes.--Maximum discharge during year, 1,340 cfs May 12 (gage height, 3.87 ft), from rating curve extended above 530 cfs; minimum daily, 24 cfs Jan. 10.

1953-62: Maximum discharge, 1,620 cfs June 26, 1957; maximum gage height, 4.82 ft June 6, 1957; minimum daily discharge, 12 cfs Aug. 28, Sept. 22, 1954.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 900 acres above station.

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

1.5	24	3.0	430
1.8	56	3.3	670
2.2	124	3.6	1,000
2.6	240		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	111	78	46	38	32	28	60	406	388	316	70	41
2	97	70	46	36	32	30	60	394	451	278	69	40
3	95	60	44	36	30	32	62	412	479	255	67	38
4	97	70	42	36	28	32	66	*524	500	240	69	37
5	101	50	44	38	28	34	*69	643	472	223	64	36
6	106	55	44	38	28	34	69	769	458	209	62	35
7	111	55	40	36	*26	34	74	802	430	196	59	36
8	113	*60	38	32	28	*36	70	824	*376	184	56	37
9	*135	60	38	28	30	36	69	912	382	174	56	37
10	119	60	38	*24	32	38	72	901	444	163	55	38
11	106	60	34	26	36	36	78	956	472	154	51	37
12	102	55	32	28	36	34	93	1,000	516	146	52	36
13	97	50	36	30	36	32	122	945	560	*154	54	35
14	102	50	40	32	34	30	168	703	600	152	50	34
15	110	55	44	32	34	34	248	556	580	137	49	35
16	113	55	44	30	34	36	330	479	470	131	46	36
17	113	50	42	28	34	38	376	444	350	126	48	35
18	113	48	42	28	32	38	437	*418	*330	120	50	34
19	104	46	42	30	32	38	532	458	394	117	59	34
20	102	50	44	32	34	38	652	548	424	113	56	35
21	93	55	44	32	34	36	616	532	451	104	52	40
22	93	46	44	30	34	34	500	465	458	101	51	48
23	78	48	42	28	34	36	532	394	424	97	48	39
24	82	50	46	28	34	40	616	412	388	106	49	37
25	72	50	44	28	32	48	643	451	376	92	45	37
26	77	50	38	30	32	55	670	430	365	92	42	35
27	83	50	34	32	30	60	616	430	350	85	41	35
28	82	50	36	32	28	60	589	370	325	82	42	37
29	72	48	40	30	-	55	598	345	325	77	41	39
30	83	46	42	30	-----	50	458	316	365	*74	*41	40
31	80	-----	40	32	-----	55	-----	345	-----	72	41	-----
Total	3,042	1,630	1,270	970	894	1,217	9,545	17,584	12,903	4,570	1,635	1,113
Mean	98.1	54.3	41.0	31.3	31.9	39.3	318	567	430	147	52.7	37.1
Ac-ft	6,030	3,230	2,520	1,920	1,770	2,410	18,930	34,880	25,590	9,060	3,240	2,210

Calendar year 1961: Max 625 Min 20 Mean 99.0 Ac-ft 71,700

Water year 1961-62: Max 1,000 Min 24 Mean 154 Ac-ft 111,800

Peak discharge (base, 500 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-20	2300	3.50	912	6-13	unknown	3.36	736
5-12	2330	3.87	1,340	6-20	2130	3.15	532

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 3 to Dec. 11, Jan. 11-27, Mar. 9-18. No gage-height record Dec. 12 to Jan. 10, Jan. 28 to Mar. 8, Mar. 19 to Apr. 2 (stage-discharge relation affected by ice during most of periods), June 13-18.

9-2500. Milk Creek near Thornburg, Colo.

Location.--Lat 40°12', long 107°44', in NE¼ sec.32, T.3 N., R.92 W., on right bank 2½ miles northwest of Thornburg and 3 miles upstream from Little Creek.

Drainage area.--65 sq mi, approximately.

Records available.--October 1952 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 6,450 ft (by barometer).

Average discharge.--10 years, 22.5 cfs (16,290 acre-ft per year).

Extremes.--Maximum discharge during year, 370 cfs May 9 (gage height, 4.46 ft); minimum daily, 1.2 cfs Sept. 18, 19.

1952-62: Maximum discharge, 491 cfs May 10, 1957; maximum gage height, 5.52 ft June 1, 1957; minimum daily discharge, 0.2 cfs Oct. 5-7, 1956.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. 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 Apr. 4

Apr. 5 to Sept. 30

2.2	2.9	2.0	1.0	2.9	57
2.3	5.8	2.1	2.1	3.5	150
2.5	16	2.2	4.2	4.0	250
2.8	39	2.3	8.0	4.5	375
3.0	60	2.6	27		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	11	9.2	7	5.5	4.6	7	38	172	55	18	4.0	2.7
2	9.6	8.7	7	5.5	4.8	9.5	44	166	61	15	4.0	2.5
3	8.7	7	6.5	5.5	5	10	44	166	64	12	3.8	2.1
4	8.3	8.5	6.5	5.5	5.5	11	42	184	* 58	10	3.6	1.9
5	8.3	7.5	6	5.5	5.5	10	* 40	214	60	9.1	3.4	* 1.8
6	8.7	7	6.5	5.5	6	12	44	236	57	8.0	2.9	1.8
7	9.2	8	6	5.5	* 6.2	15	47	292	53	8.6	2.7	1.8
8	9.6	8	6	5	6.6	14	49	302	45	9.6	2.5	1.8
9	17	8	6.5	4.4	7.5	14	26	305	40	8.6	2.1	1.7
10	18	8	6	4.0	12	13	43	280	38	8.0	2.0	1.6
11	12	7.5	6	3.8	20	13	41	258	36	* 8.0	2.0	1.6
12	11	7.5	4.6	4.2	13	12	47	234	35	7.6	2.1	1.6
13	10	* 9	5	4.2	11	11	60	228	37	6.9	2.0	1.4
14	10	7	8.5	4.2	10	10	82	* 198	35	7.2	1.9	1.3
15	10	7.5	7	4.2	9	11	106	156	28	7.2	1.7	1.3
16	* 11	8	6.5	4.2	8	12	158	128	26	7.2	1.7	1.3
17	11	7.5	6.5	4.2	8	14	180	108	26	6.9	1.7	1.3
18	11	7	6.5	4.6	10	15	196	92	25	6.5	1.7	1.2
19	9.6	6.5	6.5	4.8	9	16	220	90	24	6.9	1.8	1.2
20	8.7	7	6.5	5.0	9	18	246	102	* 21	6.9	1.8	1.3
21	8.7	7	7	4.8	9	20	280	97	24	6.5	1.8	1.7
22	8.3	6.5	6.5	4.8	8.5	22	226	90	22	6.1	2.0	1.8
23	7.9	7	6	4.4	8.5	24	238	78	24	5.7	1.9	1.6
24	7.5	7	6	4.0	8	22	252	74	24	4.6	2.3	1.7
25	7.5	7	6.5	4.0	8	30	* 300	73	21	4.0	2.7	1.7
26	7.5	7	6.5	4.2	8	50	285	69	19	3.6	3.2	1.7
27	9.6	7	6	4.2	7	70	255	78	17	3.4	2.9	1.6
28	10	7	5.5	4.4	6	70	248	70	15	3.4	2.7	1.6
29	8.7	6.5	6	4.4	-	44	260	64	15	3.6	2.9	1.7
30	8.7	7	6	4.4	-----	38	202	56	17	3.6	3.4	1.7
31	8.7	-----	5.5	4.6	-----	34	-----	58	-----	* 3.6	2.7	-----
Total	305.8	223.4	195.1	143.5	233.7	671.5	4,309	4,718	1,022	226.3	77.9	50.0
Mean	9.86	7.45	6.29	4.63	8.35	21.7	144	152	34.1	7.30	2.51	1.67
Ac-ft	607	443	387	285	464	1,330	8,550	9,360	2,130	449	155	99

Calendar year 1961: Max 181 Min 0.8 Mean 18.0 Ac-ft 13,020

Water year 1961-62: Max 305 Min 1.2 Mean 33.4 Ac-ft 24,160

Peak discharge (base, 250 cfs).--Apr. 25 (0500) 350 cfs (4.30 ft); May 9 (0500) 370 cfs (4.46 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 3-10, 13-18, Feb. 10-19. No gage-height record Nov. 19 to Feb. 6, Feb. 20 to Apr. 5 (stage-discharge relation affected by ice part of periods).



## GREEN RIVER BASIN

9-2510. Yampa River near Maybell, Colo.

Location.--Lat 40°30'10", long 108°01'45", in NW¼ sec.2, T.6 N., R.95 W., on left bank 100 ft downstream from bridge on U. S. Highway 40, 2 miles downstream from Lay Creek, and 3 miles east of Maybell.

Drainage area.--3,410 sq mi, approximately.

Records available.--April 1904 to October 1905, June 1910 to November 1912, April 1916 to September 1962. Monthly discharge only for some periods, published in WSP 1313. No winter records prior to 1917.

Gage.--Water-stage recorder. Datum of gage is 5,900.23 ft above mean sea level, datum of 1929. Prior to Apr. 24, 1916, staff or chain gage at Thornburgh Bridge 14 miles downstream at different datum. Apr. 24, 1916, to Nov. 3, 1917, chain gage and Nov. 4, 1917, to Mar. 8, 1937, water-stage recorder, at site 700 ft downstream, at datum 0.92 ft higher prior to Oct. 1, 1932, and at present datum thereafter.

Average discharge.--46 years (1916-62), 1,571 cfs (1,137,000 acre-ft per year).

Extremes.--Maximum discharge during year, 11,500 cfs May 14 (gage height, 8.70 ft); minimum daily, 93 cfs Sept. 18.

1904-5, 1910-12, 1916-62: Maximum discharge observed, 17,900 cfs May 19, 1917 (gage height, 10.4 ft, from floodmarks, site and datum then in use), from rating curve extended above 12,000 cfs; minimum daily, 2 cfs July 17-19, 1934.

Remarks.--Records good except those for periods of ice effect, which are poor. Natural flow of stream affected by transbasin diversions, numerous storage reservoirs, and diversions above station for irrigation of about 65,000 acres above and about 800 acres below station.

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

1.3	93	2.5	600	6.5	6,350
1.4	115	3.0	950	7.0	7,400
1.7	205	4.0	2,060	8.0	9,800
2.0	325	5.0	3,640	9.0	12,300

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,990	747	450	360	330	300	1,400	7,830	4,250	4,980	* 522	143
2	1,400	775	450	350	340	350	1,770	6,310	4,580	4,530	522	135
3	1,120	775	430	350	350	400	2,420	5,790	4,940	4,060	516	132
4	1,010	670	400	350	360	390	2,990	6,060	5,340	3,810	480	130
5	958	588	350	350	370	380	3,490	7,030	5,480	3,500	474	* 122
6	958	* 614	320	360	370	400	3,670	8,410	5,560	3,180	474	115
7	990	552	340	390	* 380	* 430	3,560	9,250	5,340	2,890	447	108
8	1,040	621	320	400	380	400	4,060	10,100	5,210	2,640	395	102
9	1,170	663	300	310	400	380	3,100	10,600	4,460	2,510	350	102
10	1,200	698	280	280	600	400	2,590	11,000	4,290	2,360	325	100
11	1,210	691	270	* 290	1,040	400	3,050	11,000	4,810	2,080	330	102
12	* 1,100	663	250	310	3,230	380	3,520	11,000	5,350	* 1,870	312	104
13	1,050	649	250	340	2,640	370	3,910	11,000	5,660	1,680	298	104
14	998	588	260	310	2,080	370	4,650	11,300	6,090	1,680	284	102
15	974	492	300	300	1,290	370	5,470	* 10,400	6,350	1,570	268	102
16	990	528	350	300	1,010	380	6,530	7,830	6,170	1,380	256	104
17	1,020	582	350	320	754	400	7,900	6,530	5,560	1,210	233	100
18	1,030	628	350	330	650	430	8,190	6,190	4,620	1,140	212	93
19	1,030	600	370	350	600	450	8,840	5,620	4,130	1,060	205	97
20	982	498	380	350	* 520	480	9,560	5,140	4,350	982	198	97
21	936	436	390	310	540	540	10,400	5,430	* 5,140	943	191	95
22	894	355	390	270	500	600	11,100	5,470	5,480	880	191	100
23	859	400	390	230	460	640	10,600	5,140	5,680	824	198	108
24	824	450	400	270	420	660	* 9,900	4,850	5,500	782	219	111
25	768	490	400	290	350	760	10,400	4,670	5,160	719	205	125
26	747	460	350	310	320	1,200	11,000	4,600	5,080	705	212	138
27	719	450	330	310	280	2,450	11,100	4,620	4,890	663	205	130
28	768	450	360	320	250	* 2,730	10,200	4,900	4,850	642	174	125
29	810	440	400	320	-	2,140	9,800	4,580	4,630	649	152	130
30	789	420	390	320	-----	1,720	9,700	4,540	4,630	600	143	135
31	705	-----	380	320	-----	1,410	-----	4,320	-----	546	146	-----
Total	31,039	16,973	10,950	9,970	20,814	22,710	194,870	221,510	153,580	57,065	9,137	3,391
Mean	1,001	566	353	322	743	733	6,496	7,145	5,119	1,841	295	113
Ac-ft	61,560	33,670	21,720	19,780	41,280	45,040	386,500	439,400	304,600	113,200	18,120	6,730

Calendar year 1961: Max 6,150 Min 75 Mean 975 Ac-ft 706,000

Water year 1961-62: Max 11,300 Min 93 Mean 2,060 Ac-ft 1,492,000

Peak discharge (base, 7,000 cfs).--Apr. 27 (1200) 11,200 cfs (8.58 ft); May 14 (0200) 11,500 cfs (8.70 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 23 to Feb. 11, Feb. 18 to Mar. 26.

9-2530. Little Snake River near Slater, Colo.

Location.--Lat 41°00', long 107°09', in SW¼ sec.15, T.12 N., R.87 W., on left bank just downstream from highway bridge at Focus Ranch, a quarter of a mile downstream from Willow Creek and 11 miles east of Slater.

Drainage area.--285 sq mi.

Records available.--October 1942 to September 1947, October 1950 to September 1962.

Gage.--Water-stage recorder. Datum of gage is 6,831.00 ft above mean sea level, datum of 1929.

Average discharge.--17 years, 217 cfs (157,100 acre-ft per year).

Extremes.--Maximum discharge during year, 2,920 cfs May 11 (gage height, 7.99 ft); minimum daily, 16 cfs Sept. 7.

1942-47, 1950-62: Maximum discharge, 3,230 cfs June 7, 1957 (gage height, 8.27 ft); minimum daily, 8.6 cfs Sept. 10, 1944.

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)

3.2	11	4.8	310
3.4	18	5.1	460
3.6	31	5.5	680
3.9	68	6.3	1,270
4.2	118	7.0	1,920
4.5	198	8.0	2,930

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	125	90	70	50	50	36	72	981	974	460	* 45	20
2	101	79	70	48	50	38	75	946	995	395	41	19
3	99	46	60	50	50	40	85	1,030	1,090	340	39	17
4	101	60	55	55	50	42	99	1,310	*1,160	301	40	17
5	105	90	60	55	50	42	105	1,540	1,130	265	36	17
6	101	95	65	60	50	* 42	*105	1,790	1,090	237	33	17
7	97	* 100	60	60	50	46	110	2,080	1,110	220	30	16
8	103	95	55	55	55	50	105	2,210	946	204	30	18
9	107	95	50	45	55	55	99	2,310	869	192	30	18
10	*110	90	48	40	60	55	103	2,370	883	168	30	19
11	99	85	46	45	90	50	110	2,460	925	* 138	28	19
12	108	80	44	50	120	48	127	2,520	953	127	25	17
13	101	75	50	55	100	44	168	2,320	1,010	127	25	17
14	99	70	55	55	* 90	42	244	1,860	1,030	122	25	17
15	96	75	60	50	80	44	390	1,520	995	114	24	19
16	92	80	60	46	70	46	584	*1,370	883	101	22	19
17	92	80	60	44	60	50	743	1,310	778	94	23	18
18	90	80	55	*46	55	55	974	1,170	701	85	24	18
19	82	70	55	50	50	55	1,220	1,070	680	81	30	17
20	81	70	60	55	55	55	1,460	1,130	* 729	76	35	19
21	78	65	60	50	55	55	1,550	1,130	750	69	29	26
22	79	65	60	46	50	50	1,430	1,170	715	67	28	35
23	65	75	55	44	50	55	1,500	1,160	674	65	29	27
24	79	80	60	44	50	55	1,700	1,060	638	62	29	22
25	62	82	60	46	50	60	1,800	1,050	608	61	27	22
26	78	78	55	48	46	80	*1,780	1,050	560	58	23	22
27	89	75	50	50	40	94	1,580	1,070	530	62	20	22
28	92	70	55	50	34	94	1,610	1,050	500	58	* 19	23
29	67	70	60	50	-	89	1,410	1,070	470	53	18	26
30	78	70	60	50	-----	82	1,130	960	590	48	17	30
31	90	-----	55	50	-----	78	-----	946	-----	45	19	-----
Total	2,846	2,335	1,768	1,542	1,665	1,727	22,468	45,013	24,966	4,495	873	613
Mean	91.8	77.8	57.0	49.7	59.5	55.7	749	1,452	832	145	28.2	20.4
Ac-ft	5,640	4,630	3,510	3,060	3,300	3,430	44,560	89,280	49,520	8,920	1,730	1,220

Calendar year 1961: Max 1,210 Min 16 Mean 156 Ac-ft 112,800  
 Water year 1961-62: Max 2,520 Min 16 Mean 302 Ac-ft 218,800

Peak discharge (base, 1,600 cfs).--Apr. 24 (2200) 2,230 cfs (7.35 ft); May 11 (2230) 2,920 cfs (7.99 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 4-24, Nov. 27 to Mar. 26 (no gage-height record Dec. 27 to Jan. 18).

## GREEN RIVER BASIN

9-2550, Slater Fork near Slater, Colo.

Location.--Lat 40°59', long 107°23', in SW¼ sec.21, T.12 N., R.89 W., on right bank 25 ft downstream from highway bridge, 1 mile upstream from mouth, and 1½ miles south of Slater.

Drainage area.--161 sq mi.

Records available.--May to October, December 1910, March to October 1911, and April to May 1912 (published as Slater Creek), July 1931 to September 1962. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Altitude of gage is 6,600 ft (from river-profile map). May 28, 1910, to May 25, 1912, staff gage at site 1½ miles upstream at different datum. July 9, 1931, to May 6, 1932, chain gage at site a quarter of a mile downstream at different datum.

Average discharge.--31 years (1931-62), 71.1 cfs (51,470 acre-ft per year).

Extremes.--Maximum discharge during year, 1,070 cfs May 9 (gage height, 8.32 ft); minimum daily, 1.1 cfs Aug. 29. 1910-12, 1931-62: Maximum discharge observed, 1,700 cfs May 19, 1912 (gage height, 5.00 ft, site and datum then in use); no flow Aug. 2-10, 1934, Aug. 18, 25-27, 1936, Aug. 29 to Sept. 3, 1954.

Remarks.--Records good except those for periods of ice effect, which are poor. Diversions for irrigation of about 500 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 Mar. 21-29, Apr. 4-11)

0.7	1.0	2.6	65
.9	3.2	3.5	132
1.1	6.0	4.0	188
1.4	13	5.0	330
1.8	26	6.0	500
2.2	43	8.0	970

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	34	27	22	14	22	22	44	266	294	145	* 5.0	1.5
2	27	26	22	12	24	22	48	260	292	109	5.6	1.8
3	23	15	22	12	24	24	50	310	290	92	5.6	1.8
4	22	25	18	14	24	24	52	472	293	78	5.6	3.5
5	21	24	20	16	24	26	50	640	* 284	67	5.1	3.5
6	21	26	22	16	24	* 26	* 48	708	256	61	5.2	3.2
7	20	* 28	20	18	24	26	50	802	286	52	5.2	3.2
8	21	26	20	14	26	26	48	810	218	46	4.8	3.5
9	23	26	18	12	28	24	45	820	188	42	4.1	3.6
10	27	26	16	10	40	24	50	792	202	36	3.6	4.1
11	* 26	24	14	14	60	22	52	745	242	* 32	3.5	4.2
12	24	24	12	16	79	22	63	728	262	29	3.6	4.2
13	24	22	14	18	45	22	83	662	280	29	4.5	4.2
14	24	20	16	18	* 34	18	110	478	282	29	4.5	4.8
15	22	24	18	18	30	22	157	372	256	27	3.7	5.6
16	21	24	18	18	30	22	198	* 324	197	22	2.7	6.0
17	20	22	18	16	28	22	198	333	164	20	2.5	6.6
18	21	22	16	20	28	22	254	291	161	18	3.0	7.4
19	20	20	14	* 22	26	24	327	252	156	17	4.8	8.2
20	19	22	16	22	24	24	448	303	* 188	14	5.7	10
21	18	22	18	20	26	24	492	308	192	12	3.6	10
22	18	20	18	18	26	23	411	296	189	11	2.0	19
23	17	22	16	16	26	25	412	288	175	10	1.7	17
24	19	22	18	18	24	25	520	290	169	9.6	2.4	14
25	16	22	18	20	24	28	634	298	156	8.0	3.0	17
26	20	22	16	22	22	36	* 612	290	144	7.8	2.7	16
27	23	22	14	22	22	59	492	303	132	8.0	2.0	16
28	29	22	16	22	20	68	544	274	124	* 5.7	1.4	22
29	26	22	18	22	-	52	486	273	113	1.3	1.1	24
30	24	22	18	22	-----	46	326	241	170	1.5	1.4	19
31	26	-----	16	22	-----	44	-----	238	-----	3.0	1.2	-----
Total	696	692	542	544	834	894	7,304	13,467	6,360	1,042.9	110.8	264.9
Mean	22.5	23.1	17.5	17.5	29.8	28.8	243	434	212	33.6	3.57	8.83
Ac-ft	1,380	1,370	1,080	1,080	1,650	1,770	14,490	26,710	12,610	2,070	220	525

Calendar year 1961: Max 371 Min 0.9 Mean 37.4 Ac-ft 27,090

Water year 1961-62: Max 820 Min 1.1 Mean 89.7 Ac-ft 64,960

Peak discharge (base, 430 cfs).--Apr. 25 (0200) 800 cfs (7.34 ft); May 9 (0330) 1,070 cfs (8.32 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 4-23, Nov. 27 to Dec. 1, Dec. 4 to Feb. 11, Feb. 15 to Mar. 20, Mar. 30 to Apr. 3 (no gage-height record Dec. 10 to Jan. 18, Mar. 1-6).

9-2580, Willow Creek near Dixon, Wyo.

Location.--Lat 40°55'00", long 107°31'10", in SW¼ sec.8, T.11 N., R.90 W., in Colorado on right bank 6 miles south of Colorado-Wyoming State line, 7 miles south of Dixon, and 8 miles upstream from mouth.

Drainage area.--24 sq mi, approximately.

Records available.--October 1953 to September 1962.

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

Average discharge.--9 years, 8.80 cfs (6,370 acre-ft per year).

Extremes.--Maximum discharge during year, 156 cfs Apr. 15 (gage height, 4.60 ft); minimum not determined.  
1953-62: Maximum discharge, 195 cfs May 10, 1957 (gage height, 4.97 ft); no flow Sept. 17-19, 1955.

Remarks.--Records good except those for periods of ice effect, which are poor. No diversion above station. Regulation by Elk Lake (capacity, 400 acre-ft).

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

2.0	0.8	2.7	14
2.1	1.7	3.0	29
2.3	4.6	3.6	66
2.5	8.4		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.8	3.0					7	19	27	42	* 5.0	3.2
2	3.0	2.8					8	18	32	29	4.6	3.2
3	3.0	1.7					9.5	21	36	25	4.3	3.0
4	3.1	2.5					10	28	39	21	4.3	3.0
5	3.1	2.6					10	34	* 33	17	4.0	3.0
6	3.1	2.2					9.5	36	28	14	4.0	3.0
7	3.4	* 2.6					9	40	30	13	4.0	3.0
8	3.7	2.6					8	40	22	12	4.0	2.8
9	5.0	2.0				3.5	7.2	45	19	11	4.2	3.0
10	5.1	1.8					8.8	45	24	9.7	4.0	3.1
11	* 3.4	1.8					10	46	32	* 9.1	3.7	3.0
12	3.2	1.4					15	50	34	8.6	3.7	2.7
13	3.1	1.0					30	48	44	8.6	3.8	2.7
14	3.2	1.0					44	33	49	7.8	3.6	2.7
15	3.1	1.2					63	26	46	7.6	3.4	2.8
16	3.0	1.0	1	0.8	3		51	* 24	36	6.8	3.7	2.7
17	2.7	1.0					47	25	30	5.9	3.7	2.7
18	2.7	1.0					47	22	29	5.5	3.8	2.3
19	2.7	1.0				* 3.8	50	16	34	5.5	4.2	1.5
20	2.4	1.0				4.0	60	23	* 43	5.0	4.0	1.4
21	2.3	1.0				4.6	42	24	45	4.4	3.7	1.7
22	2.3	.8				5	31	20	45	4.2	3.7	3.1
23	1.8	1.0				5.5	32	20	44	4.2	3.7	2.0
24	2.0	1.2				5.5	40	20	44	4.0	3.6	1.6
25	2.0	1.2				6	47	18	42	4.0	3.6	1.5
26	2.4	1.2				10	50	24	41	7.0	3.2	1.6
27	2.5	1.0				25	* 36	26	38	6.8	3.1	1.6
28	3.0	1.0				20	34	24	37	6.4	3.0	2.1
29	2.4	1.0				10	33	22	34	6.0	3.1	1.8
30	2.1	1.0				5.5	24	20	42	5.3	* 3.2	3.1
31	2.1	-----			-----	6	-----	20	-----	5.3	3.4	-----
Total	90.7	45.6	31	24.8	84	173.9	873.0	877	1,079	321.7	117.3	74.9
Mean	2.93	1.52	1	0.8	3	5.61	29.1	28.3	36.0	10.4	3.78	2.50
Ac-ft	180	90	61	49	167	345	1,730	1,740	2,140	638	233	149

Calendar year 1961: Max 36 Min 0.4 Mean 4.85 Ac-ft 3,510  
Water year 1961-62: Max 63 Min - Mean 10.4 Ac-ft 7,520

Peak discharge (base, 70 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-15	1600	4.60	156	7-1	0300	3.66	71
4-20	1800	3.99	99				

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 23-25, 30, 31, Nov. 5 to Apr. 8 (no gage-height record Dec. 17 to Mar. 19).



## GREEN RIVER BASIN

9-2597. Little Snake River near Baggs, Wyo.

Location.--Lat 41°00'00", long 107°55'10", in NE¼ sec.24, T.12 N., R.94 W., in Wyoming, on left bank 600 ft upstream from Wyoming-Colorado State line, half a mile upstream from Scandinavian Wash, and 15 miles west of Baggs. Prior to Apr. 12, 1962, at site 800 ft downstream.

Drainage area.--3,020 sq mi, approximately.

Records available.--October 1961 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 6,050 ft (from topographic map). Prior to Apr. 12, 1962, at site 800 ft downstream at datum 3.00 ft lower.

Extremes.--Maximum discharge during year, about 10,000 cfs Mar. 28 (gage height, 8.0 ft, from floodmark, present datum); minimum daily, 0.1 cfs Sept. 14-20.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 15,000 acres above station.

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

Oct. 1 to Apr. 11

Apr. 12 to Sept. 30

2.9	115	0.2	0.1	0.7	13	2.5	780
3.2	235	.3	.3	1.0	50	3.0	1,180
3.6	430	.4	1.0	1.3	115	4.0	2,310
		.5	3.2	1.6	230	5.0	3,970
		.6	6.5	2.0	450	5.6	5,130

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	350	235	170	140	140	190	2,000	2,500	1,610	1,070	25	0.4
2	280	244	170	130	140	180	1,800	2,200	1,740	836	9.8	.4
3	240	200	180	130	140	170	1,700	2,100	1,800	696	4.5	.4
4	*200	150	160	130	130	160	1,700	2,800	1,870	620	6.5	.4
5	174	100	150	140	130	160	1,800	3,500	1,930	556	11	.3
6	162	80	140	140	130	170	1,600	3,800	*1,900	*438	3.2	.3
7	166	*70	120	140	140	170	1,400	4,000	1,800	384	1.7	.3
8	162	85	100	130	150	170	1,200	4,400	1,800	335	.9	.3
9	174	110	90	110	150	170	1,000	4,600	1,700	308	.8	.3
10	320	130	80	80	250	170	700	4,700	1,500	275	.8	.3
11	*350	140	60	100	900	180	800	4,800	1,500	*220	.7	.3
12	410	140	90	120	2,000	180	*900	4,900	1,500	200	.9	.2
13	280	130	120	130	1,500	190	1,200	5,000	1,600	150	.8	.2
14	253	120	140	130	1,200	190	1,560	4,000	1,600	150	.8	.1
15	235	130	150	130	900	190	2,090	3,200	1,700	140	.7	.1
16	212	140	150	130	700	220	3,010	*2,690	1,600	130	.8	.1
17	212	150	140	120	500	280	3,180	2,770	1,500	100	.9	.1
18	212	150	150	*130	350	350	2,990	2,510	1,400	70	.9	.1
19	217	160	*170	140	320	400	3,230	2,150	1,300	50	1.0	*.1
20	217	170	170	150	300	450	3,720	2,000	1,200	35	.9	.1
21	208	170	160	140	*280	550	4,110	2,030	*1,200	25	1.0	.2
22	204	160	160	120	220	700	3,830	1,930	1,260	20	2.3	.46
23	204	170	150	80	210	850	3,340	2,100	1,220	15	2.3	.18
24	194	180	150	90	210	1,000	3,480	2,070	1,120	10	1.7	4.8
25	194	190	140	110	220	1,800	*3,840	1,880	1,070	8	1.7	2.3
26	194	190	130	120	230	3,000	4,000	1,820	1,030	7	1.2	1.7
27	194	190	120	130	230	6,000	4,000	1,820	930	4.8	.8	1.2
28	230	180	130	130	190	8,000	3,900	1,880	822	3.9	.5	1.4
29	244	170	150	130	-	4,000	3,500	1,920	780	3.2	.4	2.3
30	220	160	150	140	-----	3,000	2,800	1,860	850	2.8	*.4	2.1
31	199	-----	150	140	-----	2,500	-----	1,660	-----	*3.0	.3	-----
Total	7,111	4,594	4,290	3,880	11,960	35,740	74,380	89,590	42,832	6,865.7	85.2	84.8
Mean	229	153	138	125	427	1,153	2,479	2,890	1,428	221	2.75	2.83
Ac-ft	14,100	9,110	8,510	7,700	23,720	70,890	147,500	177,700	84,960	13,620	169	168

Calendar year 1961: Max - Min - Mean - Ac-ft -  
 Water year 1961-62: Max 8,000 Min 0.1 Mean 771 Ac-ft 558,100

Peak discharge (base, 3,400 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
3-28	Unknown	8.0	†10,000	5-13	Unknown	Unknown	†5,500
4-21	2000	5.30	4,510				

† About.

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 30, Nov. 3-16, Dec. 20-26, Feb. 25-27. No gage-height record Oct. 1-4, Nov. 17 to Dec. 19, Dec. 27 to Feb. 24, Feb. 28 to Apr. 13 (stage-discharge relation affected by ice during part of periods), Apr. 26 to May 15, June 6-21, July 11-26.

9-2600. Little Snake River near Lily, Colo.

Location.--Lat 40°32'50", long 108°25'25", in NW 1/4 sec. 20, T.7 N., R.98 W., on left bank 170 ft downstream from highway bridge, 6 miles north of Lily, and 10 miles upstream from mouth.

Drainage area.--3,730 sq mi, approximately.

Records available.--June to August 1904, October 1921 to September 1962. Monthly discharge only for some periods, published in WSP 1313. Published as "near Maybell" 1904.

Gage.--Water-stage recorder. Altitude of gage is 5,685 ft (from river-profile map). June 9 to Aug. 14, 1904, chain gage and May 5, 1922, to Nov. 30, 1935, water-stage recorder, at site 300 ft upstream at different datums.

Average discharge.--41 years (1921-62), 570 cfs (412,700 acre-ft per year).

Extremes.--Maximum discharge during year, 10,200 cfs Mar. 28 (gage height, 8.30 ft); maximum gage height, 11.1 ft (from floodmark, backwater from ice), Feb. 13; no flow for many days in August, September.

1904, 1921-62: Maximum discharge, 14,200 cfs May 27, 1926 (gage height, 10.5 ft, site and datum then in use), from rating curve extended above 3,600 cfs; maximum gage height, that of Feb. 13, 1962; no flow at times in many years.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 21,000 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 Sept. 27-30)

0.2	0	0.8	30	3.0	1,170
.3	.4	1.0	66	4.0	2,360
.4	1.8	1.5	185	6.0	5,730
.5	5.5	2.0	370	7.7	9,000
.6	11	2.5	705		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	173	232	180	160	150	190	2,800	2,800	1,590	730	* 18	0
2	356	179	180	160	150	180	2,400	2,290	1,530	1,020	17	0
3	274	206	190	150	150	180	2,000	2,050	1,660	880	15	0
4	226	206	180	160	140	180	* 1,900	1,990	* 1,730	665	16	0
5	197	197	160	160	130	180	1,920	2,430	1,790	550	14	* 0
6	182	* 80	140	170	* 100	180	1,990	3,040	1,860	462	11	0
7	173	70	120	170	130	* 190	1,730	3,440	1,780	415	9.4	0
8	167	90	90	170	150	200	1,540	3,840	1,770	370	8.8	0
9	229	110	70	150	160	210	1,680	4,160	1,770	321	8.8	0
10	236	150	65	110	300	230	1,080	4,320	1,500	285	7.7	0
11	229	150	60	* 80	600	210	835	4,400	1,390	254	7.2	0
12	* 317	150	70	90	1,100	190	808	4,380	1,420	* 240	6.0	0
13	375	140	100	100	2,200	180	900	4,450	1,520	206	5.5	0
14	305	130	170	130	1,600	190	1,200	4,490	1,600	173	4.0	0
15	232	120	180	150	1,100	200	1,700	* 3,870	1,660	150	2.9	0
16	218	140	180	150	800	200	2,400	2,940	1,680	150	2.2	0
17	209	110	180	150	500	230	3,000	2,500	1,620	140	2.2	0
18	191	100	180	150	480	300	3,400	2,670	1,500	135	2.9	0
19	188	130	190	160	440	350	3,200	2,290	1,360	128	4.8	0
20	182	180	200	170	* 400	450	3,600	1,960	1,220	96	4.4	0
21	179	170	190	160	380	550	4,000	1,860	1,170	72	4.0	0
22	173	160	180	120	325	600	4,500	1,910	* 1,220	53	4.0	0
23	170	170	180	80	246	800	4,000	1,830	1,250	35	3.3	0
24	170	190	190	100	142	1,000	3,600	1,990	1,190	29	2.9	0
25	170	200	190	110	160	1,300	* 4,000	1,960	1,110	23	1.8	0
26	167	210	170	130	190	2,290	4,130	1,780	1,030	27	1.4	0
27	167	210	150	140	240	6,600	4,200	1,740	984	23	.7	
28	182	210	160	140	200	9,000	4,090	1,740	908	21	.4	1.4
29	158	200	170	140	-	5,000	3,730	1,800	790	27	0	1.2
30	173	190	170	150	-----	4,000	3,560	1,840	756	24	0	1.7
31	236	-----	170	150	-----	3,500	-----	1,780	-----	21	0	-----
Total	6,604	4,780	4,805	4,310	12,663	39,060	79,893	84,540	42,358	7,725	186.3	6.8
Mean	213	159	155	139	452	1,260	2,663	2,727	1,412	249	6.01	0.23
Ac-ft	13,100	9,480	9,530	8,550	25,120	77,470	158,500	167,700	84,020	15,320	370	13

Calendar year 1961: Max 1,640 Min 0 Mean 259 Ac-ft 187,600  
 Water year 1961-62: Max 9,000 Min 0 Mean 786 Ac-ft 569,200

Peak discharge (base, 3,500 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
3-28	1030	8.30	10,200	5-9	1400	5.50	4,760
4-22	1300	5.55	4,900				

\* Discharge measurement or observation of no flow made on this day.

Note.--Stage-discharge relation affected by ice Nov. 6 to Dec. 28, Jan. 12-22, Feb. 25 to Mar. 18. No gage-height record Dec. 29 to Jan. 11, Jan. 23 to Feb. 20, Mar. 19-25 (stage-discharge relation affected by ice most of period), Mar. 29-31, Apr. 1-4, 13-25.

## GREEN RIVER BASIN

9-3024. White River below Trapper's Lake, Colo.

Location--Lat 39°59'50", long 107°13'50", in sec.2, T.1 S., R.88 W., on right bank 200 ft below Trapper's Lake, 1 mile upstream from Skinny Fish Creek, and 21 miles east of Buford.

Drainage area--21.4 sq mi.

Records available--October 1956 to September 1962.

Gage--Water-stage recorder. Altitude of gage is 9,600 ft (from topographic map).

Average discharge--6 years, 29.3 cfs (21,210 acre-ft per year).

Extremes--Maximum discharge during year, 195 cfs June 28 (gage height, 6.87 ft); minimum daily, 9.6 cfs Sept. 27.  
1956-62: Maximum discharge, 481 cfs July 4, 1957 (gage height, 8.03 ft), from rating curve extended above 250 cfs; minimum daily determined, 7.0 cfs Mar. 27, 1960.

Remarks--Records good except those for periods of no gage-height record, which are poor. No diversion above station.

Rating table (gage height, in feet, and discharge,  
in cubic feet per second)  
(Shifting-control method used Apr. 21 to May 9, July 24 to Aug. 23)

4.7	8.0	6.0	85
5.0	16	6.5	142
5.5	40	7.0	214

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	15	16	15	13				20	49	174	26	11
2	14	16	14	13				19	54	163	24	12
3	12	16	15	12				18	63	154	* 24	12
4	12	17	15	13				18	71	143	24	* 13
5	12	16	15	13				21	78	129	21	14
6	12	15	15	14				24	*89	115	18	14
7	13	16	14	15				27	94	105	17	14
8	14	16	14	15				32	93	94	15	14
9	17	15	14	13				42	84	86	16	14
10	19	15	14	12				53	83	82	16	14
11	20	15	14	11			18	63	97	75	15	13
12	20	15	14	12				75	119	70	14	13
13	19	15	14	13				84	142	* 67	14	12
14	18	15	13	13				81	158	65	14	12
15	18	15	14	13				72	175	57	13	13
16	19	15	14	13				64	174	53	12	13
17	*19	15	14	12				58	148	49	13	13
18	18	15	14	13				53	130	46	14	12
19	17	15	14	13				46	115	43	15	12
20	17	15	14	14				47	131	41	16	12
21	17	15	14	13				20	50	155	38	14
22	16	15	14	13				20	53	* 178	36	14
23	16	15	14	12				20	49	182	34	14
24	15	15	13	13				* 22	48	175	36	14
25	15	15	13	13				22	49	172	35	13
26	14	15	14	13				24	49	174	33	13
27	16	15	13	13				23	52	179	32	12
28	16	15	14	13				22	51	190	29	12
29	17	14	14	13				26	51	176	28	11
30	16	14	14	13				24	47	175	28	10
31	16	-----	13	13				47	-----	26	11	-----
Total	499	456	434	402	392	465	583	1,463	3,903	2,166	479	367.0
Mean	16.1	15.2	14.0	13.0	14	15	19.4	47.2	130	69.9	15.5	12.2
Ac-ft	990	904	861	797	778	922	1,160	2,900	7,740	4,300	950	728

Calendar year 1961: Max 175 Min 7.8 Mean 21.7 Ac-ft 15,690  
Water year 1961-62: Max 190 Min 9.6 Mean 31.8 Ac-ft 23,030

\* Discharge measurement made on this day.

Note--No gage-height record Jan. 9 to Apr. 24.

## GREEN RIVER BASIN

289

9-3028. White River near Buford, Colo.

Location.--Lat 40°02', long 107°31', in SW¼ sec.20, T.1 N., R.90 W., on right bank a third of a mile upstream from highway bridge, three-quarters of a mile downstream from Ute Creek, and 6½ miles northeast of Buford.

Drainage area.--223 sq mi.

Records available.--July 1903 to December 1906, October 1956 to September 1962. Monthly discharge only for some periods, published in WSP 1313. Published as North Fork White River near Buford prior to 1956. Records for May 1910 to December 1915 and July 1919 to December 1920 at site 6½ miles downstream not equivalent owing to inflow between the sites.

Gage.--Water-stage recorder. Prior to October 1956, staff gage at highway bridge a third of a mile downstream at different datum.

Average discharge.--9 years, 317 cfs (229,500 acre-ft per year).

Extremes.--Maximum discharge during year, 1,680 cfs May 12 (gage height, 5.12 ft); maximum gage height, 5.61 ft Jan. 25 (backwater from ice); minimum daily discharge, 106 cfs Jan. 10.

1903-6, 1956-62: Maximum daily discharge, 1,950 cfs June 8, 1905; minimum daily determined, 100 cfs Jan. 18, 1957, Jan. 18, 19, 1960, Jan. 29, 1961.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions above station for irrigation of a few hay meadows.

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

2.8	100	4.0	700
3.0	165	5.0	1,570
3.5	400		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	228	185	148	118	120	130	144	515	707	886	295	218
2	210	173	148	134	130	140	148	515	778	810	*285	214
3	210	148	148	134	130	154	*158	587	818	770	280	205
4	218	173	140	144	130	151	165	735	842	742	275	*201
5	228	148	148	137	130	177	165	922	842	687	260	197
6	228	185	144	137	140	*154	165	1,090	*834	654	260	193
7	236	185	134	130	140	158	165	1,130	842	623	250	193
8	241	177	144	137	*140	151	165	1,210	810	587	246	197
9	285	173	140	*115	140	148	158	1,260	802	569	241	193
10	250	169	137	106	140	144	162	1,260	834	539	236	189
11	232	173	134	110	148	140	169	1,290	859	*509	228	185
12	228	173	130	120	148	130	177	1,380	940	497	236	181
13	218	150	120	120	140	120	205	1,340	1,030	491	232	185
14	223	*140	110	120	134	130	260	1,130	1,090	479	228	185
15	232	170	110	110	134	130	355	958	1,090	455	228	181
16	236	165	120	110	134	130	428	*834	1,030	433	223	185
17	*232	162	110	120	137	148	491	770	886	416	228	185
18	228	158	110	120	130	137	587	700	794	400	246	185
19	214	148	110	120	137	137	648	721	818	395	265	181
20	210	158	120	120	130	134	749	794	*886	375	246	189
21	201	158	120	120	130	137	728	763	967	355	236	223
22	197	151	110	120	137	134	635	749	1,020	350	232	214
23	185	158	110	110	137	137	700	674	994	345	241	201
24	181	148	130	110	148	134	802	668	985	355	241	201
25	173	151	130	110	140	137	877	687	931	350	232	197
26	177	154	130	110	130	140	*826	700	931	340	223	193
27	189	148	120	110	120	154	728	714	913	330	214	193
28	189	148	130	120	110	158	763	654	913	325	218	201
29	181	148	151	120	-	148	707	635	904	315	214	197
30	185	148	134	120	-----	148	575	605	985	310	218	197
31	185	-----	134	120	-----	144	-----	642	-----	300	214	-----
Total	6,630	4,825	4,004	3,732	3,764	4,414	13,005	26,632	27,075	14,992	7,471	5,859
Mean	214	161	129	120	134	142	434	859	902	484	241	195
Ac-ft	13,150	9,570	7,940	7,400	7,470	8,760	25,800	52,820	53,700	29,740	14,820	11,620

Calendar year 1961: Max 810 Min 100 Mean 219 Ac-ft 158,200  
 Water year 1961-62: Max 1,380 Min 106 Mean 335 Ac-ft 242,800

Peak discharge (base, 1,000 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-24	2100	4.48	1,110	6-14	2100	4.59	1,200
5-12	2000	5.12	1,680				

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 13-15, Dec. 13-28, Jan. 11-25, Feb. 25 to Mar. 2, Mar. 12-16. No gage-height record Jan. 26 to Feb. 8.



## GREEN RIVER BASIN

9-3030. White River at Buford, Colo.

Location.--Lat 39°59', long 107°37', in NW¼ sec.9, T.1 S., R.91 W., on right bank 600 ft east of Buford and 1½ miles upstream from South Fork White River.

Drainage area.--254 sq mi.

Records available.--May 1910 to December 1915, July 1919 to December 1920, October 1951 to September 1962. Monthly discharge only for some periods, published in WSP 1313. Published as North Fork White River near Buford prior to 1951. Records for July 1903 to December 1906 at site 6½ miles upstream not equivalent owing to inflow between sites.

Gage.--Water-stage recorder. Altitude of gage is 7,010 ft (from topographic map). May 24, 1910, to May 27, 1914, staff gage at site 1½ miles upstream at different datum. May 28, 1914, to Dec. 7, 1915, and July 1, 1919, to Oct. 9, 1920, staff gage at present site at different datum.

Average discharge.--17 years, 321 cfs (232,400 acre-ft per year).

Extremes.--Maximum discharge during year, 1,790 cfs May 12 (gage height, 6.51 ft); minimum daily, 110 cfs Jan. 10. 1910-15, 1919-20, 1951-62: Maximum daily discharge, 3,150 cfs May 30, 1912; maximum gage height, 7.22 ft Jan. 9, 1961 (backwater from ice); minimum daily discharge, 90 cfs Feb. 21, 1955.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Diversions above station for irrigation of about 900 acres above and 300 acres below station.

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jen.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	236	208	170	132	130	140	160	598	722	845	338	230
2	212	199	165	150	140	160	170	587	803	796	* 334	226
3	212	175	168	148	140	170	* 170	668	845	740	329	222
4	219	205	170	150	140	190	170	866	838	692	329	* 216
5	230	178	160	150	150	170	175	1,040	* 852	650	312	212
6	233	208	178	150	160	* 160	172	1,220	852	609	312	208
7	248	208	165	150	160	160	175	1,240	845	587	308	212
8	252	196	178	140	* 160	160	175	1,260	810	550	296	212
9	312	190	165	* 130	160	160	175	1,350	782	525	292	216
10	272	190	162	110	160	160	181	1,360	810	490	288	212
11	248	187	160	120	160	160	193	1,390	852	* 475	276	208
12	244	184	143	130	170	140	205	1,470	915	465	284	202
13	230	184	139	130	160	140	244	1,460	985	465	284	205
14	236	* 168	121	130	150	150	342	1,220	1,040	455	272	202
15	252	199	127	120	150	150	495	1,050	1,020	435	268	202
16	256	181	128	120	150	160	598	* 936	971	420	264	202
17	* 252	181	126	130	150	150	662	859	859	415	268	202
18	244	175	128	130	150	150	704	782	789	395	296	202
19	230	172	124	130	140	150	824	796	796	395	320	202
20	230	181	132	130	140	150	936	880	* 852	375	288	212
21	219	187	139	130	140	160	901	852	929	356	272	252
22	212	175	128	130	150	160	789	817	964	347	268	240
23	199	178	124	120	150	160	866	722	950	342	268	226
24	199	172	155	120	150	160	999	716	901	352	268	226
25	196	172	155	120	150	160	1,030	740	880	347	256	226
26	193	175	150	120	150	160	* 978	747	880	347	252	222
27	205	172	139	120	140	170	880	768	880	338	248	222
28	208	170	146	130	120	170	915	692	866	338	248	230
29	199	165	168	130	-	170	859	668	859	338	240	230
30	202	165	148	130	-----	160	680	626	936	338	244	230
31	202	-----	143	130	-----	160	-----	650	-----	338	236	-----
Total	7,082	5,500	4,604	4,060	4,170	4,920	15,823	29,030	26,283	14,560	8,758	6,509
Mean	228	183	149	131	149	159	527	936	876	470	283	217
Ac-ft	14,050	10,910	9,130	8,050	8,270	9,760	31,380	57,580	52,130	28,880	17,370	12,910

Calendar year 1961: Max 810 Min 110 Mean 243 Ac-ft 176,000

Water year 1961-62: Max 1,470 Min 110 Mean 360 Ac-ft 260,400

Peak discharge (base, 1,000 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-24	2130	5.86	1,260	6-14	2100	5.68	1,110
5-12	2200	6.51	1,790				

\* Discharge measurement made on this day.

Note.--No gage-height record Jan. 4 to Apr. 3 (stage-discharge relation affected by ice part of period)

9-3040. South Fork White River at Buford, Colo.

Location.--Lat 39°58', long 107°38', in NW¼ sec.17, T.1 S., R.91 W., on left bank 300 ft downstream from highway bridge, three-quarters of a mile upstream from mouth, and 1 mile south of Buford.

Drainage area.--170 sq mi, approximately.

Records available.--July 1919 to December 1920, October 1951 to September 1962. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Altitude of gage is 6,970 ft (from topographic map). Prior to Nov. 30, 1920, staff gage at site 300 ft upstream at different datum.

Average discharge.--12 years, 265 cfs (191,900 acre-ft per year).

Extremes.--Maximum discharge during year, 1,880 cfs June 14 (gage height, 6.20 ft); minimum daily, 85 cfs Jan. 10.  
1919-20, 1951-62: Maximum discharge, about 3,000 cfs June 30, 1957; maximum gage height, 7.07 ft June 30, 1957; minimum daily discharge determined, 60 cfs Feb. 21, 1955.

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 1,100 acres above station and a few acres below.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used May 16 to July 20, Aug. 19 to Sept. 19)

2.8	80	4.0	355
3.0	96	4.5	620
3.3	137	5.0	1,020
3.6	205	6.0	1,970

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	188	175	141	100	110	b 100	114	440	718	1,100	239	149
2	173	171	137	110	110	b 110	116	410	930	948	* 232	149
3	171	147	139	100	110	119	* 119	400	1,180	858	232	149
4	171	157	130	110	120	124	120	435	1,300	768	235	* 147
5	171	137	107	110	120	122	120	518	* 1,310	676	220	151
6	171	147	130	110	120	* 125	120	590	1,370	614	208	151
7	178	157	120	120	120	122	120	697	1,400	572	200	147
8	183	168	126	120	* 120	118	120	840	1,190	536	195	149
9	208	157	122	* 110	130	114	120	1,050	1,040	506	195	149
10	205	157	118	85	130	119	120	1,200	1,180	465	190	149
11	192	157	b 100	100	130	113	124	1,280	1,420	435	182	151
12	188	157	b 90	100	120	106	126	1,520	1,680	415	178	151
13	182	b 120	b 100	110	120	98	132	1,600	1,780	* 400	173	153
14	180	* b 110	110	110	110	102	145	1,340	1,800	400	166	155
15	185	b 130	100	100	110	114	164	1,170	1,750	355	159	155
16	188	164	95	100	110	119	223	* 948	1,580	347	162	157
17	* 192	157	95	100	110	119	259	840	1,200	339	182	157
18	198	149	95	110	110	114	307	746	1,040	331	190	155
19	198	136	95	110	110	110	368	683	1,180	323	192	155
20	200	134	100	110	110	114	440	739	* 1,400	311	190	162
21	198	147	100	110	110	113	475	792	1,460	291	190	171
22	195	130	95	110	* 110	113	420	808	1,580	271	185	168
23	185	156	95	100	106	113	430	746	1,470	275	173	159
24	185	137	110	100	100	113	500	718	1,390	275	166	155
25	178	145	110	100	102	113	584	784	1,300	263	162	155
26	175	145	110	100	107	118	* 614	792	1,260	263	159	155
27	180	141	100	100	97	118	542	876	1,290	259	155	153
28	180	141	110	100	87	119	530	784	1,280	251	155	155
29	178	125	120	110	-	113	554	697	1,090	247	153	157
30	178	145	110	110	-----	116	490	602	1,160	247	151	153
31	175	-----	100	110	-----	113	-----	602	-----	247	149	-----
Total	5,729	4,399	3,410	3,275	3,149	3,544	8,616	25,647	39,728	13,588	5,718	4,622
Mean	185	147	110	106	112	114	287	827	1,324	438	184	154
Ac-ft	11,360	8,730	6,760	6,500	6,250	7,030	17,090	50,870	78,804	26,950	11,340	9,170

Calendar year 1961: Max 1,300 Min 75 Mean 209 Ac-ft 151,500  
Water year 1961-62: Max 1,800 Min 85 Mean 333 Ac-ft 240,800

Peak discharge (base, 1,300 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-13	0700	5.74	1,640	6-14	0500	6.20	1,880
6-7	0900	5.80	1,440	6-22	0600	5.98	1,710

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 14 to Feb. 22 (stage-discharge relation affected by ice during most of period).

## GREEN RIVER BASIN

9-3041, Big Beaver Creek near Buford, Colo.

Location.--Lat 39°58', long 107°39', in NW¼ sec.18, T.1 S., R.91 W., on right bank 165 ft upstream from bridge on County Highway 132, 500 ft upstream from mouth, and 2 miles southwest of Buford.

Drainage area.--34.6 sq mi.

Records available.--October 1955 to September 1962.

Gage.--Water-stage recorder. Prior to Sept. 7, 1957, at site 35 ft upstream at same datum.

Average discharge.--7 years, 16.7 cfs (12,090 acre-ft per year).

Extremes.--Maximum discharge during year, 270 cfs May 8 (gage height, 3.35 ft); minimum daily, 0.1 cfs Jan. 21, 22, 24, 25, 1955-62; Maximum discharge, 395 cfs June 3, 1957 (gage height, 4.46 ft); no flow at times in 1956, 1961.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Small diversions above station for irrigation of hay meadows. One diversion above station for irrigation below station along the White River.

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	11	5.8	4.0	1.4	0.8	1.6	7	118	50	8.8	2.0	0.9
2	8.4	5.8	4.0	1.4	1.2	2.2	10	114	51	6.0	* 2.2	.8
3	7.0	4.2	4.0	1.4	1.6	2.6	* 12	123	40	2.7	1.8	.8
4	7.8	5.0	3.6	1.6	2.2	3.0	15	144	* 34	2.4	1.8	*.8
5	8.1	4.2	3.8	1.6	2.8	3.4	16	176	31	2.7	1.4	.8
6	8.4	4.6	3.8	1.6	3.4	* 3.6	16	214	29	2.6	1.1	.8
7	8.4	4.8	3.8	1.6	4.0	3.6	16	208	27	2.2	1.0	.2
8	7.8	4.8	3.8	1.4	* 5.0	3.4	16	224	22	1.8	1.0	1.3
9	14	4.8	3.4	* 1.2	5.5	3.4	16	216	21	1.6	1.1	1.5
10	13	5.0	3.2	.2	6	3.0	19	194	19	1.6	1.0	1.5
11	9.5	5.0	3.0	.4	6	2.6	21	178	14	* 1.8	.8	1.6
12	10	5.0	2.6	.4	5.5	2.2	26	178	7.4	1.8	.7	1.5
13	8.4	4.6	2.0	.2	5.0	1.4	34	178	8.8	1.6	.6	1.5
14	8.4	* 3.8	2.2	.2	4.6	1.8	49	152	9.2	1.6	.7	1.5
15	8.1	4.2	2.6	.4	5.0	2.0	71	* 126	8.4	1.5	.6	1.4
16	8.1	4.2	2.6	.3	5.0	2.4	85	112	8.4	1.4	.6	1.4
17	* 7.8	4.5	2.4	.2	4.6	2.6	94	104	8.1	2.0	.6	1.4
18	7.0	4.2	2.4	.2	4.2	2.8	110	96	7.8	2.6	.9	1.4
19	6.4	4.0	2.2	.2	4.0	3.0	123	98	6.7	3.1	1.1	1.3
20	6.0	4.2	2.4	.2	3.8	3.0	138	102	* 6.0	3.3	1.2	1.3
21	5.5	4.2	2.2	.1	3.8	3.2	142	94	5.5	3.1	1.3	1.6
22	5.0	3.8	2.0	.1	3.6	3.2	129	92	5.5	3.3	1.3	1.5
23	4.8	4.2	1.8	.2	3.4	3.4	142	84	5.2	3.5	1.3	1.3
24	4.5	4.2	1.8	.1	3.2	3.4	172	79	4.8	3.5	1.1	1.4
25	4.2	3.8	2.0	.1	3.0	3.2	190	77	4.2	3.3	.9	1.5
26	4.0	4.2	2.0	.2	2.6	3.8	* 186	71	4.5	3.3	.9	1.6
27	4.8	4.0	1.2	.2	2.0	4.2	164	66	4.5	2.6	1.0	1.8
28	5.2	4.2	1.4	.3	1.0	5	168	61	4.2	2.4	1.0	2.0
29	4.8	4.0	1.8	.4	-	5.5	158	56	4.8	2.0	1.0	2.4
30	4.8	4.2	1.8	.4	-----	5	132	48	9.2	1.8	1.1	2.6
31	5.0	-----	1.6	.4	-----	6	-----	51	-----	2.2	1.1	-----
Total	226.2	133.5	81.4	18.6	102.8	99.5	2,477	3,834	461.2	84.1	34.2	41.9
Mean	7.30	4.45	2.63	0.60	3.67	3.21	82.6	124	15.4	2.71	1.10	1.40
Ac-ft	449	265	161	37	204	197	4,910	7,600	915	167	68	83

Calendar year 1961: Max 92 Min 0 Mean 8.90 Ac-ft 6,440  
 Water year 1961-62: Max 224 Min 0.1 Mean 20.8 Ac-ft 15,060

Peak discharge (base, 200 cfs).--May 8 (2330) 270 cfs (3.35 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 3-9, 13-15, 19-24, 29, Dec. 4 to Jan. 9, Mar. 7-13. No gage-height record Jan. 10-12, Jan. 24 to Mar. 6, Mar. 14 to Apr. 3 (stage-discharge relation affected by ice during part of periods).

9-3042. White River above Coal Creek, near Meeker, Colo.

Location--Lat 40°00'20", long 107°49'30", on base line between sec.33, T.1 N., and sec.3, T.1 S., R.93 W., on right bank 16 ft upstream from county road bridge, 2 miles upstream from Coal Creek, and 5 miles southeast of Meeker.

Drainage area--660 sq mi, approximately.

Records available--October 1961 to September 1962.

Gage--Water-stage recorder. Altitude of gage is 6,400 ft (from topographic map).

Extremes--Maximum discharge during year, 3,580 cfs May 13 (gage height, 5.41 ft); minimum daily, 180 cfs Jan. 10.

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 8,000 acres above station and about 4,000 acres below.

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

Oct. 1 to June 30		July 1 to Sept. 30	
1.2	175	1.5	240
1.5	265	2.0	450
2.0	500	2.5	720
3.0	1,200	3.0	1,110
5.0	3,130	4.0	2,100
5.5	3,690		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	511	440	336	260	280	328	332	1,420	1,550	2,060	460	308
2	470	420	332	260	300	314	341	1,370	1,820	1,860	*428	304
3	465	360	336	260	300	310	*365	1,420	2,090	1,740	436	300
4	470	400	320	260	320	305	375	1,690	2,210	1,610	455	300
5	470	340	300	260	320	*301	385	1,960	*2,230	1,460	446	312
6	475	360	340	280	340	328	385	2,270	2,250	1,300	441	*312
7	485	400	320	300	340	328	390	2,420	2,280	1,210	460	304
8	495	420	320	260	*360	305	390	2,720	2,120	1,140	428	300
9	522	400	300	*210	b 380	297	385	2,940	1,940	1,040	405	308
10	544	400	300	b 180	b 380	305	390	3,160	2,040	948	396	304
11	500	380	280	b 240	360	297	410	3,170	2,220	*818	382	284
12	490	380	240	260	375	285	425	3,320	2,440	769	369	268
13	475	*340	300	260	350	285	475	3,390	2,580	755	352	268
14	480	314	360	260	301	293	582	*2,940	2,670	755	320	288
15	490	360	340	240	301	318	754	2,380	2,640	684	296	292
16	*500	375	b340	240	301	305	976	2,350	2,480	648	272	308
17	500	365	b340	240	305	314	1,080	2,150	2,120	618	252	304
18	500	355	b340	260	285	301	1,270	1,890	1,870	570	264	288
19	490	328	b340	280	297	297	1,460	1,780	1,930	560	316	280
20	485	332	*b340	300	328	305	1,690	1,900	2,150	540	276	296
21	470	370	b320	280	314	301	1,750	1,930	*2,310	515	260	340
22	465	328	b320	260	310	305	1,510	1,910	2,500	505	288	356
23	435	370	b300	240	314	301	1,600	1,760	2,380	510	308	336
24	435	346	b300	240	301	301	1,790	1,670	2,280	530	332	320
25	400	350	b320	260	310	301	*2,000	1,720	2,200	530	336	324
26	420	355	b300	260	318	323	2,050	1,710	2,170	530	360	320
27	440	346	b260	260	285	350	1,840	1,820	2,180	550	369	320
28	440	346	260	260	262	375	1,910	1,700	2,190	525	382	336
29	440	318	300	260	-	341	1,920	1,560	2,030	480	392	356
30	420	341	300	280	-----	332	1,600	1,430	2,200	475	400	352
31	420	-----	260	280	-----	328	-----	1,420	-----	475	340	-----
Total	14,662	10,939	9,664	7,990	8,937	9,679	30,830	65,270	66,080	26,710	11,221	9,288
Mean	473	365	312	258	319	312	1,028	2,105	2,203	862	362	310
Ac-ft	29,080	21,700	19,170	15,850	17,730	19,200	61,150	129,500	131,100	52,980	22,260	18,420

Calendar year 1961: Max - Min - Mean - Ac-ft -  
 Water year 1961-62: Max 3,390 Min 180 Mean 743 Ac-ft 538,100

Peak discharge (base, 2,000 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-25	0130	4.06	2,190	6-15	0600	4.62	2,750
5-13	0030	5.41	3,580				

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Oct. 25 to Nov. 13, Dec. 4-15, Dec. 28 to Jan. 9, Jan. 12 to Feb. 8 (stage-discharge relation affected by ice during part of periods).



## GREEN RIVER BASIN

9-3043. Coal Creek near Meeker, Colo.

Location.--Lat 40°05'30", long 107°46'05", in NE¼ sec.1, T.1 N., R.93 W., on right bank 200 ft downstream from unnamed tributary, 300 ft above headgate of ditch, 1.3 miles below Ninemile Draw, and 8 miles northeast of Meeker.

Drainage area.--25 sq mi, approximately.

Records available.--October 1957 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 6,820 ft (from topographic map).

Average discharge.--5 years, 6.09 cfs (4,410 acre-ft per year).

Extremes.--Maximum discharge during year, 77 cfs May 8 (gage height, 4.11 ft); minimum daily, 0.9 cfs Sept. 7.

1957-62: Maximum discharge, 102 cfs May 11, 1958 (gage height, 4.37 ft); minimum daily, 0.4 cfs Sept. 9, 10, Nov. 20-23, 1959, Aug. 24, 1961.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Slight regulation by two small storage reservoirs above station. Diversions for irrigation of a few acres of hay meadows above station.

Rating tables, 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

2.4	1.6	2.2	0.5	2.8	10
2.5	3.0	2.3	1.0	3.2	21
2.6	5.0	2.4	2.0	3.5	34
		2.6	5.6	4.0	68

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.6	2.6					5.4	36	17	5.0	1.8	1.4
2	3.0	2.4					5.8	34	16	4.6	1.6	1.3
3	2.9	2.2					7.2	33	24	4.3	1.7	1.2
4	2.7	2.4					7.6	36	*23	4.1	2.0	1.2
5	2.7	2.4					*7.6	43	24	3.9	2.5	1.1
6	2.6	2.4					7.8	54	24	3.9	2.5	*1.1
7	2.6	2.6			(*)	(*)	8.3	62	23	3.4	2.5	9
8	2.7	2.8				2.5	8.1	63	21	3.4	2.5	1.0
9	4.8	3.0					7.8	65	21	3.2	2.5	1.1
10	4.0	3.0		(*)			8.8	63	22	2.8	2.5	1.2
11	3.4	3.0					10	62	20	*2.5	2.5	1.2
12	3.2	2.8					12	55	20	2.5	2.3	1.2
13	3.6	*2.8					16	50	20	2.5	2.3	1.0
14	3.4	2.6					20	44	19	2.5	2.2	1.1
15	3.2	2.8					28	*38	17	2.5	1.9	1.0
16	*2.7	3.0	2.2	1.6	2		36	34	16	2.7	1.9	1.0
17	2.3	2.8					38	30	14	2.7	2.0	1.0
18	2.2	2.8					43	27	13	2.5	2.3	1.0
19	2.2	2.8					50	23	13	2.7	2.5	1.1
20	2.0	2.8					61	21	*12	2.5	2.3	1.0
21	1.9	2.8					51	21	12	2.2	1.6	1.3
22	1.9	2.6					43	23	13	2.0	1.4	1.4
23	1.9	2.8				3.5	44	21	13	1.9	1.7	1.2
24	1.9	2.8					52	20	11	1.9	1.7	1.2
25	1.9	3.0					*57	19	9.5	1.9	1.6	1.2
26	2.0	3.0					62	22	6.8	1.9	1.5	1.3
27	2.8	3.0					51	28	6.0	1.9	1.5	1.4
28	2.8	2.8					51	27	4.3	1.9	1.6	1.8
29	2.6	2.6					48	24	4.5	1.8	1.6	1.7
30	2.4	2.4					41	22	5.0	1.8	1.7	1.5
31	2.4	-----			-----		-----	20	-----	*1.7	1.5	-----
Total	84.3	81.8	68.2	49.6	56	93.5	888.4	1,120	464.1	85.1	61.7	36.1
Mean	2.72	2.73	2.2	1.6	2	3.0	29.6	36.1	15.5	2.75	1.99	1.20
Ac-ft	167	162	135	98	111	185	1,760	2,220	921	169	122	72

Calendar year 1961: Max 28 Min 0.4 Mean 3.92 Ac-ft 2,840

Water year 1961-62: Max 65 Min 0.9 Mean 8.46 Ac-ft 6,120

Peak discharge (base, 50 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-20	2100	4.10	76	5-8	2300	4.11	77
4-24	2100	4.01	69				

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 26 to Mar. 31 (stage-discharge relation affected by ice during most of period).

9-3045. White River near Meeker, Colo.

Location.--Lat 40°02'00", long 107°51'35", in NE¼ sec.30, T.1 N., R.93 W., on left bank 1 mile upstream from Curtis Creek and 2½ miles east of Meeker.

Drainage area.--762 sq mi.

Records available.--June 1901 to December 1906, October 1909 to September 1962. Monthly discharge only for some periods, published in WSP 1313. Published as "at Meeker" 1901-13.

Gage.--Water-stage recorder. Altitude of gage is 6,320 ft (from topographic map). Prior to Oct. 31, 1906, and May 7 to Aug. 13, 1910, staff gage and Aug. 14, 1910, to Oct. 19, 1913, water-stage recorder, at site 2½ miles downstream at different datum. Oct. 20, 1913, to Sept. 30, 1933, water-stage recorder at present site at datum 1.00 ft higher.

Average discharge.--58 years, 633 cfs (458,300 acre-ft per year).

Extremes.--Maximum discharge during year, 4,150 cfs May 13 (gage height, 3.90 ft); minimum daily, 200 cfs Jan. 10.

1901-6, 1909-62: Maximum discharge observed, 6,370 cfs June 16, 1921 (gage height, 5.60 ft, present datum), from rating curve extended above 4,700 cfs; minimum daily, 112 cfs July 17, 1934.

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 12,000 acres above station and about 3,000 acres below.

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 Dec. 20, Mar. 28 to Apr. 12, Apr. 19, 20)

Oct. 1 to Apr. 20

Apr. 21 to Sept. 30

0.1	190	2.0	1,090	0.4	295	2.0	1,190
.3	230	2.5	1,550	1.0	530	3.0	2,440
1.0	510	3.0	2,200	1.5	780	3.9	4,150
1.5	750						

Discharge, in cubic feet per second, water year October 1962 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	542	470	380	b 280	320	b 300	320	1,450	1,440	2,030	530	357
2	501	460	371	b 280	320	b 340	400	1,370	1,700	1,840	503	353
3	492	398	375	b 280	320	b 360	* 420	1,400	1,980	1,700	503	341
4	492	452	363	300	340	359	420	1,680	2,130	1,580	521	337
5	492	380	315	300	340	* 331	434	1,960	* 2,140	1,410	508	345
6	492	402	384	300	360	375	442	2,360	2,180	1,290	494	* 357
7	501	452	335	320	360	375	442	2,540	2,220	1,220	521	341
8	510	452	355	320	380	355	442	2,730	2,040	1,170	481	337
9	610	442	343	260	* 420	339	438	2,940	1,880	1,050	461	345
10	582	434	327	* 200	460	351	447	3,190	1,980	* 960	453	345
11	532	438	303	240	420	339	474	3,270	2,200	843	433	325
12	519	429	280	280	420	307	501	3,530	2,440	801	425	322
13	496	* 406	300	280	380	284	560	3,770	2,690	794	413	322
14	501	355	400	280	360	299	685	* 3,090	2,820	794	369	325
15	506	420	360	260	340	343	846	2,600	2,780	744	345	329
16	* 514	424	360	260	360	331	1,040	2,200	2,580	710	319	353
17	510	420	340	260	340	347	1,150	1,960	2,180	690	310	353
18	514	406	340	280	320	331	1,330	1,770	1,840	660	333	333
19	510	355	340	320	320	327	1,510	1,630	1,920	655	389	329
20	501	380	* 360	340	320	343	1,730	1,760	2,100	635	373	349
21	483	420	b 340	320	320	339	1,860	1,800	* 2,270	616	333	433
22	488	375	b 320	300	* b 300	343	1,600	1,770	2,390	598	369	453
23	465	420	b 300	260	b 320	340	1,690	1,640	2,360	598	381	413
24	460	393	b 320	280	b 320	340	1,880	1,540	2,220	625	393	397
25	442	398	b 340	280	b 320	360	* 2,080	1,600	2,140	616	377	397
26	452	406	b 320	300	b 320	420	2,130	1,620	2,100	611	369	393
27	465	398	b 280	300	b 300	480	1,900	1,720	2,130	620	357	393
28	478	388	b 260	300	b 240	460	1,940	1,630	2,110	606	353	421
29	460	355	b 320	300	-	400	2,000	1,460	1,940	552	369	441
30	452	388	b 300	300	-----	360	1,650	1,310	2,140	548	373	433
31	465	-----	b 280	300	-----	380	-----	1,290	-----	* 544	365	-----
Total	15,427	12,316	10,311	8,880	9,700	10,958	32,821	64,580	65,040	28,110	12,723	10,972
Mean	498	411	333	286	346	353	1,094	2,083	2,168	907	410	366
Ac-ft	30,600	24,430	20,450	17,610	19,240	21,730	65,100	128,100	129,000	55,760	25,240	21,760

Calendar year 1961: Max 1,950 Min 170 Mean 468 Ac-ft 338,900  
 Water year 1961-62: Max 3,770 Min 200 Mean 772 Ac-ft 559,000

Peak discharge (base, 2,100 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-25	0230	2.92	2,310	6-15	0800	3.28	2,920
5-13	0400	3.90	4,150				

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 12-20, Jan. 4 to Feb. 21 (stage-discharge relation affected by ice most of period), Mar. 23 to Apr. 3.

## GREEN RIVER BASIN

9-3048, White River below Meeker, Colo.

Location.--40°00'30", long 108°06'00", in center of sec.31, T.1 N., R.95 W., on left bank 30 ft downstream from county bridge, 3½ miles downstream from Strawberry Creek, and 10 miles west of Meeker.

Drainage area.--1,040 sq mi, approximately.

Records available.--October 1961 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is about 5,900 ft (estimated from nearby level line).

Extremes.--Maximum discharge during year, 3,580 cfs May 13 (gage height, 3.88 ft); minimum daily, 220 cfs Jan. 10.

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 22,000 acres above and a few acres below.

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

0.9	280
1.2	400
2.0	940
2.5	1,400
3.0	2,050
3.8	3,430

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	629	502	390	340	340	360	490	1,420	1,330	2,050	562	395
2	580	502	385	340	360	360	* 526	1,340	1,560	1,860	538	390
3	556	400	385	320	380	340	538	1,330	1,830	1,670	526	380
4	550	490	375	340	400	340	550	1,550	1,940	1,580	550	370
5	550	430	330	340	420	* 340	544	1,800	* 2,110	1,440	532	375
6	550	400	385	340	440	412	550	2,240	2,190	1,280	514	* 380
7	550	460	360	340	460	385	532	2,380	2,230	1,190	544	375
8	562	460	350	320	* 500	370	544	2,620	2,110	1,170	526	370
9	727	460	375	280	540	355	508	2,750	1,890	1,060	490	375
10	692	460	342	* 220	600	360	508	2,960	1,900	* 1,030	478	380
11	678	448	346	260	640	350	520	3,090	2,110	924	442	365
12	574	448	260	280	700	334	526	3,180	2,350	924	436	355
13	556	* 418	280	300	600	322	556	3,380	2,570	924	430	346
14	550	375	500	320	500	318	657	* 3,110	2,650	924	385	350
15	562	418	400	300	400	342	783	2,550	2,650	868	355	355
16	* 580	454	380	300	440	350	996	2,130	2,530	790	338	350
17	580	430	380	300	380	360	1,040	1,900	2,190	755	318	355
18	580	418	360	320	320	365	1,200	1,680	1,840	699	350	330
19	574	375	360	340	360	360	1,390	1,510	1,830	713	436	322
20	562	395	* 380	360	380	400	1,610	1,580	2,080	692	478	334
21	544	418	400	360	360	418	2,020	1,640	* 2,330	650	400	418
22	532	375	380	360	360	400	1,760	1,640	2,410	622	430	472
23	508	424	360	340	360	400	1,770	1,560	2,380	615	436	442
24	502	395	340	280	340	430	1,980	1,440	2,240	629	448	424
25	490	400	360	300	340	502	* 2,020	1,460	2,130	615	436	424
26	478	412	380	320	360	671	2,070	1,490	2,070	629	400	412
27	490	400	360	320	320	924	1,840	1,580	2,070	615	390	418
28	502	400	340	320	280	884	1,840	1,530	2,080	636	390	442
29	496	375	320	320	-	594	1,960	1,390	1,940	568	390	466
30	490	390	340	320	-----	502	1,620	1,280	2,130	562	395	454
31	496	-----	340	320	-----	460	-----	1,240	-----	* 562	400	-----
Total	17,270	12,732	11,243	9,820	11,880	13,308	33,448	60,750	63,670	29,246	13,743	11,624
Mean	557	424	363	317	424	429	1,115	1,960	2,122	943	443	387
Ac-ft	34,250	25,250	22,300	19,480	23,560	26,400	66,340	120,500	126,300	58,010	27,260	23,060

Calendar year 1961 Max - Min - Mean - Ac-ft -  
Water year 1961-62 Max 3,380 Min 220 Mean 791 Ac-ft 572,700

Peak discharge (base, 2,000 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-25	0830	3.11	2,230	6-15	1130	3.44	2,790
5-13	0930	3.88	3,580				

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 12-14, Dec. 21 to Jan. 30, Feb. 8-13. No gage-height record Dec. 15-20, Jan. 31 to Feb. 8, Feb. 14 to Mar. 5 (stage-discharge relation affected by ice during most of period).

## GREEN RIVER BASIN

297

9-3065. White River near Watson, Utah

Location.--Lat 39°59', long 109°11', in sec.2, T.10 S., R.24 E., Salt Lake meridian, on right bank 350 ft downstream from bridge on State Highway 45, 1 mile downstream from Evacuation Creek, and 7 miles north of Watson.

Drainage area.--4,020 sq mi, approximately.

Records available.--April 1904 to October 1906 (no winter records), May to November 1918, April 1923 to September 1962. Monthly discharge only for some periods, published in WSP 1313. Published as "near Dragon" 1906 and as "near Rangely, Colo." 1904-5, 1918.

Gage.--Water-stage recorder. Datum of gage is 4,946.78 ft above mean sea level, datum of 1929. Apr. 15, 1904, to Oct. 31, 1905, and May 19 to Nov. 23, 1918, staff gage at site 25 miles upstream (half a mile northwest of Rangely, Colo.) at different datum. Apr. 1 to Oct. 31, 1906, staff or chain gages at site 350 ft upstream at different datum. Apr. 1, 1923, to Oct. 3, 1938, water-stage recorder at site 350 ft upstream at datum 4.48 ft higher; Oct. 4, 1938, to Apr. 17, 1939, at site 1,450 ft upstream at different datum; Apr. 18, 1939, to Sept. 6, 1956, at site 100 ft upstream at datum 3.00 ft higher; Sept. 7, 1956, to Oct. 26, 1959, at site 250 ft upstream at datum 3.00 ft higher.

Average discharge.--39 years (1923-62), 720 cfs (521,300 acre-ft per year).

Extremes.--Maximum discharge during year, 6,760 cfs Mar. 28 (gage height, 9.06 ft); maximum gage height, 13.1 ft Feb. 11, from flood-mark in well (backwater from ice); minimum daily discharge, 78 cfs Dec. 11. 1904-6, 1918, 1923-62: Maximum daily discharge, 8,160 cfs July 15, 1929; maximum gage height, that of Feb. 11, 1962; minimum discharge, 52 cfs July 19, 20, 1934; minimum daily, 53 cfs July 19, 1934.

Remarks.--Records good except those for period of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 30,000 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 Apr. 4, 5, June 2-23)

2.3	60	4.0	1,100
2.6	140	6.0	3,150
3.0	300	8.0	5,510
3.5	630		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	686	501	398	380	340	220	870	2,010	1,510	2,220	* 501	350
2	670	501	410	380	360	* 220	970	1,790	1,580	2,050	501	356
3	614	501	404	340	380	300	1,080	1,690	1,780	1,880	508	350
4	574	459	404	340	360	400	* 1,170	1,630	* 2,010	1,730	501	345
5	558	452	398	360	340	487	1,080	1,820	2,170	1,620	508	* 325
6	550	* 438	362	380	* 320	392	960	2,080	2,190	1,550	501	325
7	550	392	374	380	400	445	830	2,480	2,210	1,350	473	330
8	598	431	380	380	550	529	870	2,660	2,220	1,240	459	325
9	1,890	452	350	360	650	590	870	2,890	2,100	1,220	480	325
10	1,000	445	275	320	800	662	737	3,100	1,920	1,090	459	320
11	791	438	78	260	2,000	536	719	3,200	1,960	1,020	445	340
12	* 662	431	480	* 200	1,600	445	737	3,390	2,140	* 910	417	340
13	614	431	550	220	1,400	356	782	3,510	2,350	860	398	330
14	574	404	410	220	1,200	340	840	* 3,720	2,590	840	398	325
15	558	380	360	320	1,100	300	990	3,330	2,660	830	380	325
16	558	374	340	360	1,000	330	1,190	2,830	2,630	773	356	325
17	550	445	360	360	910	424	1,420	2,460	2,510	710	340	325
18	558	473	380	340	746	746	1,500	2,200	2,210	670	320	330
19	558	438	400	340	* 622	1,000	1,600	2,000	1,950	614	330	325
20	558	398	420	360	536	1,200	1,850	1,810	1,930	606	345	335
21	543	398	420	380	543	2,000	2,010	1,860	2,100	590	452	320
22	529	410	400	380	494	1,700	2,250	1,880	* 2,250	550	398	356
23	522	417	380	380	487	1,500	2,000	1,870	2,340	536	374	431
24	515	398	360	360	480	1,100	* 1,900	1,770	2,320	515	392	410
25	494	466	340	320	431	900	2,060	1,670	2,240	515	398	398
26	494	438	360	340	325	2,000	2,290	1,670	2,150	522	392	392
27	487	431	380	340	152	* 4,050	2,400	1,710	2,100	536	368	398
28	501	431	380	340	240	5,010	2,230	1,820	2,110	536	356	398
29	522	410	360	340	-	3,020	2,270	1,770	2,120	566	345	410
30	515	404	340	340	-----	1,340	2,330	1,620	2,050	515	345	438
31	494	-----	360	340	-----	920	-----	1,520	-----	494	345	-----
Total	19,287	12,987	11,613	10,460	18,766	33,462	42,805	69,760	64,400	29,658	12,785	10,602
Mean	622	433	375	337	670	1,079	1,427	2,250	2,147	957	412	353
Ac-ft	38,260	25,760	23,030	20,750	37,220	66,370	84,900	138,400	127,700	58,830	25,360	21,030

Calendar year 1961: Max 2,490 Min 78 Mean 513 Ac-ft 371,400  
Water year 1961-62: Max 5,010 Min 78 Mean 922 Ac-ft 667,600

Peak discharge (base, 2,900 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
2-11	1600	13.1	unknown	5-14	1300	6.62	3,910
3-28	1730	9.06	6,760				

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 15 to Jan. 28, Feb. 7-10, Feb. 28 to Mar. 4. No gage-height record Jan. 29 to Feb. 6, Feb. 11-16 (stage-discharge relation affected by ice part of periods), Mar. 19-26.



## SAN JUAN RIVER BASIN

9-3399, East Fork San Juan River above Sand Creek, near Pagosa Springs, Colo.

Location.--Lat 37°23'25", long 106°50'25", in NE¼ sec.4, T.36 N., R.1 E., on right bank 0.3 mile upstream from Sand Creek, 4 miles upstream from West Fork San Juan River, and 13 miles northeast of Pagosa Springs.

Drainage area.--64.1 sq mi.

Records available.--October 1956 to September 1962. Prior to October 1959, published as San Juan River above Sand Creek, near Pagosa Springs.

Gage.--Water-stage recorder. Altitude of gage is 8,900 ft (from topographic map).

Average discharge.--6 years, 90.6 cfs (65,590 acre-ft per year).

Extremes.--Maximum discharge during year, 615 cfs May 12 (gage height, 4.99 ft); minimum not determined.

1956-62: Maximum discharge, 1,210 cfs June 6, 1957 (gage height, 6.32 ft); minimum daily determined, 3.4 cfs Dec. 26, 1958. Maximum flood known occurred Oct. 5, 1911.

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

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

2.6	9	3.6	116
2.8	18	4.0	210
3.0	33	4.5	390
3.3	68	5.0	610

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	39	38					b 34	210	237	222	43	14
2	35	32					b 40	210	272	202	* 38	14
3	33	b 22					56	244	296	185	35	14
4	31	b 22					71	314	366	* 175	31	14
5	* 30	b 24					72	406	* 410	165	27	* 13
6	28	b 22					76	452	426	160	24	13
7	27	(*)					82	511	430	145	23	20
8	27						81	538	402	136	23	21
9	67						75	556	406	131	22	19
10	50						71	* 560	410	116	21	16
11	48						72	560	422	107	29	15
12	49					20	92	570	422	102	48	14
13	45						129	488	430	98	35	13
14	48						188	418	422	87	31	13
15	48		15	15	20		268	338	366	76	26	13
16	48						346	272	303	67	24	13
17	47						382	228	244	63	22	13
18	44	22					418	210	247	62	21	12
19	42						457	200	* 268	62	22	12
20	41						484	240	310	58	23	19
21	39						426	254	338	49	28	38
22	42						330	237	342	53	28	36
23	36						306	264	330	51	23	26
24	32						378	* 314	303	55	22	22
25	31						406	318	278	55	19	22
26	29					33	386	310	261	50	18	23
27	32					* 35	350	326	254	47	16	24
28	30					42	354	275	234	42	16	27
29	31					47	330	225	225	32	16	27
30	28					42	254	202	231	43	16	22
31	36	-----			-----	b 34	-----	216	-----	49	14	-----
Total	1,193	688	465	465	560	733	7,014	10,466	9,885	2,952	784	562
Mean	38.5	22.9	15	15	20	23.6	234	338	330	95.2	25.3	18.7
Ac-ft	2,370	1,360	922	922	1,110	1,450	13,910	20,760	19,610	5,860	1,560	1,110

Calendar year 1961: Max 366 Min - Mean 63.0 Ac-ft 45,600  
Water year 1961-62: Max 570 Min - Mean 98.0 Ac-ft 70,940

Peak discharge (base, 500 cfs).--Apr. 19 (1900) 547 cfs (4.85 ft); May 12 (0030) 615 cfs (4.99 ft).

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 7 to Mar. 27 (stage-discharge relation affected by ice during most of period).

9-3400. East Fork San Juan River near Pagosa Springs, Colo.

Location--Lat 37°22'00", long 106°53'40", in SE¼ sec.12, T.36 N., R.1 W., on right bank a quarter of a mile upstream from private highway bridge, half a mile upstream from West Fork, and 9.5 miles northeast of Pagosa Springs.

Drainage area--86.9 sq mi.

Records available--May 1935 to September 1962. Prior to October 1959, published as San Juan River near Pagosa Springs.

Gage--Water-stage recorder. Datum of gage is 7,597.63 ft above mean sea level, datum of 1929. Prior to Sept. 8, 1938, at site a quarter of a mile downstream at different datum.

Average discharge--27 years, 121 cfs (87,600 acre-ft per year).

Extremes--Maximum discharge during year, 880 cfs May 10 (gage height, 3.80 ft); minimum daily, 14 cfs Dec. 12.  
1935-62: Maximum discharge, 2,070 cfs May 12, 1941 (gage height, 4.84 ft), from rating curve extended above 1,300 cfs; minimum daily, 5.5 cfs Dec. 20, 1939.  
Maximum flood known occurred Oct. 5, 1911.

Remarks--Records good except those for periods of ice effect, which are poor. Diversions above station for irrigation of a few hundred acres of hay meadows below station.

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

Oct. 1 to Mar. 20

Mar. 21 to Sept. 30

1.2	12	1.8	76	1.2	14	2.5	245
1.3	18	2.1	145	1.4	24	3.0	450
1.5	35			1.7	54	3.7	820
				2.0	106		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	46	52	27	22	26	20	50	* 324	320	273	48	18
2	42	47	28	22	28	24	63	324	360	248	44	17
3	40	36	27	22	30	28	86	360	392	224	* 42	17
4	* 37	34	22	22	30	26	* 104	455	460	* 207	39	* 17
5	36	36	20	22	32	28	102	550	515	195	34	18
6	33	34	18	24	36	* 32	110	630	* 545	189	31	19
7	32	* 32	18	24	* 40	30	119	738	540	169	30	27
8	33	39	20	24	38	28	119	* 760	500	158	29	28
9	107	39	18	22	36	26	108	732	500	148	28	23
10	76	40	18	20	38	24	98	772	510	133	26	20
11	71	43	16	18	38	22	98	790	540	121	34	20
12	73	45	14	20	34	22	128	760	540	115	56	18
13	68	40	* 18	22	38	22	192	688	555	113	39	18
14	76	38	22	22	34	20	284	570	545	96	36	17
15	78	36	24	20	30	22	378	455	475	84	30	17
16	74	* 34	26	18	28	22	475	374	387	74	29	17
17	70	34	26	18	26	24	530	320	320	72	27	18
18	65	33	24	20	26	24	585	300	324	69	26	16
19	60	28	22	22	24	24	640	300	* 340	69	26	16
20	56	30	22	22	24	24	710	344	392	66	32	26
21	54	32	24	20	24	24	540	356	418	58	36	56
22	59	30	26	22	22	23	374	320	423	60	35	47
23	50	28	26	20	22	23	364	356	405	58	30	33
24	45	32	26	22	24	22	450	410	374	63	26	30
25	41	34	26	22	22	22	545	* 418	348	64	23	30
26	40	34	24	22	18	30	500	400	328	60	22	33
27	43	32	22	22	20	46	480	414	316	54	21	37
28	41	30	24	22	16	65	520	360	292	48	20	40
29	41	28	24	22	-	76	490	300	292	46	19	38
30	42	30	24	24	62	382	280	292	292	49	19	31
31	50	-----	24	26	-----	46	-----	292	-----	56	18	-----
Total	1,679	1,060	700	670	804	931	9,624	14,452	12,548	3,439	955	762
Mean	54.2	35.3	22.6	21.6	28.7	30.0	321	466	418	111	30.8	25.4
Ac-ft	3,330	2,100	1,390	1,330	1,590	1,850	19,090	28,670	24,890	6,820	1,890	1,510

Calendar year 1961: Max 475 Min 8 Mean 83.9 Ac-ft 60,720  
Water year 1961-62: Max 790 Min 14 Mean 130 Ac-ft 94,460

Peak discharge (base, 600 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-20	1730	3.70	820	6-13	2300	3.35	625
5-10	2200	3.80	880				

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 3-7, 13, 14, 19-30, Dec. 4 to Mar. 20 (no gage-height record Jan. 19 to Feb. 6), Mar. 24-28, 31, Apr. 1.

## SAN JUAN RIVER BASIN

9-3425. San Juan River at Pagosa Springs, Colo.

Location.--Lat 37°15'50", long 107°00'40", in S½ sec.13, T.35 N., R.2 W., on right bank at former bridge site in Pagosa Springs, 0.2 mile upstream from McCabe Creek, 0.6 mile downstream from bridge on U. S. Highway 160, and 2 miles upstream from Mill Creek.

Drainage area.--298 sq mi.

Records available.--October 1910 to December 1914, May 1935 to September 1962. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 7,052.04 ft above mean sea level, datum of 1929. Jan. 29 to Mar. 6, 1911, staff gage at site half a mile upstream at different datum. Mar. 7 to Oct. 4, 1911, staff gage at present site at different datum. Nov. 23, 1911, to Nov. 14, 1914, staff gage at site 300 ft downstream at different datum.

Average discharge.--31 years, 380 cfs (275,100 acre-ft per year).

Extremes.--Maximum discharge during year, 2,410 cfs May 11 (gage height, 5.44 ft); minimum daily, 19 cfs Sept. 4, 5. 1910-14, 1935-62: Maximum discharge, about 25,000 cfs Oct. 5, 1911 (gage height, 17.8 ft, from floodmarks), from velocity-area study; minimum daily, 9.7 cfs Oct. 5, 6, 1956. Maximum stage known, that of Oct. 5, 1911. Flood of June 29, 1927, reached a stage of 13.5 ft (discharge, about 16,000 cfs), from information by local residents.

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

Rating tables (gage height, in feet, and discharge,  
in cubic feet per second)  
(Shifting-control method used Oct. 1 to Dec. 12, May 18-24, Sept. 2-5)

Dec. 13 to May 24				May 25 to Sept. 30			
2.0	45	3.4	560	1.6	13	3.0	305
2.2	68	4.0	1,040	1.7	20	3.5	530
2.5	130	5.5	2,470	2.0	57	4.0	860
2.9	280			2.4	129	5.0	1,850

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	145	a 150	93	71	76	82	181	886	804	706	114	26
2	* 131	a 140	89	* 70	82	89	240	* 910	972	632	97	23
3	129	a 120	89	a 70	87	91	325	1,020	1,110	* 584	* 89	23
4	118	a 130	75	a 70	95	80	* 375	1,260	1,340	536	87	19
5	112	a 130	63	a 70	103	85	365	1,490	1,520	510	79	* 19
6	104	a 120	62	a 75	101	* 89	375	1,630	* 1,590	495	70	24
7	98	a 120	58	a 75	108	95	402	1,920	1,600	450	62	35
8	100	* 134	54	a 75	103	91	408	2,040	1,480	403	63	49
9	409	134	60	a 70	99	89	392	* 2,140	1,510	365	58	40
10	294	131	54	a 65	101	82	375	2,220	1,550	317	54	34
11	238	143	43	a 60	110	83	355	2,230	1,620	274	58	31
12	260	147	a 40	a 60	122	68	454	2,230	1,660	256	106	28
13	226	123	* 58	a 65	167	85	630	1,950	1,670	252	75	21
14	242	106	63	a 70	142	73	894	1,740	1,580	220	74	22
15	252	127	71	a 70	* 136	80	1,150	1,440	1,390	194	64	23
16	252	118	70	* a 65	128	80	1,360	1,180	1,120	172	56	21
17	242	121	70	64	118	85	1,490	977	900	157	54	27
18	229	110	70	65	101	82	1,580	862	900	154	49	25
19	214	89	a 70	65	105	85	1,730	790	980	154	49	22
20	205	89	a 75	65	105	91	1,820	942	* 1,140	154	53	31
21	191	106	a 75	64	101	89	1,640	959	1,160	140	69	106
22	208	79	a 80	64	83	87	1,320	846	1,160	131	66	95
23	183	77	a 70	65	99	87	1,210	934	1,120	136	57	79
24	164	87	a 70	65	99	85	1,390	1,100	1,020	147	49	69
25	157	100	a 70	65	91	95	1,540	* 1,150	964	150	43	64
26	147	102	a 70	64	78	125	1,540	1,050	892	145	40	70
27	152	93	a 70	63	76	184	1,360	1,140	853	131	39	72
28	143	93	73	63	73	266	1,360	956	* 776	116	38	95
29	138	87	73	64	-	262	1,270	790	769	104	35	89
30	136	97	75	67	-----	203	1,040	713	769	100	35	72
31	a 140	-----	73	73	-----	164	-----	776	-----	131	34	-----
Total	5,759	3,403	2,126	2,077	2,889	3,332	28,571	40,271	35,919	8,416	1,916	1,354
Mean	186	113	68.6	67.0	103	107	952	1,299	1,197	271	61.8	45.1
Ac-ft	11,420	6,750	4,220	4,120	5,730	6,610	56,670	79,880	71,240	16,690	3,800	2,890

Calendar year 1961: Max 1,520 Min 28 Mean 257 Ac-ft 186,400  
Water year 1961-62: Max 2,230 Min 19 Mean 373 Ac-ft 269,800

Peak discharge (base, 1,500 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-19	2200	5.09	2,060	6-12	2200	5.02	1,880
5-11	2330	5.44	2,410				

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

## SAN JUAN RIVER BASIN

301

9-3430. Rio Blanco near Pagosa Springs, Colo.

Location.--Lat 37°12'46", long 106°47'38", in center of sec.1, T.34 N., R.1 E., on right bank 40 ft downstream from highway bridge, 0.4 mile upstream from Leche Creek, 1½ miles downstream from Fish Creek, and 12.5 miles southeast of Pagosa Springs.

Drainage area.--58.0 sq mi.

Records available.--May 1935 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 7,950 ft (from topographic map).

Average discharge.--27 years, 85.9 cfs (62,190 acre-ft per year).

Extremes.--Maximum discharge during year, 744 cfs May 10; maximum gage height, 2.42 ft May 13; minimum daily discharge, 8.0 cfs Aug. 31, Sept. 2.

1935-62: Maximum discharge, about 1,600 cfs July 26 or 27, 1957; maximum gage height, 4.12 ft June 18, 1949; minimum daily discharge, 3.0 cfs Oct. 10, 1956.

Maximum flood known occurred Oct. 5, 1911.

Remarks.--Records good except those for periods of ice effect or indefinite stage-discharge relation, which are poor. Diversions for irrigation of about 350 acres above station.

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

Oct. 1 to May 14

May 15 to Sept. 30

0.7	19	1.3	8.0
.9	36	1.4	15
1.0	48	1.5	27
1.1	66	1.7	75
1.2	92	2.0	175
1.4	180	2.3	370
2.1	680		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	27	38	25	20	20	22	44	198	220	151	* 26	8.7
2	26	34	25	20	22	26	50	222	238	132	25	8.0
3	25	34	25	20	24	26	* 59	247	264	* 129	26	8.7
4	* 25	34	24	20	26	22	76	282	* 330	123	25	* 9.4
5	24	33	19	22	30	* 22	71	324	330	126	23	8.7
6	23	* 34	18	22	28	24	71	345	* 370	120	22	8.7
7	21	34	17	22	* 30	26	74	352	370	111	21	21
8	22	32	16	20	30	27	74	394	314	102	20	22
9	103	32	17	20	28	25	69	* 592	290	87	19	19
10	53	34	16	18	28	24	62	680	314	75	17	14
11	* 62	38	* 15	17	32	22	62	e 600	* 322	67	26	12
12	55	37	14	16	34	20	82	e 500	314	62	35	12
13	55	34	18	18	34	22	130	e 400	330	59	25	12
14	57	30	19	20	33	19	210	e 300	322	48	21	12
15	52	30	20	20	32	22	289	270	258	44	17	11
16	44	30	22	19	32	24	324	225	205	40	19	11
17	40	30	22	18	32	24	338	200	167	33	17	12
18	37	30	22	19	28	24	324	210	* 185	31	14	12
19	35	26	22	19	30	26	352	215	200	31	25	12
20	33	24	22	19	28	26	366	258	232	31	20	20
21	32	27	22	19	26	26	324	232	238	31	20	90
22	33	22	20	19	24	24	268	200	238	33	16	44
23	31	22	20	18	28	24	268	* 258	220	33	15	22
24	29	24	20	18	28	26	317	306	205	38	13	20
25	28	26	20	18	29	28	331	298	180	35	12	26
26	27	26	20	18	24	32	317	270	163	42	12	35
27	29	26	20	18	22	44	282	264	159	35	12	29
28	28	26	20	18	20	55	275	220	* 143	29	10	44
29	29	24	22	18	-	52	247	185	147	26	9.4	48
30	31	26	22	19	-----	44	* 210	171	155	35	8.7	29
31	36	-----	20	20	-----	50	-----	195	-----	35	8.0	-----
Total	1,152	897	624	592	782	878	5,966	9,413	7,423	1,974	579.1	641.2
Mean	37.2	29.9	20.1	19.1	27.9	28.3	199	304	247	63.7	18.7	21.4
Ac-ft	2,280	1,780	1,240	1,170	1,550	1,740	11,830	18,670	14,720	3,920	1,150	1,270

Calendar year 1961: Max 320 Min 8 Mean 65.2 Ac-ft 47,210  
Water year 1961-62: Max 680 Min 8.0 Mean 84.7 Ac-ft 61,320

Peak discharge (base, 800 cfs).--No peak above base.

\* Discharge measurement made on this day.

e Stage-discharge relation indefinite.

Note.--Stage-discharge relation affected by ice Nov. 3, 4, 6, 7, 13, 14, 16, 19, 20, 22-25, 27-29, Dec. 4 to Feb. 13, Feb. 18-24, Feb. 26 to Mar. 7, Mar. 10-28, 31, Apr. 1, 2 (no gage-height record Jan. 25 to Feb. 7, Mar. 17-24).



## SAN JUAN RIVER BASIN

9-3440. Navajo River at Banded Peak Ranch, near Chromo, Colo.

Location.--Lat 37°05'07", long 106°41'20", in NW¼ sec.24, T.33 N., R.2 E., on left bank at downstream side of private bridge on Banded Peak Ranch, half a mile downstream from Aspen Creek, 4 miles downstream from East Fork, and 9 miles northeast of Chromo.

Drainage area.--69.8 sq mi.

Records available.--October 1936 to September 1962. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 7,940.6 ft above mean sea level (river-profile survey). Prior to Oct. 1, 1949, at datum 3.00 ft higher.

Average discharge.--26 years, 105 cfs (76,020 acre-ft per year).

Extremes.--Maximum discharge during year, 640 cfs Apr. 19 (gage height, 3.53 ft); minimum daily, 17 cfs Sept. 4.  
1936-62: Maximum discharge, 1,340 cfs May 13, 1941 (gage height, 7.02 ft, present datum); minimum daily, 8.4 cfs Sept. 29, 1960, result of temporary blockage by channel alteration upstream.  
Maximum flood known occurred Oct. 5, 1911.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 430 acres above station.

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

0.8	16	2.3	185
1.3	50	3.0	405
1.8	100	3.5	640

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	47	53	40	32	36	a 28	46	a 220	231	192	* 56	23
2	45	46	40	32	36	a 32	52	a 240	266	170	52	18
3	* 46	40	40	32	36	a 32	* 64	* a 280	292	* 153	49	18
4	44	42	34	32	38	a 30	74	320	* 354	138	48	* 17
5	43	43	34	32	* 42	* a 32	73	365	397	154	45	30
6	42	* 42	32	32	41	34	77	409	433	145	43	35
7	42	40	32	32	40	34	82	441	437	136	42	44
8	41	44	30	30	40	34	82	463	393	126	41	41
9	42	44	30	30	38	34	78	* 490	401	119	38	38
10	62	45	26	28	40	32	75	520	425	109	37	34
11	64	48	* 22	26	41	32	82	525	* 425	100	38	33
12	59	49	20	22	42	30	105	495	437	98	45	32
13	54	41	24	24	47	31	151	441	450	96	49	32
14	56	41	26	26	43	32	218	393	433	86	45	32
15	55	44	28	26	41	32	309	320	369	80	41	32
16	53	42	28	24	41	32	385	273	306	75	40	33
17	52	44	28	24	39	32	401	237	254	68	40	33
18	50	42	30	26	36	32	454	237	* 273	66	62	32
19	48	38	28	28	38	33	495	231	302	68	82	30
20	46	38	28	28	36	34	a 480	246	337	66	54	44
21	45	38	28	26	35	33	a 420	240	323	62	46	72
22	48	36	30	24	32	32	a 340	237	316	64	44	59
23	43	34	32	28	34	32	a 320	* 295	295	65	41	47
24	41	36	32	28	35	32	a 340	340	279	73	38	43
25	39	40	32	28	32	34	a 340	337	276	67	37	47
26	38	41	32	26	29	41	a 340	323	263	67	36	52
27	41	40	30	24	28	49	a 320	323	246	62	35	55
28	40	41	30	26	a 26	53	a 300	273	* 231	58	34	60
29	41	38	30	28	-	52	a 280	224	216	55	34	60
30	44	41	32	30	-----	48	* a 260	211	206	56	34	50
31	50	-----	32	30	-----	42	-----	218	-----	62	34	-----
Total	1,501	1,251	940	864	1,042	1,090	7,043	10,167	9,866	2,936	1,360	1,176
Mean	48.4	41.7	30.3	27.9	37.2	35.2	235	328	329	94.7	43.9	39.2
Ac-ft	2,980	2,480	1,860	1,710	2,070	2,160	13,970	20,170	19,570	5,820	2,700	2,330

Calendar year 1961: Max 435 Min 15 Mean 90.2 Ac-ft 65,280  
Water year 1961-62: Max 525 Min 17 Mean 107 Ac-ft 77,820

Peak discharge (base, 500 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-19	1800	3.53	640	6-13	2100	3.33	555
5-10	2030	3.38	580				

\* Discharge measurement made on this day.

a No gage-height record.

Note.--Stage-discharge relation affected by ice Nov. 3, 7, 19, 20, 22-24, 29, Dec. 4 to Feb. 4, Feb. 22, 27.

## SAN JUAN RIVER BASIN

303

9-3443. Navajo River above Chromo, Colo.

Location--Lat 37°01'55", long 106°43'56", in NE¼ sec.9, T.32 N., R.2 E., on right bank 5 ft downstream from private road bridge, 6 miles east of Chromo, and 7 miles upstream from Little Navajo River.

Drainage area--96.4 sq mi.

Records available--October 1956 to September 1962. Published as "near Chromo" 1956-58.

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

Average discharge--6 years, 124 cfs (89,770 acre-ft per year).

Extremes--Maximum discharge during year, 665 cfs May 10 (gage height, 5.05 ft); minimum daily, 6.4 cfs Sept. 2, 1956-62; Maximum discharge, 1,340 cfs June 7, 1957 (gage height, 5.95 ft); maximum gage height, 6.13 ft during period Feb. 1-8, 1957 (ice jam); minimum daily discharge, 6.4 cfs Sept. 2, 1962.  
Maximum flood known occurred Oct. 5, 1911.

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 750 acres above station and about 250 acres below.

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

3.1	4.0	3.8	68
3.2	8.0	4.0	110
3.3	15	4.3	220
3.5	34	5.0	630

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	51	63	42			34	70	285	260	220	*56	15
2	50	59	42			36	88	295	290	196	55	6.4
3	*50	44	42		45	38	*113	332	305	*172	53	7.6
4	47	46	38			39	137	386	*350	144	52	*13
5	46	*51	36		(*)	*39	134	422	392	160	50	29
6	45	44	34		47	38	137	464	416	164	45	34
7	45	44	32		47	39	148	530	422	152	44	43
8	46	50	32		47	39	148	554	398	137	44	42
9	88	48	32		47	39	140	*574	404	125	42	39
10	68	51	30		47	40	134	602	428	113	41	35
11	65	52	*28		50	39	152	609	386	108	41	33
12	63	54	24		51	38	192	560	398	102	46	32
13	58	44	30		55	39	255	500	404	98	52	31
14	59	42	32		53	40	356	470	404	88	48	31
15	58	48	34		51	39	422	404	374	82	44	30
16	58	44	34	35	48	38	482	356	320	78	43	32
17	56	44	34		46	38	488	310	270	73	43	34
18	55	44	34		43	38	518	310	*290	63	46	33
19	54	40			42	40	548	295	310	59	82	32
20	53	42			43	43	567	310	344	58	55	42
21	51	40			41	42	494	305	332	55	48	70
22	54	38			36	41	410	290	320	65	45	56
23	51	38			40	42	404	*326	310	67	43	47
24	48	40			38	39	446	356	295	71	41	46
25	47	42			40	44	464	362	290	67	41	44
26	47	42	35		39	52	452	338	275	65	39	53
27	50	40			40	70	392	350	260	62	37	53
28	50	42			34	85	380	305	250	58	36	59
29	51	38			-	80	356	260	235	54	35	62
30	54	42			-----	70	*310	240	230	56	35	51
31	60	-----			-----	63	-----	250	-----	62	29	-----
Total	1,678	1,356	1,065	1,085	1,250	1,400	9,337	11,950	9,962	3,074	1,411	1,135.0
Mean	54.1	45.2	34.4	35	44.6	45.2	311	385	332	99.2	45.5	37.8
Ac-ft	3,330	2,690	2,110	2,150	2,480	2,780	18,520	23,700	19,760	6,100	2,800	2,250

Calendar year 1961: Max 462 Min 18 Mean 97.5 Ac-ft 70,590

Water year 1961-62: Max 609 Min 6.4 Mean 122 Ac-ft 88,670

Peak discharge (base, 550 cfs)--Apr. 19 (1800) 651 cfs (5.04 ft); May 10 (2000) 665 cfs (5.05 ft).

\* Discharge measurement made on this day.

Note--Stage-discharge relation affected by ice Nov. 3, 4, 6, 7, 13, 14, Nov. 16 to Dec. 18, Feb. 22, 24, 28, Mar. 1, 2. No gage-height record Dec. 19 to Feb. 5 (stage-discharge relation affected by ice most of period).

## SAN JUAN RIVER BASIN

9-3460. Navajo River at Edith, Colo.

Location.--Lat 37°00'10", long 106°54'25", in NW¼ sec.24, T.32 N., R.1 W., on right bank at Colorado-New Mexico State line, 290 ft downstream from highway bridge, a quarter of a mile east of Edith, and 1 mile upstream from Coyote Creek.

Drainage area.--172 sq mi.

Records available.--September 1912 to September 1962. Monthly or yearly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 7,033.00 ft above mean sea level (Bureau of Reclamation bench mark). Prior to Jan. 1, 1929, staff gage at site 240 ft upstream at different datum. June 2, 1935, to June 27, 1941, water-stage recorder at sites 210 and 240 ft upstream at datum 2.0 ft higher. June 28, 1941, to June 20, 1961, at site 50 ft downstream at same datum.

Average discharge.--50 years, 160 cfs (115,800 acre-ft per year).

Extremes.--Maximum discharge during year, 922 cfs Apr. 17 (gage height, 5.09 ft); maximum gage height, 5.47 ft Mar. 14 (ice jam); minimum daily discharge, 13 cfs Sept. 4.

1935-62: Maximum discharge, 2,840 cfs Apr. 23, 1942 (gage height, 6.55 ft), from rating curve extended above 1,100 cfs; minimum daily, 8 cfs Sept. 25, 1953.

Maximum flood known occurred Oct. 5, 1911.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 1,700 acres above station.

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

2.7	10	3.4	112
2.8	16	4.0	270
2.9	24	4.5	495
3.1	50	5.0	845

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	50	78	47	42	50	38	122	358	277	207	* 64	22
2	50	64	46	42		42	170	372	313	194	57	15
3	* 50	44	46	42		46	* 237	415	321	* 170	53	14
4	50	46	40	40		44	249	473	* 372	158	50	* 13
5	50	50	38	40		* 42	246	525	415	155	49	16
6	49	* 46	36	44	55	44	243	574	435	178	44	23
7	49	50	36	44	55	46	246	634	456	163	39	35
8	49	55	36	42	55	46	246	662	415	155	39	36
9	100	55	36	40	55	44	226	* 690	405	143	29	36
10	95	55	34	36	60	42	218	698	430	131	29	32
11	78	58	* 30	34	55	40	229	698	425	129	31	31
12	84	62	26	38	60	40	267	683	435	122	34	31
13	67	50	30	40	70	42	329	574	456	126	42	30
14	67	47	34	42	65	42	430	519	456	114	43	29
15	67	53	38	42	* 60	42	537	430	400	105	37	30
16	65	52	38	40	55	44	607	372	345	98	36	30
17	62	53	38		55	46	641	321	284	84	37	31
18	60	50	38		50	46	676	313	* 298	73	35	30
19	58	46	40		46	48	676	298	305	64	93	29
20	57	46	40		46	50	683	313	345	71	53	40
21	55	47	40	40	48	46	620	305	337	58	49	93
22	55	43	40		44	42	555	288	321	64	40	73
23	52	43	38		44	44	537	* 317	313	69	39	58
24	50	44	38		48	43	568	368	298	84	32	53
25	47	47	38		48	49	614	376	288	82	26	52
26	47	47	38	40	44	80	627	358	264	80	28	62
27	50	47	38		44	129	501	386	246	71	26	64
28	49	47	38		38	176	495	337	237	64	23	71
29	53	46	38		-	163	456	291	220	53	22	88
30	57	47	38		-----	126	* 390	258	212	52	22	65
31	64	-----	40	-----	-----	98	-----	264	-----	65	22	-----
Total	1,836	1,518	1,171	1,248	1,450	1,870	12,641	13,470	10,324	3,382	1,223	1,232
Mean	59.2	50.6	37.8	40.3	51.8	60.3	421	435	344	109	39.5	41.1
Ac-ft	3,640	3,010	2,320	2,480	2,880	3,710	25,070	26,720	20,480	6,710	2,430	2,440

Calendar year 1961: Max 509 Min 24 Mean 110 Ac-ft 79,450

Water year 1961-62: Max 698 Min 13 Mean 141 Ac-ft 101,900

Peak discharge (base 600 cfs).--Apr. 17 (2100) 922 cfs (5.09 ft); May 10 (0100) 765 cfs (4.90 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 4 to Jan. 15, Feb. 6 to Mar. 16. No gage-height record Jan. 16 to Feb. 5, Mar. 17-19 (stage-discharge relation affected by ice most of periods).

## SAN JUAN RIVER BASIN

305

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, 3 miles northwest of Carracas, and 7.2 miles upstream Piedra River.

Drainage area--1,230 sq mi, approximately.

Records available--October 1961 to September 1962.

Gage--Water-stage recorder. Altitude of gage is 6,090 ft (from river-profile map).

Extremes--Maximum discharge during period, 3,920 cfs Apr. 20 (gage height, 5.55 ft); maximum gage height, 6.58 ft Feb. 19 (ice jam); minimum discharge, about 5 cfs Dec. 10, 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 poor. Discharge measurements generally made twice a month. Diversions for irrigation of about 11,000 acres above station.

Cooperation--Records furnished by New Mexico district.

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

Oct. 1 to Feb. 26,  
Mar. 28 to July 6

Feb. 27 to Mar. 27,  
July 7 to Sept. 30

1.9	156	3.5	1,070	1.1	37	2.5	440
2.3	270	4.5	2,190	1.5	127	3.0	700
2.7	480	5.5	3,830	2.0	255	3.2	830

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-	486	a 205	b 100	b 130	b 120	772	1,640	1,380	1,120	237	66
2	-	450	a 190	b 100	b 140	b 140	1,010	1,620	1,560	1,030	210	66
3	-	274	a 200	b 100	b 140	b 160	1,330	1,770	1,690	932	190	59
4	-	252	a 170	b 100	b 150	b 170	1,580	2,040	1,950	844	180	46
5	-	252	a 150	b 100	b 150	170	1,410	2,490	2,240	772	172	44
6	-	242	a 140	b 110	b 150	190	1,440	2,710	2,370	788	152	41
7	-	226	a 130	b 110	b 160	220	1,340	3,070	2,460	788	141	63
8	-	242	120	b 110	b 200	246	1,410	3,280	2,260	700	125	120
9	-	252	b 110	b 110	b 300	249	1,300	3,410	2,220	646	125	141
10	-	249	b 80	b 100	b 500	208	1,300	3,460	2,300	580	109	120
11	-	252	b 50	b 95	b 450	188	1,160	3,480	2,380	505	104	104
12	-	266	b 40	b 95	b 450	158	1,240	3,510	2,400	467	134	88
13	-	263	b 70	b 95	b 600	170	1,440	3,040	2,460	458	165	83
14	-	220	b 110	b 110	b 700	168	1,920	2,730	2,420	440	148	72
15	-	229	b 125	b 110	a 650	158	2,370	2,250	2,200	388	136	70
16	-	226	b 125	b 110	a 550	170	3,060	1,870	1,840	344	122	61
17	-	229	b 125	b 110	a 450	195	3,140	1,600	1,540	316	111	63
18	355	226	b 125	b 110	a 350	228	3,220	1,480	1,450	299	106	68
19	320	202	b 120	b 120	a 300	296	3,330	1,390	1,500	276	127	70
20	306	189	b 120	b 125	a 250	404	3,460	1,510	1,670	279	158	77
21	294	211	b 115	b 125	a 220	392	3,240	1,570	1,770	261	143	178
22	278	195	b 110	b 125	a 210	348	2,490	1,450	1,710	243	143	302
23	298	170	b 110	b 125	a 200	360	2,160	1,510	1,710	255	132	243
24	263	184	b 110	b 125	a 200	324	2,420	1,770	1,590	276	125	a 200
25	246	200	b 110	b 125	a 170	454	2,790	1,920	1,500	288	104	a 170
26	235	211	b 110	b 125	a 150	677	2,780	1,750	1,400	273	88	210
27	235	200	b 110	b 120	b 140	792	2,440	1,890	1,350	267	83	a 190
28	238	197	b 105	b 120	b 120	1,290	2,380	1,730	1,240	240	81	222
29	229	a 195	b 100	b 120	-	1,320	2,220	1,490	1,160	215	74	270
30	278	a 200	b 100	b 120	-----	1,070	1,920	1,330	1,170	200	66	215
31	358	-----	b 100	b 120	-----	647	-----	1,360	-----	237	63	-----
Total	-	7,190	3,685	3,470	8,180	11,682	62,072	66,120	54,890	14,727	4,054	3,722
Mean	333	240	119	112	292	377	2,069	2,133	1,830	475	131	124
Ac-ft	20,450	14,260	7,310	6,880	16,220	23,170	123,100	131,100	108,900	29,210	8,040	7,380

Calendar year 1961: Max - Min - Mean - Ac-ft -  
Water year 1961-62: Max 3,510 Min 40 Mean 685 Ac-ft 496,000

Peak discharge (base, 2,500 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-10	0430	5.55	3,920	6-7	0600	4.83	2,700
5-10	0700	5.45	3,740				

a No gage-height record.

b Stage-discharge relation affected by ice.

Note.--Monthly figures for October are partly estimated on basis of associated records, to complete water year.



9-3495. Piedra River near Piedra, Colo.

Location.--Lat 37°13'20", long 107°20'30", in NW¼NW¼ sec.17, T.34 N., R.4 W., on right bank 0.1 mile downstream from bridge on U. S. Highway 160, 0.4 mile upstream from Yellow Jacket Creek, and 1½ miles northwest of Piedra. Prior to Sept. 19, 1962, at site 0.3 mile upstream.

Drainage area.--371 sq mi.

Records available.--October 1911 to September 1912, October 1938 to September 1962. Monthly discharge only for some periods, published in WSP 1313. Published as "at Piedra" 1912.

Gage.--Water-stage recorder. Altitude of gage is 6,510 ft (from topographic map). Nov. 26, 1911, to July 22, 1912, staff gages near present site at different datums. Jan. 11, 1939, to Mar. 19, 1940, chain gage 0.3 mile upstream at different datum. Mar. 20, 1940, to May 9, 1941, water-stage recorder at site 2 miles upstream at different datum. May 10 to Sept. 27, 1941, chain gage and Sept. 28, 1941, to Sept. 18, 1962, water-stage recorder, 0.3 mile upstream at different datum.

Average discharge.--25 years, 324 cfs (234,600 acre-ft per year).

Extremes.--Maximum discharge during year, 1,950 cfs Apr. 20 (gage height, 4.95 ft, site and datum then in use); minimum daily, 28 cfs Sept. 16.

1911-12, 1938-62: Maximum discharge not determined, occurred Oct. 5, 1911. Maximum discharge determined, 6,870 cfs July 26, 1957 (gage height, 8.60 ft, site and datum then in use), from rating curve extended above 2,800 cfs; minimum daily, 17 cfs Nov. 11, 1950.

Maximum flood known, that of Oct. 5, 1911. Another major flood occurred June 29, 1927.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 2,220 acres above station. Also two small ditches divert water above station for irrigation below. Piedra Pass and Squaw Pass ditches (see elsewhere in this report) export small amount of water above station to Rio Grande basin.

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	138	182	108	80	70	70	192	776	580	525	103	34
2	*126	172	103	*20	70	80	250	*776	741	465	91	32
3	119	140	107	80	75	75	327	878	886	418	*88	32
4	117	152	89	70	80	70	375	1,090	986	*391	77	31
5	114	152	70	65	85	70	*379	1,250	1,120	367	71	*29
6	108	134	65	70	85	70	445	1,390	*1,170	375	62	31
7	103	132	60	70	*89	*83	515	1,600	1,160	348	56	35
8	103	*146	55	70	92	75	580	*1,640	1,020	313	51	46
9	434	146	55	65	92	75	590	1,700	1,050	271	a 48	46
10	306	144	55	60	91	78	560	1,740	1,070	244	a 48	43
11	235	146	46	50	94	65	565	1,720	1,120	212	a 48	39
12	247	156	40	55	101	70	657	1,760	1,120	198	52	37
13	226	142	55	60	125	80	838	1,480	1,140	205	58	35
14	241	125	*70	65	123	75	1,070	1,300	1,110	190	56	34
15	260	146	75	65	*114	75	1,310	1,040	986	158	a 48	31
16	274	134	70	65	114	70	1,530	862	783	144	a 46	28
17	285	138	70	60	108	70	1,630	727	626	132	a 46	30
18	278	125	70	60	85	65	1,680	626	575	130	a 46	29
19	268	119	70	60	85	65	1,740	575	632	125	a 50	*a 30
20	250	110	65	60	90	75	1,780	644	*748	125	53	39
21	232	130	70	60	80	77	1,600	671	783	112	54	97
22	235	90	75	60	70	72	1,240	590	755	103	59	101
23	210	90	70	60	80	75	1,100	632	748	112	64	80
24	190	100	70	60	85	72	1,240	734	685	130	52	65
25	175	121	70	60	89	77	1,360	*762	638	136	a 48	72
26	166	121	70	55	83	92	1,350	692	602	128	a 46	77
27	166	107	70	55	75	119	1,160	814	590	112	a 44	77
28	160	99	70	55	65	160	1,160	699	555	105	a 40	109
29	150	98	70	60	-	200	1,110	590	535	98	a 38	107
30	154	116	75	65	-----	215	910	540	545	94	*a 36	85
31	178	-----	75	70	-----	182	-----	560	-----	114	35	-----
Total	6,248	3,913	2,183	1,980	2,495	2,797	29,243	30,858	25,059	6,580	1,714	1,561
Mean	202	130	70.4	63.9	89.1	90.2	975	995	835	212	55.3	52.0
Ac-ft	12,390	7,760	4,330	3,930	4,950	5,550	58,000	61,210	49,700	13,050	3,400	3,100

Calendar year 1961: Max 1,320 Min 40 Mean 240 Ac-ft 173,600  
 Water year 1961-62: Max 1,780 Min 28 Mean 314 Ac-ft 227,400

Peak discharge (base, 1,300 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-20	0130	4.95	1,950	6-7	0300	4.29	1,320
5-11	0300	4.88	1,920				

\* Discharge measurement made on this day.

a No gage-height record.

Note.--Stage-discharge relation affected by ice Nov. 22-24, Dec. 5 to Feb. 6, Feb. 18-24, Feb. 27 to Mar. 6, Mar. 9, 11-20, 23.

## SAN JUAN RIVER BASIN

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9-3498, Piedra River near Arboles, Colo.

Location--Lat 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, and 8 miles upstream from mouth.

Drainage area--629 sq mi.

Records available--August to September 1962. 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. Datum of gage is 6,147.52 ft above mean sea level (from Colorado State Highway Department bench mark).

Extremes--Maximum discharge during period, 136 cfs Sept. 21 (gage height, 1.94 ft); minimum daily, 26 cfs Sept. 4-6. Major floods occurred Oct. 5, 1911, and Sept. 5 or 6, 1909.

Remarks--Records good. Diversions for irrigation of about 2,800 acres above station.

Cooperation--Records furnished by New Mexico district.

Discharge, in cubic feet per second, period August to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1											-	35
2											-	35
3											-	28
4											-	26
5											-	26
6											-	*26
7											-	28
8											-	32
9											-	42
10											-	42
11											-	39
12											-	39
13											-	35
14											-	*35
15											-	32
16											-	32
17											-	32
18											-	32
19											-	*32
20											-	37
21											-	71
22											-	110
23											-	102
24											-	*86
25											-	79
26											-	102
27											-	86
28											*46	113
29											44	122
30											40	105
31		-----			-----		-----		-----		37	-----
Total											-	1,641
Mean											-	54.7
Ac-ft											-	3,250

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

\* Discharge measurement made on this day.

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 75 ft upstream from highway bridge, a quarter of a mile downstream from Piedra River, 0.9 mile upstream from Colorado-New Mexico State line, and 1 mile north of Rosa.

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 September 1962. 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. Altitude of gage is 5,980 ft (from river-profile map). 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.--53 years (1896-97, 1910-62), 1,215 cfs (879,600 acre-ft per year).

Extremes.--Maximum discharge during year, 6,330 cfs Apr. 20 (gage height, 6.54 ft); minimum, 44 cfs Dec. 10. 1920-62: 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 daily, 39 cfs Oct. 8, 1956. 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 doubtful or no gage-height record, which are poor. Discharge measurements generally made twice a month. Diversions for irrigation of about 14,000 acres above station.

Cooperation.--Records furnished by New Mexico district.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used July 11-15, Aug. 17 to Sept. 10)

1.0	58	3.0	780
1.3	104	3.5	1,170
1.6	168	4.5	2,320
2.0	285	5.5	3,990
2.5	489	6.3	5,750

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	428	696	303	a 150	b 200	b 190	1.170	2.600	2.050	1.790	3.61	97
2	393	653	285	a 150	b 200	b 240	1.540	2.530	2.310	1.620	3.14	92
3	373	446	289	a 150	b 210	b 250	1.950	2.680	2.630	1.460	2.78	81
4	353	389	278	b 155	b 220	b 220	2.350	3.130	2.960	1.350	2.59	71
5	346	397	237	b 160	b 240	249	2.080	3.740	3.350	1.270	d 240	71
6	332	377	b 190	b 170	b 270	278	2.220	4.090	3.570	1.270	d 220	66
7	314	353	b 165	b 180	b 320	346	2.190	4.700	3.690	1.220	d 210	84
8	310	377	b 150	b 180	b 400	373	2.320	5.050	3.380	1.090	d 190	131
9	1.180	397	b 140	b 180	b 600	377	2.350	5.200	3.320	990	d 180	179
10	1.170	389	b 110	b 170	690	321	2.220	5.380	3.400	894	d 170	146
11	696	401	b 70	b 170	614	b 200	2.030	5.290	3.490	780	d 160	131
12	721	415	b 60	b 160	619	b 150	2.150	5.440	3.570	708	d 180	117
13	625	410	b 60	b 160	708	b 150	2.610	4.650	3.620	702	243	115
14	642	353	b 90	b 160	823	b 150	3.380	4.150	3.570	665	217	102
15	659	365	b 140	b 160	754	b 150	3.990	3.490	3.330	575	214	101
16	671	357	b 200	b 160	714	b 150	4.850	2.930	2.760	494	a 165	96
17	665	373	b 200	b 170	b 600	b 200	5.030	2.520	2.290	446	163	96
18	653	373	b 200	b 180	b 550	b 270	5.250	2.260	2.100	415	161	101
19	619	335	b 200	b 190	b 480	393	5.490	2.100	2.150	381	166	101
20	597	296	b 190	b 200	b 420	575	5.700	2.250	2.440	397	225	110
21	569	339	b 190	b 210	b 350	569	5.290	2.420	2.610	365	198	245
22	547	314	b 180	b 210	b 300	441	4.090	2.180	2.550	328	214	510
23	580	259	b 180	b 210	b 250	479	3.560	2.240	2.550	353	203	406
24	494	278	b 180	b 200	b 250	393	3.810	2.600	2.350	397	192	310
25	451	314	b 180	b 200	b 250	580	4.410	2.770	2.220	423	156	268
26	437	332	b 180	b 190	b 200	858	4.370	2.600	2.080	419	134	374
27	419	314	b 180	b 190	b 200	1.220	3.900	2.790	2.010	401	129	346
28	432	292	a 160	b 190	b 150	1.680	3.780	2.630	1.940	353	121	415
29	410	285	a 150	b 190	-	1.860	3.640	2.250	1.800	317	110	510
30	479	299	a 150	b 190	-----	1.620	3.100	2.010	1.850	292	102	406
31	552	-----	a 150	b 200	-----	1.060	-----	2.010	-----	350	92	-----
Total	17,117	11,178	5,437	5,535	11,582	15,992	100,820	100,680	81,940	22,515	5,974	5,878
Mean	552	373	175	179	414	516	3,361	3,248	2,731	726	193	196
Ac-ft	33,950	22,170	10,780	10,980	22,970	31,720	200,000	199,700	162,500	44,660	11,850	11,660

Calendar year 1961: Max 3,950 Min 60 Mean 803 Ac-ft 581,700  
Water year 1961-62: Max 5,700 Min 60 Mean 1,054 Ac-ft 762,900

Peak discharge (base, 4,000 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-20	0530	6.54	6,330	6-7	0730	5.51	4,010
5-12	0715	6.29	5,730				

a No gage-height record.  
b Stage-discharge relation affected by ice.  
d Doubtful gage-height record.

9-3530. Vallecito Reservoir near Bayfield, Colo.

Location.--Lat 37°23'00", long 107°34'30", in SW¼SW¼ sec.18, T.36 N., R.6 W., in gatehouse above outlet gates at Vallecito Dam on Los Pinos (Pine) River, 300 ft (revised) left of spillway, a quarter of a mile upstream from Little Red Creek, and 11 miles north-east of Bayfield.

Records available.--April 1941 to September 1962.

Gage.--Float gage read once a day. Datum of gage is 7,580 ft above mean sea level (Bureau of Reclamation bench mark); gage readings have been reduced to elevations above mean sea level.

Extremes.--Maximum contents observed during year, 112,300 acre-ft July 4 (elevation, 7,659.78 ft); minimum observed, 46,720 acre-ft Sept. 30 (elevation, 7,630.63 ft).

1941-62: Maximum contents observed, 128,200 acre-ft July 27, 1957 (elevation, 7,665.72 ft); minimum observed, 1,520 acre-ft Oct. 24, 25, 1944 (elevation, 7,584.10 ft). No usable storage prior to April 1941.

Remarks.--Reservoir is formed by an earth- and rock-fill dam; dam completed in March 1941. Capacity of reservoir, 126,300 acre-ft between elevations 7,580 (sill of outlet gate) and 7,665 ft (top of spillway gates). Dead storage, 3,395 acre-ft. Figures given herein represent usable contents. Reservoir is used to store water for irrigation in Los Pinos (Pine) River basin.

Cooperation.--Records furnished by Bureau of Reclamation.

Month-end elevation and contents, water year October 1961 to September 1962

Date	Elevation (feet)†	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	7,640.53	66,230	-
Oct. 31.....	7,639.80	64,670	-1,560
Nov. 30.....	7,640.82	66,850	+2,180
Dec. 31.....	7,640.69	66,570	-280
Calendar year 1961.....	-	-	+25,760
Jan. 31.....	7,641.62	68,580	+2,010
Feb. 28.....	7,642.73	71,010	+2,430
Mar. 31.....	7,639.52	64,080	-6,930
Apr. 30.....	7,636.89	58,650	-5,430
May 31.....	7,648.24	83,590	+24,940
June 30.....	7,659.49	111,600	+28,010
July 31.....	7,654.04	97,670	-13,930
Aug. 31.....	7,641.73	68,820	-28,850
Sept. 30.....	7,630.63	46,720	-22,100
Water year 1961-62.....	-	-	-19,510

† Elevation at 0800.



## SAN JUAN RIVER BASIN

9-3535. Los Pinos River near Bayfield, Colo.  
(Locally known as Pine River)

Location.--Lat 37°23'00", long 107°34'30", in SW¼ sec.18, T.36 N., R.6 W., on left side of outlet flume from Vallecito Reservoir, a quarter of a mile upstream from Little Red Creek, 2 miles upstream from Red Creek, and 11 miles north of Bayfield.

Drainage area.--270 sq mi, approximately.

Records available.--October 1927 to September 1962. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder and concrete weir. Datum of gage is 7,582.54 ft above mean sea level (Bureau of Reclamation bench mark). Oct. 26, 1927, to Aug. 17, 1956, at sites 2½ miles downstream with datum of gage at 7,415.58 ft above mean sea level, adjustment of 1912, prior to July 8, 1934, and at 7,415.08 ft above mean sea level July 9, 1934, to Aug. 17, 1956. Since Aug. 18, 1956, supplementary water-stage recorder at former site 2½ miles downstream for use when upper spillway at Vallecito Reservoir is operating.

Average discharge.--35 years, 352 cfs (254,800 acre-ft per year).

Extremes.--Maximum discharge during year, 2,400 cfs Apr. 20 (gage height, 4.49 ft); minimum daily, 44 cfs for many days. 1927-62: Maximum discharge, 13,800 cfs July 27, 1957 (gage height, 12.2 ft, from floodmarks at supplementary gage), from rating curve extended above 2,500 cfs on basis of slope-area measurement of peak flow (result of automatic spillway gates releasing from Vallecito Reservoir); minimum daily, 3.2 cfs Feb. 11, 1951 (result of storage in Vallecito Reservoir); minimum daily prior to construction of Vallecito Reservoir, 38 cfs Dec. 21, 22, 1937.

Maximum flood known prior to construction of Vallecito Reservoir occurred Oct. 5, 1911.

Remarks.--Records good. Flow regulated by storage in Vallecito Reservoir (see preceding page). Transmountain diversions above station by Raber-Lohr and Fuchs ditches (see elsewhere in this report).

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

0.3	31	1.5	393
.4	49	2.0	618
.7	115	3.0	1,200
1.0	205		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	334	53	170	45	44	*115	216	816	623	712	614	556
2	334	53	170	45	44	115	216	589	599	712	628	551
3	334	53	170	44	44	115	216	589	584	705	628	546
4	334	53	170	44	44	115	216	726	599	698	628	546
5	334	53	170	44	44	115	216	815	613	677	623	546
6	334	53	170	44	44	115	216	815	613	663	618	541
7	334	53	170	44	44	115	216	815	618	656	618	541
8	334	53	170	44	44	115	216	715	618	642	618	536
9	334	53	170	44	44	115	216	832	623	642	613	536
10	334	53	170	44	44	115	216	838	623	642	613	536
11	291	53	170	44	44	115	216	844	644	649	608	536
12	233	53	170	44	44	115	216	849	664	649	608	536
13	233	53	115	44	44	115	216	849	669	635	608	536
14	233	* 105	44	44	44	115	216	855	674	621	604	469
15	233	170	44	44	44	115	216	855	674	621	604	426
16	233	170	44	44	44	224	216	855	674	614	604	426
17	233	170	44	44	44	334	216	855	674	649	599	426
18	236	170	44	44	44	334	382	855	674	649	599	443
19	236	170	44	44	44	334	1,000	742	679	635	594	456
20	236	170	44	44	44	334	1,460	679	679	621	594	452
21	236	170	44	44	44	334	1,540	679	679	621	575	438
22	236	170	44	44	44	334	1,530	679	679	607	584	418
23	236	170	44	44	44	334	1,520	584	679	* 600	584	418
24	236	170	44	44	44	330	1,520	570	679	642	580	414
25	236	170	44	44	44	330	1,500	618	679	670	575	405
26	236	170	44	44	77	330	1,500	623	663	656	570	389
27	236	170	44	44	115	258	1,500	623	656	649	570	361
28	236	170	45	44	115	216	1,500	623	684	642	570	294
29	236	170	*45	*44	-	216	1,490	623	698	642	565	261
30	130	170	45	44	-----	216	1,360	623	698	628	560	236
31	53	-----	45	44	-----	216	-----	623	-----	614	556	-----
Total	8,044	3,514	2,551	1,367	1,407	6,399	21,474	22,656	19,612	20,063	18,512	13,775
Mean	259	117	95.2	44.1	50.2	206	716	731	654	647	597	459
Ac-ft	15,960	6,970	5,850	2,710	2,790	12,690	42,590	44,940	38,900	39,790	36,720	27,320

Calendar year 1961: Max 1,080 Min 36 Mean 281 Ac-ft 203,600  
Water year 1961-62: Max 1,540 Min 44 Mean 383 Ac-ft 277,200

\* Discharge measurement made on this day.

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 and 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 1962. 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.--12 years, 196 cfs (141,900 acre-ft per year).

Extremes.--Maximum discharge during year, 1,730 cfs Apr. 21 (gage height, 5.92 ft); minimum, 36 cfs Nov. 3 (may have been lower during freezeup of Jan. 10).

1950-62: Maximum discharge, 6,400 cfs July 27, 1957 (gage height, 8.95 ft); minimum daily, 14 cfs Apr. 23, 24, 26, 1951.  
Maximum flood known occurred Oct. 5, 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. Flow regulated by Vallecito Reservoir (capacity, 126,280 acre-ft). Diversions for irrigation of about 33,000 acres above station.

Cooperation.--Records furnished by New Mexico district.

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. 11, Aug. 15 to Sept. 30)

3.2	38	4.5	480
3.4	64	5.0	830
3.6	112	5.5	1,280
4.0	240	6.0	1,810

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	233	71	180	a 50	b 60	a 110	308	1,020	180	191	129	120
2	194	46	177	a 50	b 65	a 120	340	528	164	180	123	120
3	194	41	180	a 45	b 65	a 130	340	456	140	184	146	123
4	184	58	174	a 45	b 65	a 110	365	462	132	177	155	126
5	167	60	177	a 45	b 65	a 110	365	589	118	177	146	120
6	167	64	174	a 50	b 70	134	365	547	118	170	149	129
7	164	62	164	a 50	b 70	152	365	468	110	161	129	146
8	170	66	167	a 55	b 90	155	380	414	110	146	126	152
9	420	69	184	b 60	b 100	158	385	400	104	149	120	149
10	288	69	164	b 55	b 120	143	400	380	110	123	107	143
11	244	66	b 150	b 45	a 110	b 130	375	375	110	118	107	143
12	158	69	a 100	b 45	a 100	b 120	375	355	100	143	123	143
13	143	66	a 120	b 50	a 100	b 115	380	375	107	143	132	143
14	140	62	a 110	b 50	a 100	b 120	405	380	107	143	126	155
15	134	126	a 90	b 45	a 100	132	420	350	112	129	118	137
16	134	155	a 70	a 40	a 95	134	444	360	137	126	137	129
17	140	155	a 60	a 45	a 90	330	444	405	146	123	158	126
18	137	174	a 55	a 45	a 80	360	498	405	146	143	140	126
19	134	177	a 50	a 50	a 80	370	915	360	137	137	137	123
20	134	180	a 50	a 55	a 90	380	1,550	240	134	129	137	149
21	134	188	b 55	a 55	82	385	1,710	226	132	120	152	233
22	137	180	b 60	a 50	78	370	1,710	248	134	120	143	191
23	134	180	b 55	b 50	82	375	1,680	309	134	132	146	180
24	132	180	b 55	b 45	80	355	1,620	134	132	132	137	191
25	132	180	b 55	b 50	82	375	1,570	126	137	155	132	180
26	134	188	b 55	b 55	b 75	390	1,550	132	137	177	123	164
27	143	184	b 50	b 50	b 90	400	1,510	177	132	158	126	205
28	143	180	a 50	b 50	b 70	365	1,490	212	132	146	123	256
29	146	180	a 50	b 50	-	370	1,490	191	158	132	110	191
30	167	184	a 50	b 55	-----	335	1,410	174	191	143	118	146
31	120	-----	a 55	b 60	-----	308	-----	184	-----	155	115	-----
Total	5,201	3,660	3,186	1,545	2,354	7,541	25,159	10,982	3,941	4,562	4,070	4,639
Mean	168	122	103	49.8	84.1	243	839	354	131	147	131	155
Ac-ft	10,320	7,260	6,320	3,060	4,670	14,960	49,900	21,780	7,820	9,050	8,070	9,200

Calendar year 1961: Max 900 Min 40 Mean 159 Ac-ft 115,100  
Water year 1961-62: Max 1,710 Min 40 Mean 211 Ac-ft 152,400

a No gage-height record.

b Stage-discharge relation affected by ice.

## SAN JUAN RIVER BASIN

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 1962. 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--12 years, 28.3 cfs (20,490 acre-ft per year).

Extremes--Maximum discharge during year, 188 cfs Oct. 9 (gage height, 2.67 ft); minimum daily, 1 cfs for several days during period of ice effect.

1951-62: Maximum discharge, 362 cfs July 19, 1957 (gage height, 3.97 ft), from rating curve extended above 100 cfs by logarithmic plotting; maximum gage height, 5.98 ft Mar. 9, 1960; minimum daily discharge determined, 1 cfs Feb. 25, 26, 1951, for several days during periods of ice effect in 1960-62.

Remarks--Records good except those for periods of ice effect, doubtful or no gage-height record, which are poor. Discharge measurements generally made twice a month. Part of flow is return waste from irrigation.

Cooperation--Records furnished by New Mexico district.

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

0.5	0.6	1.0	12
.6	1.3	1.2	22
.7	2.6	1.6	54
.8	4.6	2.0	98

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	20	40	4.0	a 2	b 3	b 1	2.6	33	84	54	59	50
2	18	31	4.2	a 2	b 3	b 2	3.2	31	79	52	54	48
3	17	26	4.2	a 2	b 3	b 3	4.0	28	72	49	56	49
4	17	14	b 4	a 2	b 3	b 4	6.4	22	67	48	59	48
5	21	8.6	b 4	a 2	b 4	b 4	5.2	21	60	54	59	50
6	22	7.9	b 4	a 2	b 6	4.4	4.4	26	49	53	56	51
7	20	7.3	b 4	a 3	b 6.5	6.4	4.0	31	50	53	49	61
8	23	7.3	b 4	a 3	b 8	6.1	4.0	28	50	53	43	64
9	28	8.4	b 3	b 3	b 20	4.4	5.2	25	49	54	43	61
10	27	7.3	b 3	b 2	b 25	b 3	9.9	29	41	50	43	56
11	23	6.7	b 3	b 1.5	b 23	b 1	5.8	32	41	50	43	53
12	25	6.4	b 1	b 1	b 20	b 1	3.8	29	41	49	49	54
13	50	5.5	b 2	b 2	b 19	b 2	3.2	31	46	54	51	57
14	50	b 5	b 2	b 1.5	b 18	b 2	3.4	31	49	51	51	60
15	55	b 4	b 2	b 1	b 17	b 2.5	3.8	33	46	55	53	50
16	54	b 5	b 4	b 1	b 15	b 3	4.2	43	42	53	50	42
17	53	5.5	b 3	b 1.5	b 10	b 3	4.2	51	45	48	53	41
18	53	b 5	b 3	b 1.5	b 6	b 3	3.6	45	48	46	50	40
19	52	b 4	b 2.5	b 2	b 5	b 3	3.2	39	43	49	48	39
20	53	b 5	b 3	a 3	b 5	3.4	3.2	38	47	58	50	49
21	52	5.5	b 3.5	a 4	b 5	3.8	2.6	43	43	53	56	94
22	51	b 5	d 3.5	a 3	b 5	4.2	2.3	46	41	48	51	74
23	51	b 5	d 3	b 3	b 5	3.4	2.1	56	40	55	53	63
24	51	b 4	d 3	b 2	b 5	3.8	17	31	43	60	49	65
25	52	4.6	a 3	b 3	b 5	3	40	43	46	70	51	61
26	51	5.2	a 2	b 4	b 4	4.2	17	52	44	82	50	72
27	47	b 5	a 2	b 2	b 3	5.5	27	67	53	65	51	77
28	46	b 4.5	a 2	b 2	b 1	7.0	34	77	52	64	49	62
29	48	b 4	a 2	b 2.5	-	6.1	34	72	55	57	49	54
30	60	4.0	a 2	b 2.5	-----	4.4	34	73	60	59	50	43
31	93	-----	a 3	b 3	-----	3.2	-----	83	-----	62	48	-----
Total	1,353	256.7	92.9	70.0	252.5	110.8	297.3	1,289	1,526	1,708	1,576	1,688
Mean	43.6	8.56	3.00	2.26	9.02	3.57	9.91	41.6	50.9	55.1	50.8	56.3
Ac-ft	2,680	509	184	139	501	220	590	2,560	3,030	3,390	3,130	3,350

Calendar year 1961: Max 114 Min 1 Mean 31.6 Ac-ft 22,900  
 Water year 1961-62: Max 98 Min 1 Mean 28.0 Ac-ft 20,280

Peak discharge (base, 120 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
10- 9	1300	2.67	188	9-21	1100	2.27	134
10-31	1045	2.28	134				

a No gage-height record.

b Stage-discharge relation affected by ice.

d Doubtful gage-height record.

## SAN JUAN RIVER BASIN

313

9-3575. Animas River at Howardsville, Colo.

Location.--Lat 37°50'00", long 107°36'00", in sec.12, T.41 N., R.7 W., on right bank 1,000 ft downstream from bridge on State Highway 110, 0.4 mile southwest of Howardsville, and half a mile downstream from Cunningham Creek.

Drainage area.--55.9 sq mi.

Records available.--October 1935 to September 1962. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 9,616.98 ft above mean sea level, adjustment of 1912. Prior to Aug. 18, 1939, at datum 1.00 ft higher.

Average discharge.--27 years, 106 cfs (76,740 acre-ft per year).

Extremes.--Maximum discharge during year, 826 cfs June 20 (gage height, 3.28 ft); minimum daily determined, 14 cfs Mar. 14.

1935-62: Maximum discharge, 1,980 cfs June 18, 1949, from rating curve extended above 950 cfs; maximum gage height, 5.24 ft Feb. 18, 1958 (backwater from snowslide); minimum daily discharge, 9 cfs Jan. 10, 1957.  
Maximum flood known occurred Oct. 5, 1911.

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

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Apr. 18 to June 2)

0.7	13	1.6	100
.8	16	2.0	190
1.1	31	2.5	365
1.3	51	3.0	630

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	83	40	29	18	19		20	134	190	552	122	36
2	* 74	39	28	18	19		20	132	247	485	114	36
3	73	36	29	18	18		20	165	282	445	106	34
4	68	37	28	18	18	17	20	* 217	285	415	108	33
5	66	36	26	18	17		20	268	325	392	98	33
6	64	34	26	20	18		20	317	388	370	* 92	34
7	62	34	26	20	20		21	374	* 392	378	86	36
8	64	* 38	26	20	20	(*)	20	383	370	357	85	35
9	69	39	26	20	20	18	20	450	435	333	83	34
10	64	38	24	18	20	18	20	480	500	317	81	* 33
11	60	39	22	16		17	19	470	552	313	81	31
12	66	40	18	18		16	* 18	450	* 594	297	78	30
13	68	36	20	19		15	25	378	612	271	76	30
14	73	34	22	20		14	34	317	564	229	71	29
15	78	37	25	18		15	51	260	475	214	68	29
16	81	36	24	16		16	74	214	361	202	66	32
17	83	37	26	18		17	97	185	301	199	63	30
18	83	34	24	19	20	18	165	160	357	* 208	63	29
19	81	32	22	17		18	208	165	510	220	66	29
20	80	32	22	18		18	217	193	* 618	199	69	38
21	74	34	22	19		18	182	199	612	190	63	73
22	78	32	* 20	19		18	165	172	600	180	60	106
23	66	32	20	18		18	182	178	582	172	57	80
24	62	32	20	17		16	229	223	558	180	51	68
25	60	31	20	20		18	278	* 238	546	172	49	60
26	58	30	20	20		18	260	214	582	158	45	54
27	60	32	18	20		17	226	241	558	152	43	57
28	56	30	18	19		19	223	199	528	142	41	56
29	47	30	21	18		19	202	178	* 558	136	39	51
30	43	29	18	18		19	158	160	612	138	39	46
31	34	-----	18	18	-----	18	-----	168	-----	126	37	-----
Total	2,078	1,040	708	573	549	534	3,214	7,882	14,094	8,142	2,200	1,302
Mean	67.0	34.7	22.8	18.5	19.6	17.2	107	254	470	263	71.0	43.4
Ac-ft	4,120	2,060	1,400	1,140	1,090	1,060	6,370	15,630	27,960	16,150	4,360	2,580

Calendar year 1961: Max 630 Min 12 Mean 94.1 Ac-ft 68,150

Water year 1961-62: Max 618 Min - Mean 116 Ac-ft 83,920

Peak discharge (base, 700 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-12	2000	3.27	777	6-29	2100	3.24	798
6-20	2000	3.28	826				

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 31, Nov. 3, 5-7, 13, 14, 18-24, 27-29, Dec. 4-14, 17-28, Dec. 30 to Jan. 5, Jan. 9-17, 19-24, Jan. 28 to Feb. 6, Mar. 9-19, 24-27, 31, Apr. 1, 11, 12. No gage-height record Feb. 10 to Mar. 8 (stage-discharge relation affected by ice during most of period).



SAN JUAN RIVER BASIN

9-3610. Hermosa Creek near Hermosa, Colo.

Location.--Lat 37°25'30", long 107°50'20", in NW¼ sec.3, T.36 N., R.9 W., on right bank 20 ft downstream from private bridge, 1 mile northwest of Hermosa, and 2 miles upstream from mouth.

Drainage area.--172 sq mi.

Records available.--November and December 1911 (gage heights and discharge measurements only), January 1912 to September 1914, October 1919 to September 1928, October 1939 to September 1962. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 6,705.88 ft above mean sea level, datum of 1929. Prior to September 1914, staff gage and April 1920 to September 1928, water-stage recorder (staff or chain gages for short periods), within half a mile at different datums.

Average discharge.--34 years, 143 cfs (103,500 acre-ft per year).

Extremes.--Maximum discharge during year, 997 cfs May 9 (gage height, 3.31 ft); minimum daily, 17 cfs Sept. 11-13, 19. 1912-14, 1919-28, 1939-62: Maximum discharge, 2,980 cfs May 12, 1941 (gage height, 6.02 ft); maximum gage height, 8.50 ft Sept. 12, 1927, from floodmarks, site and datum then in use; minimum daily discharge, 4.0 cfs Dec. 9, 1956.

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

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

0.5	13	1.7	210
.8	33	2.0	320
1.0	52	3.0	810
1.3	98	3.4	1,060

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	39	47	40	30	30	36	133	376	284	133	35	19
2	37	44	39	30	30	40	*174	392	312	115	33	19
3	37	35	39	30	32	46	183	440	328	105	33	19
4	36	39	32	28	34	44	195	*535	348	94	34	18
5	35	39	30	30	34	46	186	651	372	*93	31	18
6	*33	36	28	32	36	35	195	734	384	91	28	*19
7	33	37	26	32	38	34	217	792	*384	93	27	21
8	35	40	24	30	36	*32	192	846	360	82	27	20
9	108	*44	26	26	34	32	171	948	348	70	27	20
10	74	44	22	22	36	30	156	912	348	66	*27	18
11	58	47	22	18	40	28	171	858	332	62	26	17
12	57	49	20	22	46	28	195	858	332	60	27	17
13	52	47	26	26	55	30	280	780	328	64	26	17
14	56	41	30	24	*50	28	422	620	312	60	25	18
15	58	45	*40	24	45	28	545	490	276	53	24	18
16	62	42	42	24	49	28	646	404	245	51	24	19
17	60	46	30	24	46	28	690	344	207	49	27	20
18	59	41	34	26	40	28	728	304	186	48	27	18
19	56	36	28	26	45	30	828	280	192	48	31	17
20	53	38	30	24	43	33	*894	304	214	46	33	20
21	56	42	32	24	40	33	734	308	*220	43	29	38
22	52	34	30	22	38	32	545	280	214	42	27	36
23	49	32	30	22	36	36	515	276	201	44	25	27
24	46	38	30	24	38	34	605	300	183	48	23	24
25	45	44	30	26	38	36	656	316	171	45	23	26
26	43	42	30	26	36	43	625	288	159	45	22	25
27	45	39	30	24	34	69	575	328	147	41	21	35
28	44	39	28	26	32	115	580	*288	144	38	21	42
29	39	38	30	28	-	142	520	262	136	37	20	33
30	41	41	32	*28	-----	117	432	245	159	37	20	27
31	47	-----	30	28	-----	112	-----	270	-----	42	19	-----
Total	1,545	1,226	940	806	1,091	1,433	12,988	15,029	7,826	1,945	822	685
Mean	49.8	40.9	30.3	26.0	39.0	46.2	433	485	261	62.7	26.5	22.8
Ac-ft	3,060	2,430	1,860	1,600	2,160	2,840	25,760	29,810	15,520	3,860	1,630	1,360

Calendar year 1961:	Max	664	Min	11	Mean	98.2	Ac-ft	71,060
Water year 1961-62:	Max	948	Min	17	Mean	127	Ac-ft	91,890

Peak discharge (base, 800 cfs)--Apr. 20 (1930) 954 cfs (3.24 ft); May 9 (2300) 997 cfs (3.31 ft).

\* Discharge measurement made on this day.  
Note.--Stage-discharge relation affected by ice Nov. 19-24, Dec. 4 to Jan. 16, Feb. 23, 26-28, Mar. 1-4, 10-19, 24. No gage-height record Jan. 17 to Feb. 14 (stage-discharge relation affected by ice part of period).

## SAN JUAN RIVER BASIN

315

9-3612. Falls Creek near Durango, Colo.

Location.--Lat 37°22'00", long 107°52'00" (revised), in SW¼ sec.21, T.36 N., R.9 W., on right bank 1.2 miles upstream from mouth and 6.5 miles north of Durango.

Drainage area.--7.18 sq mi.

Records available.--October 1959 to September 1962.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 7,120 ft, revised (from topographic map).

Extremes.--Maximum discharge during year, 14 cfs Apr. 20 (gage height, 3.77 ft); minimum daily, 0.1 cfs for many days.

1959-62: Maximum discharge, 23 cfs May 13, 1960 (gage height, 3.95 ft); minimum daily, 0.1 cfs for many days in 1961-62.

Remarks.--Records good. Small diversions above station for irrigation of meadows.

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

3.1	0.1	3.5	4.6
3.2	.7	3.6	7.1
3.3	1.6	3.8	15

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.4	0.5	0.3	0.2	0.2	*0.3	1.2	5.4	1.7	0.9	0.4	0.2
2	.4	.5	.2	.2	.2	.3	*1.4	4.8	1.6	.8	.4	.2
3	.4	.4	.3	.2	.3	.3	1.7	5.1	1.6	.8	.4	.2
4	.4	.4	.2	.2	.4	.3	2.0	5.4	1.6	.8	.4	.2
5	.4	.4	.2	.1	.3	.3	2.2	6.4	1.6	*.8	.4	.2
6	.4	.4	.2	.1	.3	.3	2.6	6.8	1.6	.7	.3	*.2
7	.4	.3	.2	.2	.6	.4	3.0	7.4	*1.5	.7	.3	.2
8	.5	.3	.2	.2	.5	.5	3.2	*7.8	1.4	.7	.3	.1
9	1.2	*.4	.2	*.2	.3	.4	3.0	6.8	1.4	.6	.3	.1
10	*.5	.3	.2	.2	.6	.4	2.9	6.4	1.3	.6	*.3	.1
11	.4	.3	.2	.1	.8	.4	2.7	5.8	1.2	.6	.3	.1
12	.3	.2	.1	.1	1.3	.3	3.0	5.4	1.2	.6	.3	.1
13	.3	.2	.1	.1	1.2	.3	4.1	5.1	1.2	.6	.3	.1
14	.3	.2	.2	.1	.9	.3	5.1	4.3	1.1	.6	.3	.1
15	.4	.2	*.2	.1	.7	.3	7.1	3.8	1.1	.6	.3	.1
16	.4	.2	.2	.1	.8	.3	8.5	3.6	1.1	.6	.3	.1
17	.4	.2	.2	.1	.4	.3	9.8	3.3	1.1	.6	.3	.1
18	.4	.2	.2	.1	.3	.3	11	3.2	1.0	.6	.3	.1
19	.4	.2	.2	.1	.3	.6	13	2.7	1.0	.6	.3	.1
20	.4	.2	.2	.1	.3	.6	*13	2.4	1.0	.6	.3	.1
21	.4	.2	.2	.1	.3	1.0	11	2.3	.8	.5	.3	.2
22	.4	.2	.2	.1	.3	.8	8.8	2.3	.8	.5	.3	.2
23	.3	.2	.2	.1	.3	.5	7.8	2.0	.8	.5	.3	.2
24	.3	.2	.2	.1	.3	.5	7.8	1.9	.8	.5	.2	.2
25	.3	.2	.2	.1	.3	1.1	8.8	1.9	.9	.5	.2	.2
26	.3	.3	.2	.1	.3	1.0	9.5	1.7	.9	.5	.2	.2
27	.3	.3	.2	.2	.3	1.1	8.5	2.4	.9	.4	.2	.2
28	.3	.3	.2	.2	.3	1.3	7.4	*2.0	.8	.4	.2	.2
29	.3	.2	.2	.2	-	1.6	6.8	1.7	.9	.4	.2	.2
30	.4	.2	.2	*.2	-----	1.2	6.1	1.5	.9	.4	.2	.2
31	.7	-----	.2	.2	-----	1.0	-----	2.2	-----	.4	.2	-----
Total	12.7	8.3	6.2	4.4	13.1	18.3	183.0	123.8	34.8	18.4	9.0	4.7
Mean	0.41	0.28	0.20	0.14	0.47	0.59	6.10	3.99	1.16	0.59	0.29	0.16
Ac-ft	25	16	12	8.7	26	36	363	246	69	36	18	9.3

Calendar year 1961: Max 13 Min 0.1 Mean 1.49 Ac-ft 1,080  
 Water year 1961-62: Max 13 Min 0.1 Mean 1.20 Ac-ft 865

Peak discharge (base, 25 cfs).--No peak above base.

\* Discharge measurement made on this day.

## SAN JUAN RIVER BASIN

9-3614. Junction Creek near Durango, Colo.

Location.--Lat 37°20'05", long 107°54'30" (revised), in sec.36, T.36 N., R.10 W., on left bank  $4\frac{1}{2}$  miles upstream from mouth and  $4\frac{1}{2}$  miles northwest of Durango.

Drainage area.--26.3 sq mi.

Records available.--October 1959 to September 1962.

Gage.--Water-stage recorder. Datum of gage is 7,045.65 ft above mean sea level (Bureau of Reclamation bench mark).

Extremes.--Maximum discharge during year, 180 cfs Apr. 19 (gage height, 4.10 ft), from rating curve extended above 110 cfs; maximum gage height, 4.95 ft Dec. 14 (backwater from ice); minimum daily discharge, 0.9 cfs Sept. 3-5, 10-13, 18.  
1959-62: Maximum discharge, about 230 cfs May 13, 1960 (gage height not determined); maximum gage height, that of Dec. 14, 1961; minimum daily discharge, that of Sept. 3-5, 10-13, 18, 1962.

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

2.3	1.7	3.3	50	2.3	0.6	3.0	20
2.5	5.5	3.6	89	2.4	1.2	3.3	44
2.7	11	3.8	128	2.6	5.5	3.6	80
3.0	26			2.8	11	4.0	155

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.7	6.0	4.3	3.2	2.6	* 3.6	24	41	* 32	11	3.7	1.0
2	4.3	5.5	4.3	3.2	3.0	4.0	* 28	45	a 38	10	3.2	1.0
3	4.1	4.3	4.3	3.2	3.6	4.0	30	54	a 44	8.9	3.4	9
4	3.9	4.3	a 3.5	3.2	4.2	3.6	33	71	a 48	8.6	3.2	9
5	3.7	4.1	a 3.0	3.2	4.6	3.8	33	85	a 48	* 8.9	2.8	9
6	3.7	3.9	2.8	3.2	4.6	4.0	34	98	a 44	9.5	2.6	* 1.0
7	3.5	4.1	2.6	3.2	4.8	4.0	34	98	* 41	9.5	2.4	1.0
8	4.5	4.1	2.4	3.0	4.8	4.0	30	* 101	36	8.0	2.2	1.0
9	25	* 4.5	2.6	* 2.8	4.6	4.0	27	102	34	7.2	1.8	1.0
10	* 14	4.5	2.4	2.6	4.6	3.1	25	96	33	6.2	* 2.0	9
11	11	4.9	2.2	2.4	5.0	3.6	25	93	33	6.2	1.6	9
12	10	5.3	2.0	2.8	5.5	3.4	30	88	33	6.2	1.6	9
13	9.5	5.3	2.4	2.8	6.5	3.2	42	70	32	6.2	1.8	9
14	10	5.1	a 2.6	3.0	6.0	3.2	65	55	30	5.5	1.6	1.0
15	11	5.1	* a 3.2	3.0	5.5	3.6	88	43	25	5.0	1.6	1.0
16	11	5.1	3.0	3.0	5.0	3.6	106	36	21	4.8	1.6	1.0
17	11	5.3	3.0	2.8	5.0	2.2	124	30	18	4.6	1.6	1.0
18	9.8	4.8	3.0	2.8	4.6	3.8	128	27	* 15	4.6	1.4	9
19	8.9	4.0	3.2	2.8	4.6	4.0	139	25	16	4.6	1.4	1.0
20	8.3	3.8	3.0	2.8	4.6	4.9	* 139	28	18	4.6	2.0	1.4
21	7.8	4.4	3.0	2.8	4.6	4.9	99	29	19	4.1	1.6	2.4
22	7.2	3.8	3.0	2.8	3.8	4.9	66	25	18	3.9	1.6	1.8
23	6.8	3.6	3.0	2.8	4.4	5.1	60	25	18	3.9	1.6	1.4
24	6.2	3.8	3.0	2.8	4.6	5.3	71	29	16	3.9	1.6	1.4
25	5.8	4.5	3.0	2.8	4.2	6.0	80	31	14	5.3	1.6	1.6
26	5.5	4.5	3.0	2.8	3.8	6.5	75	26	13	5.8	1.4	1.8
27	5.3	4.3	3.2	2.8	3.4	10	63	28	13	4.6	1.2	3.7
28	4.9	4.3	3.2	2.8	3.2	22	63	* 25	13	3.9	1.1	6.0
29	4.7	4.1	3.2	2.8	-	24	55	22	12	3.7	1.1	6.2
30	4.7	4.1	3.4	* 2.8	-----	22	47	21	12	3.2	1.1	5.0
31	6.5	-----	3.2	2.6	-----	22	-----	24	-----	4.6	1.0	-----
Total	237.3	135.4	94.0	89.6	125.7	206.3	1,863	1,571	787	187.0	58.4	50.9
Mean	7.65	4.51	3.03	2.89	4.49	6.65	62.1	50.7	26.2	6.03	1.88	1.70
Ac-ft	471	269	186	178	249	409	3,700	3,120	1,560	371	116	101

Calendar year 1961: Max 110 Min - Mean 16.0 Ac-ft 11,570

Water year 1961-62: Max 139 Min 0.9 Mean 14.8 Ac-ft 10,730

Peak discharge (base, 120 cfs).--Apr. 19 (2000) 180 cfs 4.10 ft).

\* Discharge measurement made on this day.

a No gage-height record.

Note.--Stage-discharge relation affected by ice Nov. 18-24, Dec. 4-16, 19, 20, Dec. 23 to Jan. 23, Feb. 1 to Mar. 9, Mar. 11-16, 18, 19.

## SAN JUAN RIVER BASIN

317

9-3615. Animas River at Durango, Colo.

Location.--Lat 37°16'45", long 107°52'25", in sec.20, T.35 N., R.9 W., on left bank at Western Colorado Power Co.'s plant at Durango, three-quarters of a mile upstream from Lightner Creek.

Drainage area.--692 sq mi.

Records available.--June to December 1895, April 1896 to December 1898, April 1899 to December 1900, March to May 1901, April to November 1902, March to April 1903 (gage heights only, erroneously stated as discredited in WSP 1563), May to October 1903, July 1904 to December 1905, January to December 1910 (gage heights only), January to September 1911, January 1912 to September 1962. Monthly or yearly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 6,501.57 ft above mean sea level, datum of 1929. Prior to Dec. 31, 1905, staff gages at several sites three-quarters of a mile downstream at various datums. Jan. 1, 1910, to Aug. 12, 1911, staff gage at present site at different datum. Jan. 1, 1912, to Mar. 2, 1921, staff gage or water-stage recorder at present site and datum.

Average discharge.--57 years (1896-1900, 1904-5, 1910-62), 862 cfs (624,100 acre-ft per year).

Extremes.--Maximum discharge during year, 4,280 cfs May 10 (gage height, 5.72 ft); minimum daily, 142 cfs Jan. 11. 1895-1905, 1910-62: Maximum discharge, 25,000 cfs Oct. 5, 1911 (gage height, 11 ft, present site and datum), from rating curve extended above 13,000 cfs; minimum daily, 94 cfs Mar. 2, 1913. Maximum flood known, that of Oct. 5, 1911.

Remarks.--Records good except those for period of no gage-height record, which are fair. Diversions for irrigation of about 4,000 acres above station. Natural regulation by many lakes and regulation for power above station.

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

1.8	120	3.5	1,170
2.2	245	4.0	1,740
2.5	395	5.0	3,080
3.0	740	6.0	4,700

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	496	422	330	202	233	233	417	1,390	1,520	2,780	* 652	245
2	450	417	325	202	241	270	463	1,320	1,840	2,430	615	237
3	439	380	320	199	255	290	508	1,560	2,130	2,130	585	237
4	428	380	310	202	280	265	550	2,030	2,160	2,040	578	233
5	412	380	290	213	270	275	564	2,510	2,390	1,870	564	* 233
6	400	370	285	213	305	275	578	2,820	2,650	1,720	536	233
7	390	355	280	233	310	275	615	3,240	2,890	1,700	515	241
8	385	365	275	233	320	265	600	3,300	2,460	1,630	476	265
9	550	380	280	225	315	270	564	* 3,680	2,640	1,540	456	265
10	557	380	241	184	315	275	* 536	4,040	2,930	1,390	444	245
11	502	380	241	142	330	250	508	3,990	* 2,990	* 1,320	434	237
12	522	385	233	190	335	241	557	4,030	3,260	1,270	434	229
13	508	385	237	221	355	250	700	3,480	3,350	1,270	439	217
14	536	370	233	221	335	233	972	2,780	3,400	1,120	422	217
15	564	375	270	202	330	237	1,320	2,260	2,940	1,010	380	221
16	585	370	275	202	330	245	1,820	1,850	2,330	990	370	217
17	* 592	380	237	213	335	250	1,990	1,810	1,790	909	360	229
18	585	370	241	225	315	245	2,320	* 1,450	1,520	892	350	221
19	578	350	217	229	305	245	2,590	1,310	1,990	909	370	209
20	550	345	217	221	315	245	2,830	1,500	2,720	* 927	400	221
21	529	370	241	217	315	250	2,690	1,690	2,980	868	400	315
22	515	350	233	196	295	250	2,020	1,480	2,800	844	* 385	502
23	502	345	209	* 193	* 285	255	1,870	1,440	2,870	812	380	515
24	463	345	213	205	290	260	* 2,170	1,680	2,680	860	370	* 422
25	450	350	209	221	285	255	2,640	1,910	2,580	852	355	390
26	434	355	209	221	280	265	2,550	1,640	2,570	844	330	370
27	428	* 340	209	a 205	270	290	2,200	1,860	* 2,640	764	315	375
28	428	335	* 199	a 205	241	* 360	2,200	1,700	2,590	716	305	412
29	406	325	217	a 210	-	428	2,070	1,460	2,410	684	290	417
30	412	330	221	a 215	-----	428	1,720	1,370	2,870	638	275	385
31	* 428	-----	221	a 220	-----	400	-----	* 1,390	-----	692	265	-----
Total	15,024	10,984	7,718	6,480	8,390	8,575	43,132	67,970	76,890	38,421	13,050	8,755
Mean	485	366	249	209	300	277	1,438	2,193	2,563	1,239	421	292
Ac-ft	29,800	21,790	15,310	12,850	16,640	17,010	85,550	134,800	152,500	76,210	25,880	17,370

Calendar year 1961: Max 3,860 Min 148 Mean 684 Ac-ft 495,000  
 Water year 1961-62: Max 4,040 Min 142 Mean 837 Ac-ft 605,700

Peak discharge (base, 4,000 cfs).--May 10 (0800) 4,280 cfs (5.72 ft).

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



## SAN JUAN RIVER BASIN

9-3629. Florida River near Hermosa, Colo.

Location.--Lat 37°22'40", long 107°39'40", in NW¼ sec.20, T.36 N., R.7 W., on left bank 2 miles upstream from True Creek and 10 miles southeast of Hermosa.

Drainage area.--69.4 sq mi.

Records available.--October 1955 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 7,940 ft (by barometer).

Average discharge.--7 years, 89.7 cfs (64,940 acre-ft per year).

Extremes.--Maximum discharge during year, about 800 cfs May 9; maximum gage height, 8.79 ft May 9; minimum daily discharge, 8 cfs

Jan. 11.

1955-62: Maximum discharge, 1,880 cfs July 26, 1957; maximum gage height, that of May 9, 1962; minimum daily discharge, 4.0 cfs Jan. 11, 31, 1957.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor. Diversions above station for irrigation of 150 acres.

## Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	62	44	19	18	9	*a 12	31	270	212	132	30	12
2	58	41	18	18	9.5	13	*33	285	292	122	27	*13
3	56	37	18	16	10	13	35	320	360	115	25	12
4	54	38	15	14	10	12	38	378	374	113	27	12
5	51	36	14	13	10	12	41	450	477	*108	26	11
6	49	32	13	13	10	11	44	477	477	119	22	*11
7	47	32	13	14	11	11	48	*500	*464	120	20	13
8	47	33	12	13	12	10	49	572	428	98	19	12
9	*64	30	13	13	12	10	37	e640	459	87	19	12
10	54	28	11	10	13	10	37	e600	450	80	*18	11
11	52	28	10	8	14	9	38	a580	436	74	18	10
12	50	28	9	9	15	9	43	a570	*441	70	17	10
13	50	26	11	10	16	9	51	a480	436	66	17	10
14	53	*26	13	11	15	9.5	71	a450	405	64	17	10
15	57	28	14	9.5	14	10	83	a370	332	54	15	11
16	64	28	15	9.5	14	11	124	a310	285	50	15	11
17	70	28	15	9.5	14	11	171	a270	242	48	17	11
18	71	24	15	10	13	11	195	a240	232	46	20	10
19	69	25	15	10	13	11	238	a230	250	44	18	11
20	68	24	15	10	14	11	267	a280	279	41	18	13
21	64	24	15	9.5	13	11	302	310	*282	38	18	25
22	62	20	15	9	12	10	258	*292	264	36	23	29
23	57	20	16	8.5	13	11	*250	e280	255	*38	20	22
24	54	20	17	8.5	13	11	332	e280	240	36	17	18
25	52	21	17	9	13	12	374	e300	212	36	17	22
26	48	20	16	9	12	17	364	273	184	35	15	24
27	48	20	16	9	11	24	328	292	171	32	14	24
28	45	20	16	8.5	a10	28	320	*242	154	29	14	33
29	41	18	*18	*9	-	28	302	212	148	28	13	32
30	42	20	17	9	-----	24	279	201	152	28	14	26
31	45	-----	17	9	-----	25	-----	206	-----	31	12	-----
Total	1,704	819	458	336.5	345.5	416.5	4,783	11,160	9,393	2,018	582	481
Mean	55.0	27.3	14.8	10.9	12.3	13.4	159	360	313	65.1	18.8	16.0
Ac-ft	3,380	1,620	908	667	685	826	9,490	22,140	18,630	4,000	1,150	954

Calendar year 1961: Max 639 Min 7.5 Mean 81.8 Ac-ft 59,210  
 Water year 1961-62: Max 640 Min 8 Mean 89.0 Ac-ft 64,450

Peak discharge (base, 500 cfs).--May 9 (2300) about 800 cfs (8.79 ft); June 6 (2300) 590 cfs (8.01 ft).

\* Discharge measurement made on this day.

a No gage-height record.

e Stage-discharge relation indefinite.

Note.--Stage-discharge relation affected by ice Nov. 21-24, Dec. 5 to Mar. 18, Mar. 24.

## SAN JUAN RIVER BASIN

319

9-3631. Salt Creek near Oxford, Colo.

Location.--Lat 37°08'30", long 107°45'00", in SW¼ sec.32, T.34 N., R.8 W., on right bank 600 ft upstream from highway, 2½ miles upstream from mouth, 3 miles southwest of Oxford, and 11½ miles southeast of Durango.

Drainage area.--16.2 sq mi.

Records available.--October 1956 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 6,480 ft (from topographic map).

Average discharge.--6 years, 11.9 cfs (8,620 acre-ft per year).

Extremes.--1959-60: Maximum discharge during water year, 394 cfs Mar. 19 (gage height, 4.67 ft), from rating curve extended above 140 cfs on basis of computation of peak flow through culverts and over roadway; no flow Jan. 21 to Feb. 10.

1960-61: Maximum discharge during water year, 143 cfs Oct. 18 (gage height, 3.92 ft); minimum daily, 0.1 cfs Dec. 29, 30, Jan. 1, 2, 29, Feb. 7, 8.

1961-62: Maximum discharge during water year, 57 cfs Sept. 21 (gage height, 2.96 ft); no flow Apr. 25, Apr. 28 to May 8.

1956-62: Maximum discharge, 713 cfs Aug. 6, 1957 (gage height, 5.18 ft), from rating curve extended above 60 cfs on basis of computation of peak flow through culverts and over roadway; no flow at times in 1959-60, 1962.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor. Water imported from Los Pinos River. Most of flow is return flow from irrigated areas.

Discharge, in cubic feet per second, water year October 1959 to September 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	81	12					0.5	0.4	19	21	19	36
2	73	33					.4	.3	17	19	21	35
3	21	39					.4	.3	15	18	*21	31
4	22	8.0				1	.5	.4	15	21	19	14
5	12	5.3	(*)		(*)		*.4	.9	21	24	21	23
					0							
6	11	4.7					.4	.5	24	24	20	22
7	*12	*4.7					.4	1.7	22	20	15	21
8	10	4.0		(*)		*a 3	.4	1.1	25	a 22	17	18
9	10	3.2				20	.3	.7	28	a 23	18	16
10	9.8	2.9				*50	.3	*7.8	28	a 24	18	17
				0.3								
11	8.7	3.1				*60	.3	7.5	35	a 24	19	19
12	9.0	3.4				*117	.5	5.3	37	a 22	19	18
13	9.4	3.4				165	.5	10	31	*a 22	21	19
14	10	3.2				132	.3	11	29	21	21	21
15	11	2.6				65	.3	8.7	25	24	23	26
				0.8								
16	11	3.1				a 40	.2	7.2	*23	24	*19	27
17	10	3.1				24	.2	8.4	20	21	21	31
18	11	2.9				*80	.2	12	19	21	24	35
19	12	3.4				169	.2	18	19	17	27	39
20	12	3.2				139	*.2	18	18	18	22	40
					.2							
21	10	2.8				87	.2	22	*20	21	22	29
22	8.0	2.8				46	.2	31	21	20	24	26
23	7.5	3.0				17	.2	31	22	19	31	21
24	7.5	3.2				5.1	.2	29	23	23	26	17
25	7.2	3.2				2.4	.2	27	23	23	25	17
				0								
26	6.5	2.6				1.2	.2	*21	22	21	25	17
27	6.5	2.2				.8	.3	19	18	20	22	15
28	7.0	1.4				.6	.4	15	17	18	23	13
29	8.7	1.4				.6	.6	17	21	17	24	12
30	21	1.6				.5	.5	21	24	20	25	12
31	53	-----			-----	.6	-----	18	-----	19	*25	-----
Total	508.8	172.4	24.8	6.0	3.6	1,232.8	9.9	371.2	681	651	677	687
Mean	16.4	5.75	0.8	0.19	0.13	39.8	0.33	12.0	22.7	21.0	21.8	22.9
Ac-ft	1,010	342	49	12	7.1	2,450	20	736	1,350	1,290	1,340	1,360

Calendar year 1959: Max 81 Min 0 Mean 7.30 Ac-ft 5,290  
 Water year 1959-60: Max 169 Min 0 Mean 13.8 Ac-ft 9,970

\* Discharge measurement or observation of no flow made on this day.

a No gage-height record.

Note.--Stage-discharge relation affected by ice Nov. 21 to Mar. 11.

## SAN JUAN RIVER BASIN

9-3631. Salt Creek near Oxford, Colo.--Continued

Discharge, in cubic feet per second, water year October 1960 to September 1961

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	12	*9.8	0.5	0.1	0.4	3.0	2.8	*0.2	6.8	24	28	25
2	12	2.8	.4	.1	.3	*3.0	.9	.2	*15	23	35	25
3	11	1.5	.6	.2	.4	3.2	.7	.2	17	24	62	29
4	10	4.9	.4	.2	.4	3.2	.6	.2	18	30	*40	33
5	*11	4.0	.3	.2	.3	2.1	.5	.2	21	30	35	29
6	13	2.9	.2	.3	.2	1.6	*.5	.2	19	*28	39	28
7	13	4.9	.4	.3	.1	1.4	9.3	.3	15	33	39	*23
8	14	5.5	.4	.3	.1	1.1	27	9.4	15	46	34	18
9	19	4.2	.3	.2	.3	1.5	1.4	7.0	20	44	30	27
10	24	2.9	.2	.3	.6	7.8	.7	5.1	20	44	26	29
11	27	2.8	.3	.2	*2.0	21	.6	3.1	17	17	24	21
12	29	2.9	.3	.2	5.0	*22	.5	2.6	17	30	26	20
13	29	2.3	.3	.2	*8	19	.5	3.1	18	23	28	9.0
14	24	2.3	.3	.2	9	18	.4	5.1	20	22	26	3.6
15	29	4.2	.3	.2	7	18	.3	10	20	27	28	6.8
16	71	3.4	.2	.2	6	15	.3	8.4	*26	27	*36	8.0
17	52	3.4	.3	.2	5.0	6.8	.3	13	27	23	54	6.5
18	88	3.4	.2	.2	4.0	7.5	.3	17	24	18	34	18
19	25	3.4	.3	.2	4.6	5.8	.3	13	23	21	34	21
20	14	3.6	.3	.2	5.0	15	.4	14	19	19	30	*9.0
21	13	3.4	.2	.2	4.6	8.0	.2	15	21	19	30	6.8
22	11	3.4	.2	.2	4.0	4.9	.2	14	22	21	28	7.8
23	9.8	3.4	.3	.3	3.6	3.6	.2	15	22	17	32	7.2
24	9.4	2.0	.3	.4	3.4	1.5	*.2	*18	25	15	36	5.8
25	9.4	.8	.2	.3	3.2	.6	.2	17	25	13	37	13
26	9.0	.6	.2	.2	3.6	.5	.2	17	25	12	37	17
27	8.4	.8	.2	.4	3.2	.4	.2	20	26	14	32	9.8
28	8.7	.4	*.2	.3	3.0	.8	.2	19	27	16	29	7.8
29	9.0	.4	.1	.1	-	19	.2	19	29	17	26	7.8
30	10	*.4	.1	*.2	-----	35	.2	20	24	32	28	7.5
31	12	-----	.2	.3	-----	16	-----	12	-----	29	25	-----
Total	636.7	90.7	8.7	7.1	87.3	266.3	50.3	298.3	623.8	758	1,028	479.4
Mean	20.5	3.02	0.28	0.23	3.12	8.59	1.68	9.62	20.8	24.5	33.2	16.0
Ac-ft	1,260	180	17	14	173	528	100	592	1,240	1,500	2,040	951

Calendar year 1960: Max 169 Min 0 Mean 13.9 Ac-ft 10,020  
 Water year 1960-61: Max 88 Min 0.1 Mean 11.9 Ac-ft 8,600

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 16 to Jan. 26, Feb. 14, 15. No gage-height record Jan. 27 to Feb. 13, Feb. 16 to Mar. 2 (stage-discharge relation affected by ice during most of periods), July 5, 6, 9, 10, Aug. 8-15.

## SAN JUAN RIVER BASIN

321

9-3631. Salt Creek near Oxford, Colo.--Continued

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7.8	19	13			b 0.6	0.5	0	32	22	24	20
2	8.7	14	13			b .8	*.5	0	29	23	25	19
3	8.7	11	13			b .7	.5	0	29	24	* 24	21
4	8.7	11	b 1.2			.9	.5	0	29	23	25	23
5	8.0	11	b 1.1			1.0	.5	0	25	21	23	23
6	7.5	11	b 1.1		b 1.2	1.5	.4	0	18	* 21	24	* 26
7	7.8	10	b 1.1			* 4.2	.3	0	16	24	22	30
8	8.7	* 11	b 1.0			3.8	.3	0	* 17	28	20	31
9	* 4.0	12	b 4.5		(*)	3.4	.5	1.7	22	28	21	32
10	26	11	b 1.4		b 4	1.6	.7	3.8	21	27	23	29
11	23	10	b 1.4		b 8	1.4	.6	4.4	21	25	21	32
12	25	8.0	b 1.2		b 1.2	.8	.4	4.9	16	25	22	33
13	23	4.2	b .8		b 1.8	.8	.3	6.5	19	29	25	28
14	23	4.4	* .6		* b 1.4	.8	.2	7.0	19	27	22	29
15	23	12	b .5		b 1.4	.8	.2	9.8	20	25	24	24
16	23	23	b .6	b 0.3	13	1.1	.2	11	22	24	23	19
17	21	24	b .5		9.0	2.8	.2	11	24	21	25	22
18	21	17	b .4		4.0	3.6	.2	12	24	22	23	13
19	23	14	b .5		2.4	3.1	.2	8.7	24	19	27	14
20	23	13	b .6		2.1	4.2	.2	9.0	21	20	32	23
21	23	14	b .7		1.4	4.4	.1	9.4	19	22	35	42
22	25	b 1.3	b .7		1.0	2.4	.1	11	17	21	33	34
23	25	b 1.3	b .4		.9	2.0	* .1	16	17	21	29	31
24	26	b 1.3	b .4		.9	1.7	.1	12	18	21	24	33
25	27	13	b .3		1.1	1.8	0	* 11	20	24	25	28
26	27	13	b .3		.9	1.8	.1	13	21	27	24	27
27	22	13	b .3		.9	1.5	.1	30	22	24	21	33
28	20	13	b .3		b .5	1.0	0	38	20	25	21	36
29	21	13	b .4	(*)	-	.8	0	35	27	23	21	27
30	26	13	b .4		-----	.7	0	33	27	24	19	25
31	31	-----	b .4		-----	.6	-----	37	-----	21	20	-----
Total	632.9	381.6	111.6	9.3	118.9	56.6	8.0	335.2	656	731	747	807
Mean	20.4	12.7	3.60	0.3	4.25	1.83	0.27	10.8	21.9	23.6	24.1	26.9
Ac-ft	1,260	757	221	18	236	112	16	665	1,300	1,450	1,480	1,600

Calendar year 1961: Max 62 Min 0.1 Mean 12.9 Ac-ft 9,380  
 Water year 1961-62: Max 42 Min 0 Mean 12.6 Ac-ft 9,120

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 14 to Feb. 9.



9-3632. Florida River at Bondad, Colo.

Location.--Lat 37°03'20", long 107°52'10", in S½ sec.31, T.33 N., R.9 W., on left bank 0.6 mile upstream from mouth, 0.7 mile southeast of Bondad, and 15 miles south of Durango.

Drainage area.--221 sq mi.

Records available.--October 1956 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 6,000 ft (from topographic map). Prior to Sept. 11, 1958, at site 300 ft upstream at datum 2.39 ft higher.

Average discharge.--6 years, 83.0 cfs (60,090 acre-ft per year).

Extremes.--Maximum discharge during year, 429 cfs June 7 (gage height, 4.22 ft); minimum daily, 14 cfs Feb. 28.

1956-62: Maximum discharge determined, 1,430 cfs June 7, 1958, but may have been higher on July 26, 1957; minimum daily, 4.6 cfs July 24, 1959.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 14,000 acres above station.

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

2.3	13	3.5	190
2.6	30	4.0	345
2.9	60	4.5	520
3.2	114		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	a 38	56	36	32	28	20	50	98	80	47	21	19
2	a 36	58	36	32	30	23	56	127	89	43	23	19
3	a 34	50	36	32	30	24	63	114	175	38	*23	19
4	a 32	45	33	30	32	23	70	127	214	34	23	23
5	a 32	45	30	32	34	22	* 74	202	274	31	22	24
6	*a 30	44	30	34	32	24	78	244	328	*32	23	* 25
7	29	40	28	34	30	* 29	85	* 271	* 348	42	24	27
8	25	41	28	34	30	29	92	286	265	43	22	29
9	58	* 43	32	32	30	29	90	298	271	36	23	30
10	65	41	30	28	32	29	90	356	286	29	23	29
11	52	38	24	22	42	22	87	328	271	27	23	31
12	52	38	20	22	55	18	87	338	271	26	23	32
13	52	35	a 22	24	70	26	100	295	271	29	26	29
14	49	32	*a 24	26	* 65	23	123	265	268	27	25	28
15	46	34	28	26	60	23	163	205	214	26	23	29
16	52	46	30	a 24	55	25	193	146	155	25	23	23
17	87	50	30	a 24	50	26	244	108	112	25	26	25
18	98	47	30	a 24	36	28	256	76	78	24	23	23
19	96	36	30	a 24	31	29	292	45	63	23	25	18
20	90	36	32	a 24	35	32	317	39	* 90	21	29	23
21	89	45	30	a 24	29	32	328	68	114	23	31	40
22	87	36	30	a 24	25	26	292	74	102	23	29	42
23	80	35	30	a 24	26	26	* 262	68	92	24	28	34
24	73	39	32	a 24	26	25	289	118	78	23	23	36
25	71	43	34	a 24	29	23	304	* 172	68	22	22	34
26	65	41	34	a 24	22	28	298	138	55	31	22	30
27	62	37	32	a 22	23	32	253	141	* 50	28	20	34
28	58	38	30	a 22	14	42	220	150	46	25	21	41
29	56	37	30	a 22	-	50	205	108	45	22	19	39
30	59	39	32	*a 24	-----	49	153	85	47	25	19	31
31	76	-----	32	26	-----	50	-----	92	-----	22	19	-----
Total	1,829	1,255	935	820	1,001	887	5,214	5,182	4,820	896	726	866
Mean	59.0	41.8	30.2	26.5	35.8	28.6	174	167	161	28.9	23.4	28.9
Ac-ft	3,630	2,490	1,850	1,630	1,990	1,760	10,340	10,280	9,560	1,780	1,440	1,720

Calendar year 1961: Max 370 Min 10 Mean 63.7 Ac-ft 46,120

Water year 1961-62: Max 356 Min 14 Mean 66.9 Ac-ft 48,470

Peak discharge (base, 600 cfs).--No peak above base.

\* Discharge measurement made on this day.

a No gage-height record.

Note.--Stage-discharge relation affected by ice Dec. 10 to Feb. 17.

## SAN JUAN RIVER BASIN

323

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 1962. 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). Prior to Sept. 14, 1937, at datum between 1.52 and 1.36 ft higher. Sept. 15, 1937, to Sept. 30, 1946, at datum 1.36 ft higher.

Average discharge.--29 years, 912 cfs (660,300 acre-ft per year).

Extremes.--Maximum discharge during year, 4,690 cfs May 12 (gage height, 7.31 ft); minimum daily, 150 cfs Jan. 11.  
1933-62: Maximum discharge, 13,100 cfs June 19, 1949 (gage height, 11.45 ft); minimum daily, 90 cfs Jan. 21, 1935.  
Maximum flood known occurred Oct. 5 or 6, 1911.

Remarks.--Records fair 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.

Cooperation.--Records furnished by New Mexico district.

Rating tables, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used June 12-16, Sept. 2-27)

Oct. 1 to Feb. 19,  
Sept. 2-30

Feb. 20 to Sept. 1

3.6	150	3.2	268	5.0	1,340
3.8	213	3.6	394	6.0	2,580
4.0	305	4.0	548	7.0	4,210
4.3	480	4.5	860	7.2	4,590
4.7	810				

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	598	480	a 350	b 210	b 250	a 290	535	1,660	1,620	2,940	680	278
2	508	460	a 350	b 200	b 260	b 320	577	1,630	1,890	2,550	639	260
3	467	434	a 340	b 200	b 270	b 310	650	1,730	2,310	2,240	607	251
4	448	373	a 330	a 210	a 290	b 310	704	2,100	2,340	2,120	577	247
5	422	385	a 320	a 210	a 290	b 320	738	2,680	2,660	1,990	567	234
6	397	373	a 300	a 210	a 320	b 320	752	2,980	2,920	1,850	531	230
7	373	355	a 290	a 230	a 320	b 320	796	3,370	3,220	1,850	514	230
8	367	367	a 290	a 230	a 340	b 320	804	3,560	2,760	1,770	483	265
9	759	379	a 290	a 230	a 340	b 310	773	3,820	2,880	1,700	464	265
10	666	403	a 270	a 200	a 340	b 300	738	4,230	3,210	1,590	449	251
11	522	385	b 250	b 150	a 350	b 290	704	4,340	3,320	1,520	434	247
12	529	391	a 240	b 200	a 370	b 280	710	4,440	3,560	1,480	430	238
13	543	403	b 240	b 230	a 380	b 290	887	4,140	3,650	1,480	430	230
14	574	397	b 250	b 230	a 380	b 280	1,200	3,540	3,730	1,330	430	230
15	622	385	b 280	b 220	a 350	b 300	1,630	2,760	3,270	1,180	394	230
16	675	403	b 280	b 210	a 350	b 300	2,120	2,200	2,570	1,080	405	226
17	711	397	b 250	b 220	a 350	b 300	2,380	1,850	2,020	1,020	367	226
18	729	403	b 250	b 230	a 340	b 300	2,600	1,540	1,660	977	357	230
19	702	a 380	b 230	a 240	a 320	b 300	2,960	1,400	1,890	977	360	221
20	657	a 380	b 230	a 230	b 330	b 300	3,300	1,510	2,720	1,000	394	247
21	639	a 390	b 240	a 230	b 320	b 310	3,290	1,760	3,140	968	405	335
22	606	a 380	b 230	a 210	b 310	b 300	2,640	1,620	2,970	923	394	480
23	598	a 370	b 220	a 210	b 310	b 310	2,330	1,530	3,000	887	391	550
24	529	a 370	b 210	b 210	b 310	b 320	2,550	1,730	2,760	896	377	448
25	508	a 370	b 210	b 230	b 310	b 350	3,110	2,060	2,670	914	360	428
26	487	a 370	b 210	b 240	b 300	b 400	3,110	1,850	2,610	950	350	409
27	480	a 360	b 210	b 240	b 300	b 450	2,700	1,950	2,700	804	328	434
28	467	a 350	b 200	b 240	a 290	b 460	2,580	1,930	2,670	738	325	508
29	448	a 350	b 210	b 240	-	b 475	2,440	1,660	2,500	686	310	508
30	448	a 350	b 220	b 240	-----	b 500	2,060	1,510	2,880	674	298	448
31	494	-----	b 220	b 240	-----	b 480	-----	1,510	-----	692	292	-----
Total	16,973	11,593	8,010	6,820	8,990	10,415	52,368	74,590	82,100	41,776	13,342	9,384
Mean	548	386	258	220	321	336	1,746	2,406	2,737	1,348	430	313
Ac-ft	33,670	22,990	15,890	13,530	17,830	20,660	103,900	147,900	162,800	82,860	26,460	18,610

Calendar year 1961: Max 4,460 Min 166 Mean 789 Ac-ft 571,500

Water year 1961-62: Max 4,440 Min 150 Mean 922 Ac-ft 667,100

Peak discharge (base, 4,000 cfs).--May 12 (1400) 4,690 cfs (7.31 ft); June 14 (1030) 4,230 cfs (7.11 ft).

a No gage-height record.

b Stage-discharge relation affected by ice.

## SAN JUAN RIVER BASIN

9-3655. La Plata River at Hesperus, Colo.

Location.--Lat 37°17'20", long 108°02'05", in sec.14, T.35 N., R.11 W., on right bank at Hesperus 700 ft downstream from U. S. Highway 160.

Drainage area.--37 sq mi, approximately.

Records available.--June to August 1904, May 1905 to September 1906, August to November 1910, June 1917 to September 1962. Monthly discharge only for some periods, published in WSP 1313. Records for Nov. 11 to Dec. 31, 1910, published in WSP 289, have been found to be unreliable and should not be used.

Gage.--Water-stage recorder. Datum of gage is 8,104.71 ft above mean sea level, datum of 1929. Prior to May 1, 1920, staff gage and May 1, 1920, to May 24, 1927, water-stage recorder, at several sites about 600 ft downstream at different datums. May 25, 1927, to Sept. 30, 1938, water-stage recorder at site 60 ft downstream and Oct. 1, 1938, to Sept. 30, 1941, at present site at datum 1.00 ft higher.

Average discharge.--46 years (1905-6, 1917-62), 46.0 cfs (33,300 acre-ft per year).

Extremes.--Maximum discharge during year, 328 cfs May 9; maximum gage height, 2.30 ft Apr. 19; minimum daily discharge 3.2 cfs Sept. 19, 1904-6, 1910, 1917-62: Maximum discharge, 1,880 cfs Sept. 22, 1941 (gage height, 4.30 ft, present datum), from rating curve extended above 620 cfs on basis of slope-area measurement of peak flow; minimum not determined.  
Maximum flood known occurred Oct. 5, 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. One diversion above station for irrigation of about 2,000 acres along Cherry Creek below station.

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

1.0	2.5	1.3	18	1.8	114
1.1	6.0	1.4	27	2.0	188
1.2	11	1.6	58	2.3	340

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	17	18					14	95	34	44	13	5.3
2	17	17					17	105	53	42	12	5.0
3	14	14					20	143	58	34	12	5.0
4	14	14					26	188	86	34	12	4.6
5	14	14					34	213	105	39	12	5.0
6	14	13					49	235	105	45	11	5.0
7	12	12					63	235	105	49	10	5.0
8	15	12					58	235	89	45	10	5.0
9	27	13					58	260	92	40	8.5	5.0
10	17	13					58	250	98	36	8.0	4.6
11	17	13				11	60	235	98	35	7.5	4.2
12	18	13					68	217	102	35	7.5	3.9
13	17	13					89	188	102	36	7.0	4.2
14	18	13					128	158	89	30	7.0	3.9
15	20	13					169	118	68	26	7.0	3.9
16	22	13	11	10	12		201	102	54	23	7.0	3.6
17	24	13					209	86	42	22	7.0	3.6
18	25	b12					250	76	35	22	7.0	3.6
19	26	b12					270	58	51	21	6.5	3.2
20	26	12					265	56	68	21	6.5	4.2
21	25	12				8.5	217	63	68	20	6.5	5.6
22	23	12				8.5	150	54	66	18	6.0	5.6
23	22	12				9.0	128	49	58	19	6.0	5.0
24	21	12				9.5	169	60	51	19	6.0	4.6
25	19	13				9.5	205	66	54	19	6.0	4.6
26	19	13				9.0	173	45	54	20	5.6	4.2
27	17	13				9.5	136	44	54	17	5.6	4.6
28	17	13				11	143	34	53	15	5.6	6.0
29	17	13				11	125	27	51	15	5.3	5.3
30	14	13				11	102	25	54	14	5.3	5.0
31	18	-----			-----	13	-----	28	-----	14	5.3	-----
Total	586	393	341	310	336	329.5	3,654	3,748	2,097	869	241.7	138.3
Mean	18.9	13.1	11	10	12	10.6	122	121	69.9	28.0	7.80	4.61
Ac-ft	1,160	780	676	615	666	654	7,250	7,430	4,160	1,720	479	274

Calendar year 1961: Max 280 Min - Mean 39.0 Ac-ft 28,240

Water year 1961-62: Max 270 Min 3.2 Mean 35.7 Ac-ft 25,860

Peak discharge (base, 230 cfs).--Apr. 19 (2300) 322 cfs (2.30 ft); May 9 (2330) 328 cfs (2.25 ft).

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 21 to Mar. 20 (stage-discharge relation affected by ice during most of period).

## 9-3665. La Plata River at Colorado-New Mexico State line

Location.--Lat 37°00'00", long 108°11'20", in sec.10, T.32 N., R.13 W., on right bank at Colorado-New Mexico State line, 3 miles north of Pendleton, N. Mex.

Drainage area.--331 sq mi.

Records available.--January 1920 to September 1962. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 5,975.15 ft above mean sea level, datum of 1929. Prior to Apr. 30, 1920, staff gage at site 2 miles upstream at different datum. May 1 to June 18, 1920, staff gage and June 19, 1920, to Sept. 30, 1924, water-stage recorder, at present site at datum 1.26 ft higher. Oct. 1, 1924, to Mar. 16, 1934, water-stage recorder at present site at datum 0.26 ft higher.

Average discharge.--42 years, 34.6 cfs (25,050 acre-ft per year).

Extremes.--Maximum discharge during year, 284 cfs Apr. 16 (gage height, 2.67 ft), from rating curve extended above 110 cfs; minimum daily, 1.1 cfs Sept. 13-20.

1920-62: Maximum discharge, 4,750 cfs Aug. 24, 1927 (gage height, 11.36 ft, present datum), from rating curve extended above 750 cfs on basis of slope-area measurement of peak flow; no flow at times for many years.

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 above station for irrigation of about 15,000 acres, mostly above station.

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

Oct. 1 to Dec. 31

Jan. 1 to Sept. 30

0.6	2.6	0.2	1.0	1.1	34
.7	4.6	.3	1.6	1.4	64
.9	12	.4	3.2	2.0	145
1.2	29	.6	8.6	2.7	284
		.8	16		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	12	16	10		11	18	43	40	23	31	4.9	1.4
2	11	16	9.6		12	20	47	29	28	30	4.2	1.5
3	8.8	13	9.6		13	15	51	51	31	24	5.4	1.4
4	6.0	11	10		14	15	58	75	38	20	6.8	1.4
5	4.6	10	10		15	14	71	84	60	19	5.6	1.4
6	4.4	10	10		15	14	83	89	63	21	5.1	1.4
7	4.4	10	11		17	15	104	94	71	33	4.2	1.3
8	6.0	10	10		18	15	113	82	71	33	3.2	1.3
9	25	10	b 9.0		20	16	107	82	71	28	2.7	1.3
10	23	10	b 9.0		30	16	120	72	63	19	2.4	1.2
11	12	9.6			65	15	111	62	58	14	2.1	1.2
12	8.4	9.6			80	15	113	74	72	11	2.1	1.2
13	8.4	8.8			80	24	122	72	70	11	1.9	1.1
14	7.7	8.0			41	16	150	75	59	15	1.8	1.1
15	7.3	8.0		8	25	14	193	83	51	13	1.6	1.1
16	8.0	8.0			25	13	251	86	45	11	1.6	1.1
17	10	8.8			23	14	255	70	45	9.3	1.5	1.1
18	12	8.8			18	17	255	36	36	8.0	1.5	1.1
19	12	8.4			16	17	219	30	30	7.1	1.5	1.1
20	12	8.4			18	19	173	22	36	6.8	1.5	1.1
21	14	9.6	6		16	22	132	26	43	5.1	1.8	2.2
22	14	11			16	19	93	27	51	4.2	1.6	2.6
23	16	10			16	19	63	25	48	4.4	1.6	2.1
24	15	10			15	16	51	29	39	8.6	1.5	1.9
25	14	10			16	16	57	43	36	8.6	1.4	1.9
26	12	10			16	22	58	43	39	10	1.4	1.9
27	11	10			16	39	46	53	36	5.9	1.4	4.6
28	11	10			14	84	38	41	36	3.9	1.4	1.6
29	12	10			-	90	40	38	38	3.9	1.4	9.3
30	12	10			-----	57	37	29	47	4.4	1.4	5.9
31	15	-----			-----	41	-----	22	-----	5.1	1.4	-----
Total	349.0	303.0	224.2	248	681	747	3,254	1,684	1,434	428.3	77.9	73.2
Mean	11.3	10.1	7.23	8	24.3	24.1	108	54.3	47.8	13.8	2.51	2.44
Ac-ft	692	601	445	492	1,350	1,480	6,450	3,340	2,840	850	155	145

Calendar year 1961: Max 125 Min 0 Mean 22.0 Ac-ft 15,910

Water year 1961-62: Max 255 Min 1.1 Mean 26.0 Ac-ft 18,840

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 11 to Feb. 13 (stage-discharge relation affected by ice during most of period).



9-3710. Mancos River near Towaoc, Colo.

Location.--Lat 37°02' long 108°43', in NW¼ sec.18, T.32 N., R.17 W., on left bank 750 ft upstream from bridge on U. S. Highway 666, 6 miles upstream from Aztec Creek, and 12 miles south of Towaoc.

Drainage area.--550 sq mi, approximately.

Records available.--October 1920 to September 1943, February 1951 to September 1962. Monthly discharge only for some periods published in WSP 1313.

Gage.--Water-stage recorder at present site Oct. 13, 1941, to Sept. 30, 1943, and since Mar. 11, 1954. Datum of gage is 5,055.98 ft above mean sea level, datum of 1929. Prior to Mar. 15, 1940, staff gage or water-stage recorder 2½ miles downstream at different datum. Mar. 15, 1940, to Oct. 12, 1941, and Feb. 16, 1951, to Mar. 10, 1954, water-stage recorder at site 600 ft downstream at datum 4.95 ft lower.

Average discharge.--34 years, 54.2 cfs (39,240 acre ft per year).

Extremes.--Maximum discharge during year, 370 cfs Sept. 28 (gage height, 2.94 ft); no flow for many days.  
1920-43, 1951-62: Maximum discharge, 5,300 cfs Oct. 14, 1941 (gage height, 7.30 ft, present site and datum), from rating curve extended above 200 cfs on basis of slope-area measurement of peak flow; no flow at times in most years.

Remarks.--Records good except those for periods of ice effect, which are poor. Diversions for irrigation of about 10,000 acres above station. One diversion above station for irrigation of about 100 acres below.

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

0.8	0	1.3	17
.9	.5	1.5	40
1.0	2.5	2.0	120
1.1	6.0	2.2	165

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8.5	34	19	13	14	10	35	30	*10	4.2		0
2	9.5	32	17	13	14	20	42	34	10	2.8		0
3	8.0	26	16	12	14	21	49	74	9.5	.4		0
4	7.5	20	15	11	15	19	49	94	9.5	.2		0
5	*7.0	22	12	12	15	16	49	110	12	0		0
6	6.0	21	9.5	13	15	16	49	128	13	0		0
7	5.0	18	8.0	13	16	20	48	142	16	0		12
8	5.0	18	7	13	17	24	48	120	16	0	(*)	.4
9	11.4	*22	7	12	19	28	*46	122	10	0		.2
10	58	25	6.5	*10	55	26	50	116	7.0	0		0
11	18	22	6	11	100	19	42	112	5.0	0		0
12	12	20	5.5	12	86	16	30	106	5.0	0		0
13	10	24	6.5	12	86	16	37	98	5.0	0		*0
14	9.5	23	8	11	66	13	62	90	3.9	.3		0
15	8.5	21	9	10	44	16	.91	70	4.6	0		0
16	11	21	11	9	34	19	122	44	2.8	0		0
17	16	22	13	9.5	34	19	126	30	2.3	0		0
18	19	23	*16	10	31	28	140	23	1.7	0		0
19	20	16	15	11	*26	24	138	16	.2	*0		0
20	22	17	14	12	27	*43	140	12	0	0		0
21	20	21	15	12	27	44	124	8.0	.5	0		0
22	16	22	14	12	24	35	88	4.2	2.1	0		13
23	17	16	14	11	22	28	64	3.6	.2	0		15
24	17	18	13	11	23	27	55	2.1	1.9	0		10
25	17	21	12	11	22	27	58	3.9	.9	0		8.5
26	16	22	12	12	21	46	68	3.6	.2	1.6		9.5
27	15	22	13	12	19	62	74	5.6	0	0		11
28	15	20	13	12	12	76	56	15	0	0		46
29	16	19	13	12	-	91	54	16	0	0		20
30	19	17	13	12	-----	55	*39	15	.5	0		13
31	30	-----	13	13	-----	42	-----	10	-----	0		-----
Total	572.5	645	366.0	359.5	898	946	2,073	1,658.0	149.8	9.5	0	147.8
Mean	18.5	21.5	11.8	11.6	32.1	30.5	69.1	53.5	4.99	0.31	0	4.93
Ac-ft	1,140	1,280	726	713	1,780	1,880	4,110	3,290	297	19	0	233

Calendar year 1961: Max 114 Min 0 Mean 19.5 Ac-ft 14,110  
Water year 1961-62: Max 142 Min 0 Mean 21.4 Ac-ft 15,530

Peak discharge (base, 700 cfs).--No peak above base.

\* Discharge measurement or observation of no flow made on this day.

Note.--Stage-discharge relation affected by ice Dec. 8 to Feb. 11, Feb. 28, Mar. 1.

9-3720. McElmo Creek near Colorado-Utah State line

Location.--Lat 37°19', long 109°01', in sec.2, T.35 N., R.20 W., on right bank 1½ miles upstream from Colorado-Utah State line, 2 miles upstream from Yellowjacket Creek, and 2 miles west of former town of McElmo.

Drainage area.--350 sq mi, approximately.

Records available.--March 1951 to September 1962.

Gage.--Water-stage recorder. Altitude of gage is 4,925 ft (by barometer).

Average discharge.--11 years, 38.0 cfs (27,510 acre-ft per year).

Extremes.--Maximum discharge during year, 535 cfs Oct. 9 (gage height, 4.98 ft); minimum daily, 2.6 cfs Aug. 19.

1951-62: Maximum discharge, 1,700 cfs Aug. 29, 1951, July 27, 1957 (gage height, 7.05 ft), from rating curve extended above 320 cfs on basis of slope-area measurements at gage heights 4.78 and 7.05 ft; minimum daily, 0.1 cfs for several days in 1951, 1956.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 1,000 acres above station. One diversion above station for irrigation of about 60 acres below.

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

2.4	2.0	3.2	81
2.5	4.0	3.5	131
2.6	9.0	4.0	228
2.7	16	4.5	370
2.9	36		

Discharge, in cubic feet per second, water year October 1961 to September 1962

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	30	29	50	38	28	20	27	46	*109	71	17	4.0
2	33	91	62	38	30	24	26	36	91	71	18	3.6
3	33	75	59	36	32	32	24	32	97	68	18	3.4
4	42	67	53	34	32	28	23	39	89	62	16	3.2
5	*44	62	37	36	34	28	25	49	65	58	14	3.0
6	42	62	32	38	36	32	23	47	67	53	8.5	3.2
7	37	75	30	38	36	43	23	47	68	50	8.0	4.0
8	40	73	30	36	50	44	25	43	75	50	7.5	5.5
9	347	*76	30	32	a 70	56	*29	43	65	44	*7.5	8.0
10	148	71	30	* 26	a 100	56	34	46	78	40	8.5	9.0
11	81	58	26	24	a 150	37	35	42	81	34	11	9.7
12	67	58	22	24	71	29	35	47	65	30	25	1.2
13	58	65	20	26	68	29	26	56	59	29	22	*8.5
14	58	60	24	24	75	25	18	56	62	34	15	7.0
15	58	53	28	22	73	25	20	43	71	34	12	6.5
16	67	46	30	24	60	28	24	44	70	28	9.0	5.5
17	67	44	30	26	56	37	24	60	95	28	5.5	5.5
18	52	46	* 32	26	53	43	50	95	91	28	3.2	5.5
19	47	48	30	28	* 46	36	42	79	79	* 27	2.6	3.6
20	56	50	30	30	42	* 35	39	67	81	34	3.0	3.8
21	53	50	30	28	40	34	53	67	81	43	8.0	1.9
22	52	50	28	28	35	33	a 65	73	67	44	15	3.9
23	50	44	28	26	35	32	a 50	81	56	27	1.2	3.3
24	50	40	26	26	33	35	25	75	58	34	7.5	3.3
25	49	39	26	26	32	35	19	64	56	23	5.0	2.8
26	47	40	26	26	32	36	34	65	56	21	5.5	2.8
27	44	39	28	24	28	39	56	91	50	21	9.0	4.3
28	43	37	30	24	22	37	34	136	47	18	6.0	6.0
29	44	40	34	24	-	36	30	146	47	15	6.0	a 40
30	47	50	36	26	-----	37	* 43	116	56	14	5.0	a 30
31	107	-----	38	26	-----	34	-----	109	-----	19	4.5	-----
Total	1,993	1,708	1,015	890	1,399	1,075	981	2,040	2,132	1,152	314.8	467.5
Mean	64.3	56.9	32.7	28.7	50.0	34.7	32.7	65.8	71.1	37.2	10.2	15.6
Ac-ft	3,950	3,390	2,010	1,770	2,770	2,130	1,950	4,050	4,230	2,280	624	927

Calendar year 1961: Max 347 Min 1.9 Mean 38.6 Ac-ft 27,990  
 Water year 1961-62: Max 347 Min 2.6 Mean 41.6 Ac-ft 30,080

Peak discharge (base, 1,200 cfs).--No peak above base.

\* Discharge measurement made on this day.

a No gage-height record.

Note.--Stage-discharge relation affected by ice Nov. 18, 19, 22, Dec. 6 to Feb. 8, Feb. 28 to Mar. 3.

## Transmountain diversions from Colorado River basin in Colorado

There are 21 tunnels or ditches, all of which are equipped with water-stage recorders and Parshall flumes or sharp-crested weirs. Records furnished by State engineer. The locations of these diversions are given in the following list.

9-100. Grand River ditch diverts water from tributaries of Colorado River to La Poudre Pass Creek (tributary to Cache la Poudre River) in NW $\frac{1}{4}$  sec.21, T.6 N., R.75 W., in Platte River basin. Two collection ditches beginning at headgates located in sec.28, T.5 N., R.76 W., and sec.29, T.6 N., R.75 W., intercept all tributaries upstream on each side of the Colorado River and converge at La Poudre Pass.

9-120. Eureka ditch diverts water from tributaries of Tonahutu Creek between headgate in sec.7, T.4 N., R.74 W., and Sprague Pass, in Colorado River basin, to Spruce Creek (tributary to Big Thompson River) in sec.16, T.4 N., R.74 W., in Platte River basin.

9-130. Alva B. Adams tunnel diverts water from Grand Lake and Shadow Mountain Lake in NW $\frac{1}{4}$  sec.9, T.3 N., R.75 W., in Colorado River basin, to Lake Estes (Big Thompson River) in sec.30, T.5 N., R.72 W., in Platte River basin. For daily discharge, see elsewhere in this report.

9-215. Berthoud Pass ditch diverts water from tributaries of Fraser River between headgate in sec.33, T.2 S., R.75 W., and Berthoud Pass, in Colorado River basin, to Hoop Creek (tributary to West Fork Clear Creek) in sec.10, T.3 S., R.75 W., in Platte River basin.

9-225. Moffat water tunnel diverts water from tributaries of Fraser River in Colorado River basin to South Boulder Creek in sec.2, T.2 S., R.74 W., in Platte River basin by means of three collection ditches extending from the right bank of St. Louis Creek in sec.20, T.2 S., R.76 W., right bank of Vasquez Creek in sec.18, T.2 S., R.75 W., right bank of Fraser River in sec.23, T.2 S., R.75 W., left bank of North Fork Ranch Creek in sec.24, T.1 S., R.75 W., and intercepting intermediate tributaries to the west portal of the tunnel. Since July 1959, water diverted by Jones Pass tunnel from tributaries of Williams Fork in Colorado River basin between headgates on right bank of Bobtail Creek in sec.28, T.3 S., R.76 W., and headgate on left bank of McQueary Creek in sec.16, T.3 S., R.76 W., has been rediverted through Vasquez tunnel to Vasquez Creek in the Fraser River basin in sec.1, T.3 S., R.76 W., thence via collection ditch to the west portal of Moffat water tunnel where it is diverted to South Boulder Creek in sec.2, T.2 S., R.74 W., in Platte River basin. (See table of diversions by Jones Pass tunnel published with records for Williams Fork near Leal, Colo.)

9-420. Hoosier Pass tunnel diverts water from tributaries of Blue River in Colorado River basin to Montgomery Reservoir (Middle Fork South Platte River) in sec. 14, T.8 S., R.78 W., in Platte River basin; this water is again diverted to South Catamount Creek (tributary to Catamount Creek) in SE $\frac{1}{4}$  sec.14, T.13 S., R.69 W., in the Arkansas River basin. Collection conduits extending from the right bank of Spruce Creek in sec.23, T.7 S., R.78 W., right bank of McCullough Gulch in sec.26, T.7 S., R.78 W., right bank of Monte Cristo Creek in SW $\frac{1}{4}$ NE $\frac{1}{4}$  sec.2, T.8 S., R.78 W., left bank of Bemrose Creek in SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec.6, T.8 S., R.77 W., and intercepting intermediate tributaries, transport diversions to north portal of the tunnel.

9-460. Boreas Pass ditch diverts water from tributaries of Blue River between headgate in sec.26, T.7 S., R.77 W., and Boreas Pass, in Colorado River basin, to Tarryall Creek in sec.26, T.7 S., R.77 W., in Platte River basin.

9-485. Fremont Pass ditch diverts water from tributaries of Tenmile Creek in secs.2 and 3, T.8 S., R.79 W., in Blue River basin, to East Fork Arkansas River in sec.11, T.8 S., R.79 W., in Arkansas River basin.

9-615. Columbine ditch diverts water from tributaries of Eagle River in sec.5, T.8 S., R.79 W., in Colorado River basin, to Chalk Creek (tributary to East Fork Arkansas River) in NW $\frac{1}{4}$  sec.9, T.8 S., R.79 W., in Arkansas River basin.

9-620. Ewing ditch diverts water from Piney Creek in sec.11, T.8 S., R.80 W., in Eagle River basin, to Thayer Gulch (tributary to Tennessee Creek) in sec.11, T.8 S., R.80 W., in Arkansas River basin.

9-625. Wurtz ditch diverts water from tributaries of Eagle River between headgate in sec.32, T.7 S., R.80 W., and Tennessee Pass, in Colorado River basin, to West Tennessee Creek (tributary to Tennessee Creek) in sec.17, T.8 S., R.80 W., in Arkansas River basin.

9-730. Twin Lakes tunnel diverts water from tributaries of Roaring Fork between headgates (in sec.21, T.11 S., R.83 W., and sec.11, T.11 S., R.82 W.), and west portal of Twin Lakes tunnel (in sec.24, T.11 S., R.83 W.), in Colorado River basin, to North Fork Lake Creek in sec.22, T.11 S., R.82 W., in Arkansas River basin.

9-775. Busk-Ivanhoe tunnel diverts water from Ivanhoe Lake (Ivanhoe Creek), tributary to Fryingpan Creek, in sec.13, T.9 S., R.82 W., in Roaring Fork basin, to Busk Creek (tributary to Lake Fork) in sec.20, T.9 S., R.81 W., in Arkansas River basin.

9-1150. Larkspur ditch diverts water from tributaries of Tomichi Creek between headgates (in sec.11, T.48 N., R.6 E., and sec.1, T.47 N., R.6 E.), and Marshall Pass, in Gunnison River basin, to Poncha Creek (tributary to South Arkansas River) in SE $\frac{1}{4}$  sec.24, T.48 N., R.6 E., in Arkansas River basin.

9-1182. Tarbell ditch diverts water from Lake Fork Cochetopa Creek (tributary to Cochetopa Creek), in NW $\frac{1}{4}$  sec.18, T.43 N., R.2 E., in Gunnison River basin, to Lake Fork Saguache Creek (tributary to Middle Fork Saguache Creek) in NE $\frac{1}{4}$  sec.18, T.43 N., R.2 E., in Rio Grande basin. All records available prior to October 1960 published in WSP 1733.

9-1210. Tabor ditch diverts water from tributaries of Cebolla Creek in secs.29 and 36, T.43 N., R.3 W., in Gunnison River basin, to Big Spring Creek (revised), tributary to North Clear Creek in sec.35 (corrected), T.43 N., R.3 W., in Rio Grande basin.

## Transmountain diversions from Colorado River basin in Colorado--Continued

9-3410. Treasure Pass ditch diverts water from tributaries of Wolf Creek between headgates (in sec.31, T.38 N., R.2 E., and sec.6, T.37 N., R.2 E.), and Wolf Creek Pass, in San Juan River basin, to tributary of South Fork Rio Grande in sec.31, T.38 N., R.2 E., in Rio Grande basin.

9-3470. Piedra Pass ditch (Harley Fuchs ditches 1 and 2) diverts water from tributaries of Piedra River between headgates (in NW¼ sec.4, T.38 N., R.1 W., and SW¼ sec.33, T.39 N., R.1 W.), and Piedra Pass, in San Juan River basin, to South River in sec.4, T.38 N., R.1 W., in Rio Grande basin.

9-3480. Squaw Pass ditch diverts water from Williams Creek (tributary to Piedra River) in sec.13, T.39 N., R.3 W., in San Juan River basin, to Squaw Creek in sec.10, T.39 N., R.3 W., in Rio Grande basin.

9-3510. Fuchs ditch diverts water from North Fork Los Pinos River (tributary to Los Pinos River) in sec.4, T.39 N., R.4 W., in San Juan River basin, to Weminuche Creek in sec.33, T.40 N., R.4 W., in Rio Grande basin.

9-3515. Raber-Lohr ditch diverts water from left bank of Rincon la Vaca Creek (tributary to Los Pinos River) in sec.5, T.39 N., R.4 W., in San Juan River basin, to Weminuche Creek in sec.33, T.40 N., R.4 W., in Rio Grande basin.



## Transmountain diversions from Colorado River basin in Colorado

Diversions, in acre-feet, water year October 1961 to September 1962

Diversion	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Water year
TO PLATTE RIVER BASIN													
Grand River ditch.....	0	0	0	0	0	0	0	734	8,880	10,620	3,180	596	24,010
Eureka ditch.....	0	0	0	0	0	0	0	0	0	55	13	0	68
Alva B. Adams tunnel.....	9,810	12,740	17,040	20,730	19,780	15,680	9,570	13,360	14,080	29,100	18,640	24,180	204,700
Berthoud Pass ditch.....	0	0	0	0	0	0	0	0	440	454	28	0	922
Moffat water tunnel.....	596	21	0	370	712	791	1,640	13,440	19,040	13,450	6,870	3,390	60,320
Boreas Pass ditch.....	0	0	0	0	0	0	0	0	80	51	2.0	0	133
Total.....	10,410	12,760	17,040	21,100	20,490	16,470	11,210	27,530	42,520	53,730	28,730	28,170	290,200
TO ARKANSAS RIVER BASIN													
Hoosier Pass tunnel.....	456	33	0	0	0	0	0	1,440	4,700	3,290	1,420	114	11,450
Fremont Pass ditch.....	0	0	0	0	0	0	0	0	0	0	0	0	0
Columbine ditch.....	0	0	0	0	0	0	0	74	1,140	319	47	0	1,580
Ewing ditch.....	0	0	0	0	0	0	0	484	704	237	96	17	1,540
Wurtz ditch.....	0	0	0	0	0	0	0	942	1,360	372	66	0	2,740
Twin Lakes tunnel.....	3,210	1,200	512	244	182	252	710	8,440	23,150	16,090	3,140	843	57,970
Busk-Ivanhoe tunnel.....	244	156	0	0	0	0	226	955	3,720	1,730	198	8.7	7,240
Larkspur ditch.....	0	0	0	0	0	0	0	39	118	7.7	1.6	0	166
Total.....	3,910	1,390	512	244	182	252	936	12,370	34,890	22,050	4,970	983	82,690
TO RIO GRANDE BASIN													
Tarbell ditch.....	0	0	0	0	0	0	0	65	483	354	84	42	1,030
Tabor ditch.....	0	0	0	0	0	0	0	201	447	175	7.9	0	831
Treasure Pass ditch.....	0	0	0	0	0	0	0	64	314	49	0	0	427
Piedra Pass ditch.....	0	0	0	0	0	0	0	0	17	84	1.4	0	102
Squaw Pass ditch.....	0	0	0	0	0	0	0	0	0	124	21	0	145
Fuchs ditch.....	0	0	0	0	0	0	0	0	615	287	92	16	1,010
Raber-Lohr ditch.....	0	0	0	0	0	0	0	0	1,360	840	307	213	2,720
Total.....	0	0	0	0	0	0	0	330	3,240	1,910	513	271	6,260
Grand total.....	14,320	14,150	17,550	21,340	20,670	16,720	12,150	40,240	80,650	77,690	34,210	29,420	379,100

## DISCHARGE AT MISCELLANEOUS SITES

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## Measurements at miscellaneous sites

Measurements of streamflow at points other than gaging 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 (†).

Discharge measurements made at miscellaneous sites during water year 1962

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Platte River basin						
Gunbarrel Hill draw.....	Boulder Creek...	SE¼ sec.8, T.1 N., R.69 W., at road crossing ½ mile north of Boulder Creek and 3½ miles southeast of Niwot, Colo.	0.54		6-30-62	+91.4
Black Wolf Creek.	Arikaree River..	SE¼ sec.7, T.2 S., R.43 W., ½ mile below U. S. Highway 385 and 13 miles south of Wray, Colo.	a25.0		7-17-62	+17,800
Arkansas River basin						
Cache Creek.....	Arkansas River..	SW¼ sec.31, T.11 S., R.79 W., at bridge on U. S. Highway 24 at Granite and 150 ft above mouth.	b7.5		9-18-62	*c2.0
Cheyenne Creek...	Arkansas River..	Sec.17, T.23 S., R.41 W., at bridge on U. S. Highway 50, 4 miles east of Holly, Colo.	29	1952-53	5-18-62	+4,630
Roaring Fork basin						
Rocky Fork.....	Fryingpan Creek.	NW¼ sec.18, T.8 S., R.84 W., near private bridge at mouth, 1½ miles west of Ruedi, Colo.	b13	1959-61	10-12-61 11- 8-61 1-10-62 2- 6-62 3- 6-62 5- 1-62 5-17-62 6- 7-62 6-19-62 7-10-62 8- 1-62 8-29-62	*6.21 *3.89 *3.09 *3.52 *3.27 26.9 45.4 82.1 67.0 24.9 16.9 *5.56
Avalanche Creek..	Crystal River...	SE¼ sec.28, T.9 S., R.88 W., 1 mile above mouth and 4½ miles north of Redstone, Colo.	41.8	1909, 1955-57*, 1958-61	10-11-61 11- 8-61 1- 9-62 2- 7-62 3- 7-62 4- 3-62 5- 1-62 5-18-62 6- 8-62 7-31-62 8-21-62 8-30-62 9-11-62	*53.3 *29.2 *8.28 *12.2 *13.9 *15.0 72.7 152 393 130 50.3 57.1 *42.4
Colorado River Main Stem						
Colorado River...	Gulf of California....	Sec.23, T.1 S., R.1 W., Ute Meridian, at highway bridge at Grand Junction, Colo.,	b8,910	1897-99*, 1901, 1958-61	2-19-62 2-27-62 8- 9-62	2,130 2,300 2,250
Dolores River basin						
Dolores River....	Colorado River..	NE¼ sec.36, T.48 N., R.18 W., above San Miguel River 4 miles west of Uravan, Colo.	b1,880	1960	3-12-62 3-21-62	*70.2 *123
San Miguel River.	Dolores River...	SE¼ sec.25, T.48 N., R.17 W., at mouth 4 miles west of Uravan, Colo.	b1,600		3-12-62 3-21-62	*67.4 *93.4
Dolores River....	Colorado River..	Lat 38°25'34", long 108°49'28", at highway bridge 5 miles below San Miguel River and 6½ miles northwest of Uravan, Colo.	d3,497	1956	3-12-62 3-21-62	*162 *221
Do.....	.....do.....	SW¼ sec.15, T.51 N., R.19 W., 0.3 mile northwest of Gateway, Colo.	b4,350	1937-55*, 1960	3-12-62 3-21-62	*169 *223

\* Base flow.

† Peak flow.

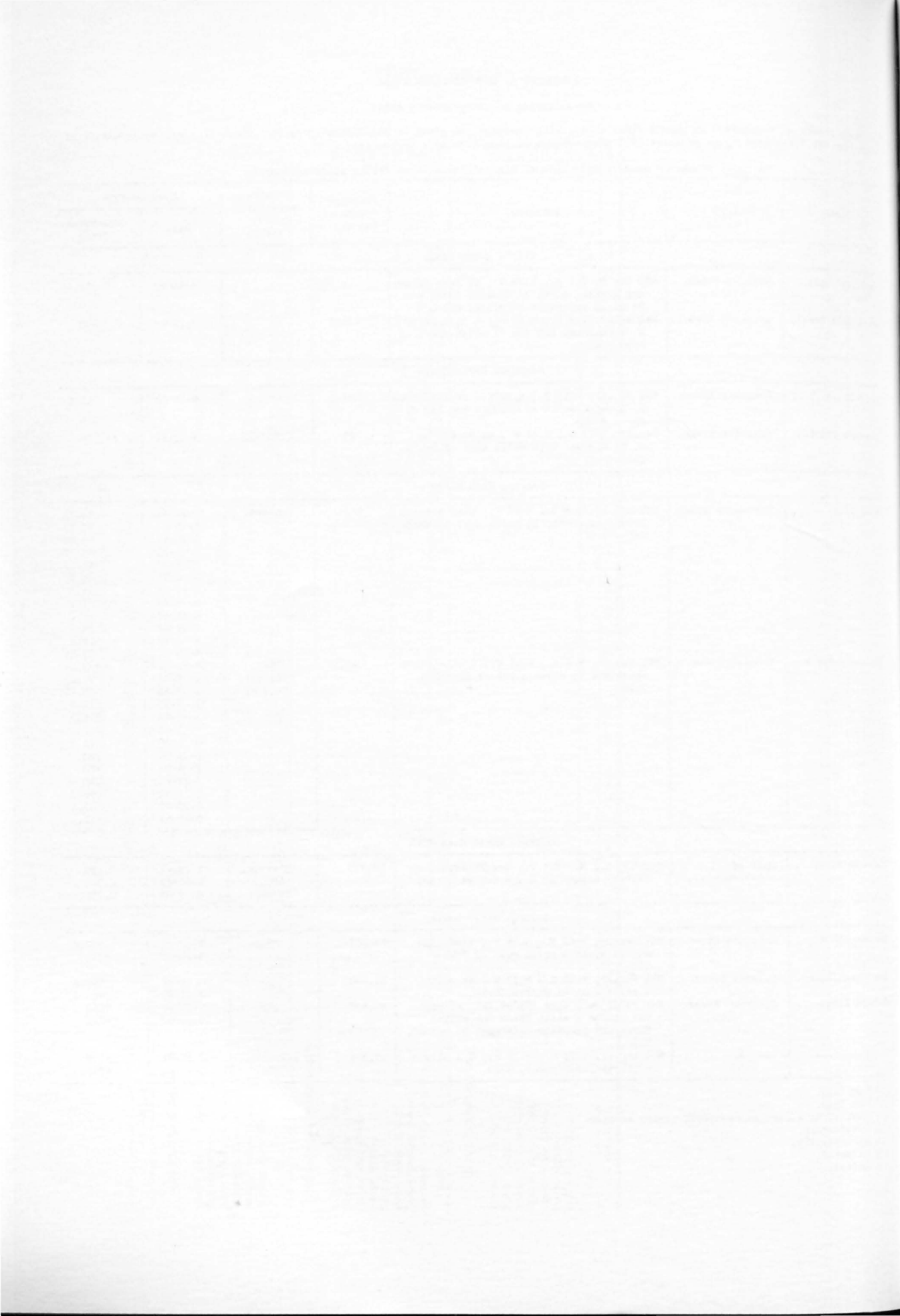
# Operated as a continuous-record gaging station.

a Contributing.

b Approximately.

c Estimated.

d Revised.



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