

**1963**

# 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

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

SURFACE WATER RECORDS  
OF COLORADO

1963

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  
1455 Ammons Street Room 22  
Denver, Colorado 80215

# CALENDAR FOR WATER YEAR 1963

## OCTOBER 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			

## NOVEMBER 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	

## DECEMBER 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					

## JANUARY 1963

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		

## FEBRUARY 1963

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		

## MARCH 1963

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						

## APRIL 1963

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				

## MAY 1963

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	

## JUNE 1963

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						

## JULY 1963

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

## AUGUST 1963

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 1963

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					

## CONTENTS

---

	Page
Introduction.....	1
Cooperation.....	2
Definition of terms and abbreviations.....	2
Downstream order and station numbers.....	3
Explanation of data.....	4
Accuracy of field data and computed results.....	7
Supplemental data.....	8
Records of discharge collected by agencies other than the Geological Survey.....	9
Gaging-station records.....	10
<u>Missouri River basin</u>	
Missouri River:	
<u>Platte River basin</u>	
North Platte River (head of Platte River):	
Michigan River:	
North Fork Michigan River near Gould.....	10
North Platte River near Northgate.....	11
Laramie River near Glendevey.....	12
South Platte River above Elevenmile Canyon Reservoir, near Hartsel.....	13
South Platte River near Lake George.....	14
Goose Creek above Cheesman Lake.....	15
South Platte River below Cheesman Lake.....	16
North Fork South Platte River below Geneva Creek, at Grant.....	17
North Fork South Platte River at South Platte.....	18
South Platte River at South Platte.....	19
South Platte River at Waterton.....	20
Plum Creek near Louviers.....	21
South Platte River at Littleton.....	22
Bear Creek at Morrison.....	23
Bear Creek at mouth, at Sheridan.....	24
Cherry Creek near Franktown.....	25
Cherry Creek near Melvin.....	26
Cherry Creek below Cherry Creek Reservoir.....	27
Cherry Creek at Denver.....	28
South Platte River at Denver.....	29
Clear Creek near Lawson.....	30
Clear Creek near Golden.....	31
Clear Creek at mouth, near Derby.....	32
South Platte River at Henderson.....	33
North St. Vrain Creek (head of St. Vrain Creek):	
South St. Vrain Creek near Ward.....	34
St. Vrain Creek at Lyons.....	35
Middle Boulder Creek (head of Boulder Creek) at Nederland....	36
Boulder Creek near Orodell.....	37



## Gaging-station records--Continued

## Missouri River--Continued

## Platte River basin--Continued

## North Platte River--Continued

## South Platte River--Continued

## St. Vrain Creek--Continued

## Boulder Creek--Continued

Page

South Boulder Creek near Eldorado Springs..... 38

Coal Creek near Plainview..... 39

St. Vrain Creek at mouth, near Platteville..... 40

Big Thompson River at Estes Park..... 41

Big Thompson River near Estes Park..... 42

Big Thompson River at mouth of canyon, near Drake..... 43

Reservoirs in South Platte River basin..... 44

Big Thompson River at mouth, near La Salle..... 46

Cache la Poudre River near Rustic..... 47

## South Fork Cache la Poudre River:

Fall Creek near Rustic..... 48

Little Beaver Creek near Idylwilde..... 49

Little Beaver Creek near Rustic..... 50

South Fork Cache la Poudre River near Rustic..... 51

Transbasin diversions from North Platte River basin to Cache

la Poudre River basin..... 52

North Fork Cache la Poudre River near Livermore..... 53

Cache la Poudre River at mouth of canyon, near Fort Collins.... 54

Cache la Poudre River near Greeley..... 55

South Platte River near Kersey..... 56

Kiowa Creek at K-79 Reservoir, near Eastonville..... 57

Kiowa Creek at Elbert..... 58

West Kiowa Creek at Elbert..... 58

Kiowa Creek at Kiowa..... 59

Kiowa Creek at Bennett..... 60

South Platte River near Weldona..... 61

South Platte River at Balzac..... 62

South Platte River at Julesburg..... 63

Kansas River basin

## Arikaree River (head of Kansas River):

## Republican River (continuation of Arikaree River):

North Fork Republican River near Wray..... 64

South Fork Republican River near Idalia..... 65

Landsman Creek near Hale..... 66

Bonny Reservoir near Hale..... 67

South Fork Republican River near Hale..... 68

## Gaging-station records--Continued

Lower Mississippi River basinMississippi River:Arkansas River basinArkansas River:

	Page
Lake Fork above Sugar Loaf Reservoir.....	69
Halfmoon Creek near Malta.....	70
Lake Creek above Twin Lakes Reservoir.....	71
Arkansas River at Granite.....	72
Clear Creek above Clear Creek Reservoir.....	73
Cottonwood Creek below Hot Springs, near Buena Vista.....	74
Arkansas River at Salida.....	75
Arkansas River near Wellsville.....	76
Grape Creek near Westcliffe.....	77
Arkansas River at Canon City.....	78
Arkansas River near Pueblo.....	79
Fountain Creek near Colorado Springs.....	80
Monument Creek:	
West Monument Creek near Pikeview.....	81
Templeton Gap Floodway at Colorado Springs.....	82
Fountain Creek at Pueblo.....	83
Huerfano River at Manzanares Crossing, near Redwing.....	84
Cucharas River at Boyd Ranch, near La Veta.....	85
Huerfano River below Huerfano Valley Dam, near Undercliffe.....	86
Arkansas River near Nepesta.....	87
Apishapa River near Fowler.....	88
Arkansas River at La Junta.....	89
Arkansas River at Las Animas.....	90
Purgatoire River at Trinidad.....	91
Purgatoire River near Hoehne.....	92
Frijole Creek near Alfalfa.....	93
San Francisco Creek near Alfalfa.....	94
Purgatoire River near Alfalfa.....	95
Purgatoire River at Ninemile Dam, near Higbee.....	96
Purgatoire River near Las Animas.....	97
John Martin Reservoir at Caddoa.....	98
Arkansas River below John Martin Reservoir.....	99
Arkansas River at Lamar.....	100
Frontier ditch near Coolidge, Kans.....	101
Arkansas River near Coolidge, Kans.....	102

Western Gulf of Mexico:Rio Grande basin

Rio Grande at Thirtymile Bridge, near Creede.....	103
North Clear Creek below Continental Reservoir.....	104
Willow Creek at Creede.....	105
Rio Grande at Wagonwheel Gap.....	106

## Gaging-station records--Continued

## Western Gulf of Mexico--Continued

## Rio Grande basin--Continued

Page

Goose Creek at Wagonwheel Gap.....	107
South Fork Rio Grande at South Fork.....	108
Rio Grande near Del Norte.....	109
Pinos Creek near Del Norte.....	110
Rio Grande near Monte Vista.....	111
Rio Grande at Alamosa.....	112
Closed basin in San Luis Valley:	
Kerber Creek at Ashley Ranch, near Villa Grove.....	113
Saguache Creek near Saguache.....	114
North Crestone Creek near Crestone.....	115
Carnero Creek near La Garita.....	116
La Garita Creek near La Garita.....	117
Alamosa Creek above Terrace Reservoir.....	118
La Jara Creek at Gallegos Ranch, near Capulin.....	119
Rio Grande above mouth of Trinchera Creek, near La Sauses.....	120
Trinchera Creek above Turners Ranch, near Fort Garland.....	121
Sangre de Cristo Creek near Fort Garland.....	122
Ute Creek near Fort Garland.....	124
Trinchera Creek below Smith Reservoir, near Blanca.....	125
Conejos River:	
Platoro Reservoir at Platoro.....	126
Conejos River below Platoro Reservoir.....	127
Conejos River near Mogote.....	128
San Antonio River at Ortiz.....	129
Los Pinos River near Ortiz.....	130
San Antonio River at mouth, near Manassa.....	131
Conejos River near La Sauses.....	132
Culebra Creek at San Luis.....	133
Rio Grande near Lobatos.....	134
Rio Grande at Colorado-New Mexico State line.....	135

Colorado River basin

Colorado River below Baker Gulch, near Grand Lake.....	136
Colorado River near Grand Lake.....	137

Grand Lake Outlet basin

## North Inlet (head of Grand Lake Outlet):

## Grand Lake:

Alva B. Adams tunnel at east portal, near Estes Park.....	138
Shadow Mountain Lake near Grand Lake.....	139

Arapaho Creek basin

Arapaho Creek at Monarch Lake Outlet.....	140
Lake Granby near Granby.....	141
Colorado River below Lake Granby.....	142
Colorado River near Granby.....	143

## Gaging-station records--Continued

## Colorado River--Continued

<u>Willow Creek basin</u>	Page
Willow Creek Reservoir near Granby.....	144
Willow Creek below Willow Creek Reservoir.....	145
<u>Fraser River basin</u>	
Fraser River near Winter Park.....	146
Vasquez Creek near Winter Park.....	147
St. Louis Creek near Fraser.....	148
Ranch Creek near Fraser.....	149
Colorado River at Hot Sulphur Springs.....	150
<u>Little Muddy Creek basin</u>	
Little Muddy Creek near Parshall.....	151
<u>Williams Fork basin</u>	
Williams Fork near Leal.....	152
Skylark Creek near Parshall.....	153
Williams Fork near Parshall.....	154
Williams Fork Reservoir near Parshall.....	155
Williams Fork below Williams Fork Reservoir.....	156
<u>Troublesome Creek basin</u>	
Troublesome Creek near Pearmont.....	157
East Fork Troublesome Creek near Troublesome.....	158
<u>Muddy Creek basin</u>	
Muddy Creek near Kremmling.....	159
Antelope Creek near Kremmling.....	160
Red Dirt Creek near Kremmling.....	161
Pass Creek near Kremmling.....	162
<u>Blue River basin</u>	
Monte Cristo Creek (head of Blue River):	
Monte Cristo diversion near Hoosier Pass.....	163
Hoosier Creek:	
Bemrose-Hoosier diversion near Hoosier Pass.....	164
Blue River:	
McCullough Creek:	
McCullough-Spruce-Crystal diversion near Hoosier Pass.....	165
Blue River near Dillon.....	166
Snake River near Montezuma.....	167
Keystone Gulch near Dillon.....	168
Snake River at Dillon.....	169
Tenmile Creek below North Fork, at Frisco.....	170
Blue River below Dillon.....	171
Blue River above Green Mountain Reservoir.....	172
Green Mountain Reservoir near Kremmling.....	173
Blue River below Green Mountain Reservoir.....	174
Colorado River near Kremmling.....	175
<u>Piney River basin</u>	
Piney River near State Bridge.....	176
<u>Rock Creek basin</u>	
Rock Creek near Toponas.....	177

## Gaging-station records--Continued

## Colorado River--Continued

<u>Big Alkali Creek basin</u>	Page
Big Alkali Creek near Burns.....	178
<u>Eagle River basin</u>	
Eagle River at Red Cliff.....	179
Homestake Creek near Red Cliff.....	180
Cross Creek near Minturn.....	181
Alkali Creek near Wolcott.....	182
Brush Creek near Eagle.....	183
Eagle River below Gypsum.....	184
Colorado River near Dotsero.....	185
Colorado River at Glenwood Springs.....	186
<u>Roaring Fork basin</u>	
Roaring Fork at Aspen.....	187
Fryingpan River at Norrie.....	188
North Fork Fryingpan River near Norrie.....	189
Fryingpan River at Ruedi.....	190
Crystal River at Placita.....	191
Crystal River above Avalanche Creek, near Redstone.....	192
Crystal River near Redstone.....	193
Cattle Creek near Carbondale.....	194
Fourmile Creek near Glenwood Springs.....	195
Roaring Fork at Glenwood Springs.....	196
<u>Divide Creek basin</u>	
West Divide Creek (head of Divide Creek) near Raven.....	197
East Divide Creek near Silt.....	198
<u>Rifle Creek basin</u>	
Rifle Creek:	
East Rifle Creek near Rifle.....	199
Rifle Creek near Rifle.....	200
<u>Beaver Creek basin</u>	
Beaver Creek near Rifle.....	201
<u>Battlement Creek basin</u>	
Battlement Creek near Grand Valley.....	202
<u>Roan Creek basin</u>	
Roan Creek above Clear Creek, near De Beque.....	203
Roan Creek near De Beque.....	204
Colorado River near Cameo.....	205
<u>Plateau Creek basin</u>	
Plateau Creek near Heiberger.....	206
Vega Reservoir near Collbran.....	207
Plateau Creek near Collbran.....	208
Buzzard Creek below Owens Creek, near Heiberger.....	209
Buzzard Creek near Collbran.....	210
Brush Creek near Collbran.....	211
Plateau Creek near Cameo.....	212

Gaging-station records--Continued

Colorado River--Continued

Gunnison River basin

Taylor River (head of Gunnison River):	Page
Taylor Park Reservoir at Taylor Park.....	213
Taylor River below Taylor Park Reservoir.....	214
Taylor River at Almont.....	215
East River at Almont.....	216
Gunnison River:	
Ohio Creek at Baldwin.....	217
Ohio Creek near Baldwin.....	218
Gunnison River near Gunnison.....	219
Tomichi Creek at Sargents.....	220
Quartz Creek near Ohio City.....	221
Tomichi Creek at Gunnison.....	222
Cebolla Creek near Powderhorn.....	223
Soap Creek near Sapinero.....	224
Lake Fork at Gateview.....	226
Gunnison River below Blue Mesa Dam.....	227
Curecanti Creek near Sapinero.....	228
Cimarron Creek near Cimarron.....	229
Cimarron Creek at Cimarron.....	230
Crystal Creek near Maher.....	231
Gunnison River below Gunnison tunnel.....	232
Smith Fork near Crawford.....	233
East Muddy Creek (head of North Fork Gunnison River):	
West Muddy Creek near Ragged Mountain.....	234
West Muddy Creek near Somerset.....	235
North Fork Gunnison River near Somerset.....	236
Hubbard Creek near Paonia.....	237
Middle Hubbard Creek near Paonia.....	238
West Hubbard Creek near Paonia.....	239
Leroux Creek near Cedaredge.....	240
Cow Creek near Cedaredge.....	241
Gunnison River near Lazear.....	242
George Creek (head of Tongue Creek) near Grand Mesa.....	243
Ward Creek near Grand Mesa.....	244
Kiser Creek near Grand Mesa.....	245
Cottonwood Creek near Grand Mesa.....	246
Youngs Creek near Grand Mesa.....	247
Tongue Creek:	
Surface Creek near Cedaredge.....	248
Surface Creek at Cedaredge.....	249
Tongue Creek at Cory.....	250
Uncompahgre River near Ridgway.....	251
West Fork Dallas Creek near Ridgway.....	252
East Fork Dallas Creek Ridgway.....	253
Beaver Creek near Ridgway.....	254

## Gaging-station records--Continued

## Colorado River--Continued

## Gunnison River basin--Continued

## Uncompahgre River--Continued

## Dallas Creek:

	Page
Pleasant Valley Creek near Noel.....	255
Dallas Creek near Ridgway.....	256
Cow Creek near Ridgway.....	257
Uncompahgre River at Colona.....	258
Uncompahgre River at Delta.....	259
Kannah Creek near Whitewater.....	260
Gunnison River near Grand Junction.....	261
Colorado River near Colorado-Utah State line.....	262

Dolores River basin

Dolores River below Rico.....	263
Dolores River at Dolores.....	264
Disappointment Creek near Dove Creek.....	265
San Miguel River near Telluride.....	266
Leopard Creek at Noel.....	267
San Miguel River near Placerville.....	268
Beaver Creek near Norwood.....	269
San Miguel River at Naturita.....	270
Taylor Creek near Gateway.....	271

Green River basin

## Green River:

Yampa River near Toponas.....	272
Yampa River near Oak Creek.....	273
Yampa River at Steamboat Springs.....	274
Elk River at Clark.....	275
Trout Creek:	
Fish Creek near Milner.....	276
Grassy Creek near Mount Harris.....	277
Elkhead Creek near Clark.....	278
Elkhead Creek near Elkhead.....	279
North Fork Elkhead Creek near Elkhead.....	280
East Fork of Williams Fork above Willow Creek.....	281
East Fork of Williams Fork near Pagoda.....	282
Milk Creek near Thornburg.....	283
Yampa River near Maybell.....	284
Little Snake River near Slater.....	285
Slater Fork near Slater.....	286
Willow Creek near Dixon, Wyo.....	287
Little Snake River near Baggs, Wyo.....	288
Little Snake River near Lily.....	289
White River below Trapper's Lake.....	290
White River near Buford.....	291
White River at Buford.....	292
South Fork White River at Buford.....	293

## Gaging-station records--Continued

## Colorado River--Continued

## Green River basin--Continued

## White River--Continued

	Page
Big Beaver Creek near Buford.....	294
White River above Coal Creek, near Meeker.....	295
Coal Creek near Meeker.....	296
White River near Meeker.....	297
White River below Meeker.....	298
White River near Watson, Utah.....	299

San Juan River basin

East Fork San Juan River above Sand Creek, near Pagosa Springs.....	300
East Fork San Juan River near Pagosa Springs.....	301
San Juan River at Pagosa Springs.....	302
Rio Blanco near Pagosa Springs.....	303
Navajo River at Banded Peak Ranch, near Chromo.....	304
Navajo River above Chromo.....	305
Navajo River at Edith.....	306
San Juan River near Carracas.....	307
Piedra River near Piedra.....	308
Piedra River near Arboles.....	309
San Juan River at Rosa, N. Mex.....	310
Los Pinos River:	
Vallecito Reservoir near Bayfield.....	311
Los Pinos River near Bayfield.....	312
Los Pinos River at La Boca.....	313
Spring Creek at La Boca.....	314
Animas River at Howardsville.....	315
Hermosa Creek near Hermosa.....	316
Falls Creek near Durango.....	317
Junction Creek near Durango.....	318
Animas River at Durango.....	319
Florida River near Hermosa.....	320
Salt Creek near Oxford.....	321
Florida River at Bondad.....	322
Animas River near Cedar Hill, N. Mex.....	323
La Plata River at Hesperus.....	324
La Plata River at Colorado-New Mexico State line.....	325
Mancos River near Towaoc.....	326
McElmo Creek near Colorado-Utah State line.....	327

Transmountain diversions

Transmountain diversions from Colorado River basin in Colorado.....	328
Discharge measurements at miscellaneous sites.....	331
Index.....	333





## SURFACE WATER RECORDS OF COLORADO, 1963

---

### INTRODUCTION

The surface-water records for the 1963 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 have been released by the Geological Survey in annual reports on a State-boundary basis. Distribution of these basic-data reports is limited and primarily for local needs. Records will be published in Geological Survey water-supply papers at 5-year intervals.

## 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,  
J. G. Hodges, president, succeeded by W. F. Nicholson.  
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 indention in the listing of gaging stations in the table of contents of this report represents one rank. This downstream order and system of indention shows which gaging stations are on tributaries between any two stations on a main stem and the rank of the tributary on which each gaging station is situated.

As an added means of identification, each gaging station 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 1963 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

9

The table below contains a list of gaging stations at which records of discharge were collected during the water year October 1962 to September 1963 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.....	1918-63*
Boehmer Creek.....	Near Pikes Peak, Colo.....	1909-63*
Cabin Creek.....	Near Halfway, Colo.....	1906-63*
Crystal Creek.....	Below reservoir near Green Mountain Falls, Colo.	1935-63
Do.....	Near Green Mountain Falls, Colo.	1935-63
French Creek.....	Near Cascade, Colo.....	1935-63
Lion Creek.....	Near Halfway, Colo.....	1908-63*†
Little Beaver Creek..	Near Pikes Peak, Colo.....	1909-63*†
North Cascade Creek..	At Cascade, Colo.....	1935-63
North Catamount Creek	Near Green Mountain Falls, Colo.	1935-63†
Sackett Creek.....	Near Pikes Peak, Colo.....	1909-63*†
Sheep Creek.....	Near Halfway, Colo.....	1908-63*†
South Cascade Creek..	At Cascade, Colo.....	1935-63†
South Catamount Creek	Below reservoir near Green Mountain Falls, Colo	1935-63
Do.....	Near Green Mountain Falls, Colo.	1935-63
South Ruxton Creek...	At Halfway, Colo.....	1906-63*
Sutherland Creek.....	Near Manitou, Colo.....	1918-63*

\* 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 1963.

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

Average discharge.--13 years, 17.2 cfs (12,450 acre-ft per year).

Extremes.--Maximum discharge during year, 248 cfs Aug. 11 (gage height, 2.63 ft), from rating curve extended above 120 cfs; minimum discharge not determined.

1950-63: Maximum discharge, 290 cfs May 25, 1961 (gage height, 3.15 ft), from rating curve extended above 160 cfs; maximum gage height recorded, 3.96 ft Apr. 17, 1962 (backwater from ice); minimum discharge not determined.

Remarks.--Records good Oct. 1-26, May 4 to July 30, and poor for remainder of the year. One diversion above station for irrigation of hay meadows below.

Revised peak discharge.--1962: May 11 (2030) 282 cfs (2.40 ft).

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6.1	5.2					*6.8	20	20	*9.9	5.3	14
2	5.6	5.0					6.1	20	25	9.9	6.9	10
3	*4.8	4.9					6.6	21	56	9.9	7.1	9.2
4	4.6	4.8					4.4	22	*35	9.6	6.9	8.1
5	5.3	4.8			(*)		3.8	29	31	9.6	*6.1	7.8
6	6.9	4.6				(*)	4.8	40	28	9.9	6.4	*7.4
7	7.4	*3.8					5.1	56	25	9.2	7.4	5.1
8	7.1	4.0		(*)			6.4	70	24	7.8	6.4	8.1
9	6.6	4.6					7.4	*74	39	8.1	5.8	7.4
10	5.8	4.4					10	71	33	8.5	5.3	7.4
11	5.3	4.2				2.8	11	71	27	7.4	3.4	7.1
12	4.8	5.0					11	54	*22	7.1	1.7	6.9
13	4.8	4.8	(*)				11	46	21	6.4	8.1	3.5
14	4.8	4.8					12	48	21	5.8	5.8	9.6
15	5.1	4.2					12	46	23	6.1	5.3	6.1
16	5.6	4.0	3.6	2.8	3.0		12	43	29	6.6	4.8	5.6
17	5.8	3.7					11	40	25	6.4	4.8	5.3
18	5.6	3.7					9.0	41	26	5.6	5.8	5.1
19	6.4	3.7					8.0	38	25	2.8	4.6	5.1
20	5.8	4.0					8.0	32	23	4.2	4.0	6.9
21	5.3	4.4					10	32	21	5.1	8.1	8.1
22	5.1	5.3					9.0	32	18	5.8	8.1	6.6
23	4.8	4.8					9.5	34	17	7.4	8.5	5.8
24	4.6	5.3					10	33	16	5.8	7.1	5.6
25	4.0	5.1					11	31	15	6.1	5.8	5.1
26	4.0	4.4				5.0	17	27	14	5.8	5.8	4.8
27	4.0	4.2					19	24	13	5.6	7.8	4.6
28	4.0	4.4					21	23	12	5.1	6.1	4.6
29	4.4	4.8					20	24	11	4.8	5.6	4.4
30	5.6	4.5					19	23	10	4.8	6.1	4.2
31	5.2	-----			-----		-----	22	-----	5.3	10	-----
Total	165.2	135.4	111.6	86.8	84.0	111.0	311.9	1,187	705	212.4	236.8	199.5
Mean	5.33	4.51	3.6	2.8	3.0	3.58	10.4	38.3	23.5	6.85	7.64	6.65
Ac-ft	328	269	221	172	167	220	619	2,350	1,400	421	470	396

Calendar year 1962: Max 210 Min - Mean 26.1 Ac-ft 18,930  
 Water year 1962-63: Max 74 Min - Mean 9.72 Ac-ft 7,030

Peak discharge (base, 100 cfs).--May 10 (2000) 106 cfs (1.65 ft); Aug. 11 (1910) 248 cfs (2.63 ft).

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 27 to Nov. 3, Dec. 3 to Apr. 1, Apr. 17 to May 3 (stage-discharge relation affected by ice during part of periods), May 7, 8. Stage-discharge relation affected by ice Nov. 8-13, 16-20, Nov. 30 to Dec. 2, Apr. 13-15.

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

Location.--Lat 40°56'10", long 106°20'21", in SW $\frac{1}{4}$ SE $\frac{1}{4}$  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 1963. 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.--48 years, 437 cfs (316,400 acre-ft per year).

Extremes.--Maximum discharge during year, 4,180 cfs Apr. 1 (gage height, 6.35 ft), from rating curve extended above 3,300 cfs; minimum daily, 50 cfs Jan. 13. 1904, 1915-63: Maximum discharge, 6,720 cfs June 11, 1923 (gage height, 6.24 ft, site then in use); maximum gage height recorded, 8.84 ft 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 table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.9	57	3.2	510
2.2	90	3.7	930
2.7	260	4.3	1,500

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	105	114	100	60	76	88	800	400	831	*202	114	183
2	*94	117	115	62	82	88	*1,300	434	885	212	114	208
3	90	117	115	62	88	86	840	456	1,400	212	138	192
4	86	112	110	62	90	82	517	531	*1,390	256	186	165
5	92	110	100	60	90	82	462	644	1,250	272	*225	146
6	126	110	90	60	*84	*82	439	669	1,120	272	236	*130
7	140	*92	82	62	86	82	545	741	921	242	236	128
8	146	90	88	*62	88	82	885	741	840	225	253	157
9	128	90	96	62	86	82	1,100	*741	930	232	272	157
10	121	94	84	60	84	80	957	732	867	292	260	130
11	112	92	84	56	84	80	705	750	732	253	236	119
12	108	92	84	54	86	78	538	669	596	236	253	108
13	103	98	*86	50	88	80	498	628	559	228	309	97
14	99	105	86	54	90	86	566	444	652	222	304	92
15	92	110	90	58	90	92	636	370	957	212	260	88
16	90	110	100	60	88	100	644	332	1,320	202	239	88
17	88	100	100	60	86	100	552	345	1,470	183	222	86
18	92	90	94	60	84	130	486	336	1,280	165	236	77
19	99	80	92	62	84	150	406	350	1,160	151	236	72
20	105	115	90	66	82	140	390	390	903	143	208	70
21	112	120	80	64	80	140	406	380	723	151	205	90
22	117	120	76	64	78	160	360	340	596	165	246	124
23	112	120	70	66	80	200	318	395	504	192	268	121
24	101	120	64	66	80	200	300	492	417	205	272	103
25	97	130	60	66	82	230	296	588	360	202	250	86
26	94	120	58	68	82	250	309	644	340	192	228	79
27	94	120	58	66	82	270	370	588	318	177	202	74
28	94	110	60	64	86	300	456	517	276	157	183	69
29	94	105	62	64	-	350	428	531	242	138	177	66
30	105	100	60	68	-----	400	395	628	212	126	168	62
31	114	-----	60	74	-----	500	-----	714	-----	121	165	-----
Total	3,250	3,203	2,594	1,922	2,366	4,870	16,904	16,520	24,051	6,238	6,901	3,367
Mean	105	107	83.7	62.0	84.5	157	563	533	802	201	223	112
Ac-ft	6,450	6,350	5,150	3,810	4,690	9,660	33,530	32,770	47,700	12,370	13,690	6,680

Calendar year 1962: Max 4,860 Min 46 Mean 654 Ac-ft 473,300  
 Water year 1962-63: Max 1,470 Min 50 Mean 253 Ac-ft 182,800

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 7 to Apr. 1.

## PLATTE RIVER BASIN

6-6575. Laramie River near Glendevy, 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 Glendevy Post Office.

Drainage area.--101 sq mi.

Records available.--June 1904 to October 1905, August 1910 to September 1963. Monthly discharge only for some periods, published in WSP 1310. Published as "at Glendevy" 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.--54 years, 73.5 cfs (53,210 acre-ft per year).

Extremes.--Maximum discharge during year, 310 cfs May 10 (gage height, 2.47 ft); minimum daily, 10 cfs July 31, Aug. 1. 1904-5, 1910-63: 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 for periods of ice effect or no gage-height record, 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)

0.5	7.5	1.5	100
.6	11	2.0	190
.8	20	3.0	440
1.0	38		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	37	20	16	16	15	14	*37	44	108	*58	10	102
2	*33	20	18	17	14	14	34	46	115	59	11	68
3	31	20	16	16	14	14	24	47	172	66	18	58
4	28	20	22	15	14	14	20	60	*130	59	19	52
5	28	20	23	16	*14	14	20	77	115	58	22	49
6	38	18	18	17	15	*14	26	129	98	53	*26	*47
7	38	*16	18	15	15	14	36	176	91	52	22	51
8	40	16	17	*15	15	13	49	216	85	51	16	51
9	36	16	18	14	16	13	40	*224	100	54	16	49
10	30	18	19	14	15	13	32	210	75	56	41	49
11	30	18	22	13	13	13	28	228	60	49	122	46
12	30	16	*16	12	13	13	29	168	60	49	132	41
13	27	16	20	12	14	13	33	125	70	46	110	39
14	25	17	26	13	15	13	40	130	77	44	97	37
15	26	18	16	14	17	14	46	130	109	44	72	37
16	27	19	20	14	16	13	40	134	136	31	65	35
17	28	18	16	14	16	13	34	124	92	25	62	31
18	28	21	22	14	16	13	30	136	84	23	73	31
19	28	24	18	14	16	13	26	139	75	26	62	31
20	28	20	16	14	16	13	26	114	72	34	57	36
21	28	18	20	15	16	13	25	115	65	37	58	58
22	28	20	17	15	15	14	26	127	56	39	67	46
23	25	18	17	14	15	15	24	125	50	44	84	39
24	23	18	17	14	15	15	24	137	41	42	78	36
25	22	18	16	15	14	16	26	117	35	39	65	34
26	19	16	15	15	14	16	35	103	31	20	62	33
27	18	16	16	15	13	16	50	96	50	14	70	33
28	19	16	17	14	13	21	47	103	60	13	59	31
29	20	16	17	15	-	29	42	109	58	11	56	31
30	20	18	17	15	-----	27	44	108	58	11	52	30
31	20	-----	17	15	-----	31	-----	108	-----	10	57	-----
Total	858	545	563	451	414	481	993	3,905	2,428	1,217	1,761	1,311
Mean	27.7	18.2	18.2	14.5	14.8	15.5	33.1	126	80.9	39.3	56.8	43.7
Ac-ft	1,700	1,080	1,120	895	821	954	1,970	7,750	4,820	2,410	3,490	2,600

Calendar year 1962: Max 521 Min 15 Mean 95.9 Ac-ft 69,460  
 Water year 1962-63: Max 228 Min 10 Mean 40.9 Ac-ft 29,610

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 7-29, Jan. 12 to Feb. 5 (stage-discharge relation affected by ice most of period), June 26 to July 1. Stage-discharge relation affected by ice Dec. 23 to Jan. 11, Feb. 6, 7, 10-14, 28, Mar. 5, 8-11, 13, 14, 17, 20, 21.

## PLATTE RIVER BASIN

13

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 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 1963 (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 8,612.83 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.--24 years (1939-63), 80.5 cfs (58,280 acre-ft per year).

Extremes.--Maximum discharge during year, 407 cfs Sept. 7 (gage height, 2.49 ft); minimum daily, 3.8 cfs June 20.  
1933-63: 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 ice effect or no gage-height record, 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 table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.1	1.5	1.1	107
.2	4.0	1.5	181
.3	9.0	2.0	287
.5	26	2.5	410
.8	62		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	30	33	41					29	99	80	98	301
2	27	34	45					29	97	76	98	282
3	26	34	28					29	107	54	27	269
4	25	33	19					29	93	59	73	253
5	25	33	20					32	73	82	119	260
6	25	*27	29				65	35	69	88	128	296
7	21	23	26		(*)			38	68	86	129	339
8	*16	22	27					50	63	94	124	379
9	15	28	24	(*)				50	82	80	116	346
10	15	24	22				*36	*56	47	102	126	315
11	15	19	22			23		65	39	*91	91	312
12	15	18	*22					25	68	*28	88	126
13	15	19	23			(*)		22	72	75	68	155
14	17	24	22					17	68	72	65	276
15	21	24	21					13	68	88	61	*278
16	23	35	21	10	20			21	66	119	45	266
17	32	52	21					30	75	33	52	276
18	48	41	19					24	86	98	45	282
19	49	22	b17					21	97	60	36	276
20	56	25	b14					26	101	38	28	264
21	66	36						23	91	65	24	260
22	61	29		(*)				19	107	*15	25	271
23	*58	35						*19	122	28	22	264
24	44	34						19	105	52	22	253
25	29	34						22	110	59	20	260
26	27	33	13			85		21	109	68	19	264
27	28	*37	(*)		(*)			22	101	*104	18	264
28	27	29						24	*104	97	15	327
29	27	27						25	112	90	13	*285
30	27	34						25	122	84	11	278
31	27							109		*11	324	
Total	937	898	626	310	560	1,395	1,071	2,335	1,875.1	1,580	6,201.6	5,734
Mean	30.2	29.9	20.2	10	20	45	35.7	75.3	62.5	51.0	200	191
Ac-ft	1,860	1,780	1,240	615	1,110	2,770	2,120	4,630	3,720	3,130	12,300	11,370

Calendar year 1962: Max 287 Min - Mean 73.6 Ac-ft 53,300  
Water year 1962-63: Max 379 Min 3.8 Mean 64.4 Ac-ft 46,640

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 21 to Apr. 9 (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 1963. 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.--34 years, 70.3 cfs (50,900 acre-ft per year).

Extremes.--Maximum discharge during year, 354 cfs Sept. 18 (gage height, 3.10 ft); minimum daily, 3.6 cfs Jan. 28, Feb. 2-6.

1929-63: 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)  
(Shifting-control method used June 11-13)

0.1	2.0	1.5	115
.2	4.0	2.0	182
.3	8.0	3.0	337
.5	19	4.0	531
1.0	60		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7.6	5.2	32	4.0	3.8	20	67	15	50	301	238	298
2	7.6	5.2	36	4.0	3.6	17	78	15	51	271	241	298
3	7.6	5.6	44	4.4	3.6	17	78	14	69	264	244	298
4	7.6	12	36	4.4	3.6	25	62	14	123	274	242	298
5	7.6	32	25	4.4	3.6	32	38	14	137	268	241	298
6	7.6	38	22	4.4	3.6	36	29	15	82	259	290	292
7	7.6	28	29	4.8	3.8	36	29	15	34	254	313	279
8	6.4	23	22	4.4	3.8	36	43	15	25	265	295	279
9	6.0	23	18	7.6	3.8	36	54	15	24	298	293	292
10	6.0	14	22	9.0	3.8	36	39	15	24	300	301	303
11	6.0	9.0	25	8.5	10	38	25	17	25	300	301	303
12	6.0	6.8	23	8.5	24	33	18	15	24	317	301	303
13	6.0	4.8	18	9.0	39	23	12	15	25	323	306	303
14	6.0	5.2	15	9.0	43	23	6.8	15	46	325	323	303
15	6.0	5.2	17	9.0	43	23	7.6	15	78	313	322	303
16	6.0	5.2	20	9.0	44	23	6.4	15	147	297	322	303
17	7.2	14	21	8.5	44	15	6.4	37	171	260	323	315
18	12	22	20	8.5	44	10	6.8	69	85	250	323	351
19	17	25	25	8.5	32	10	6.4	80	42	250	310	300
20	27	27	28	8.5	28	10	6.4	94	16	250	279	271
21	41	27	36	8.5	28	11	7.6	58	9.0	250	279	256
22	44	26	46	8.5	27	15	6.0	61	9.0	250	279	248
23	55	26	48	8.5	27	21	6.4	131	6.0	248	262	264
24	56	26	42	8.5	28	32	11	113	124	248	252	300
25	43	26	30	8.5	28	55	14	113	211	247	252	300
26	28	26	19	8.5	28	80	14	89	212	246	252	264
27	15	26	10	6.8	28	96	15	89	222	246	252	242
28	8.0	26	6.8	3.6	28	155	14	110	270	244	274	242
29	8.0	27	6.0	3.8	-	256	14	107	317	250	300	244
30	6.4	29	6.0	3.8	-----	224	14	127	312	241	300	240
31	5.6	-----	4.4	3.8	-----	104	-----	86	-----	240	300	-----
Total	480.8	575.2	752.2	211.2	610.0	1,548	734.8	1,603	2,970.0	9,349	8,810	8,590
Mean	15.5	19.2	24.3	6.81	21.8	49.9	24.5	51.7	99.0	269	284	286
Ac-ft	954	1,140	1,490	419	1,210	3,070	1,460	3,180	5,890	16,560	17,470	17,040

Calendar year 1962: Max 344 Min 4.4 Mean 72.2 Ac-ft 52,280  
 Water year 1962-63: Max 351 Min 3.6 Mean 96.5 Ac-ft 69,880

## 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 1963 (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). Avg. 1 to Dec. 31, 1899, staff gage at site about 2 miles downstream at different datum.

Average discharge.--26 years (1924-30, 1935-36, 1939-41, 1943-47, 1950-63), 26.8 cfs (19,400 acre-ft per year).

Extremes.--Maximum discharge during year, 60 cfs Sept. 21 (gage height, 1.52 ft); minimum daily, 1.2 cfs Aug. 1. 1924-63: 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 periods 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)

0.1	1.0	0.8	23
.3	5.0	1.2	42
.5	11		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6.8						5.0	5.9	4.2	1.6	1.2	31
2	6.8						6.4	5.6	5.0	1.8	1.4	25
3	7.1						7.8	5.9	8.0	1.8	7.2	22
4	6.8						7.2	5.9	7.7	2.0	13	20
5	7.1	(*)					6.8	5.9	5.9	2.4	20	26
6	7.1						13	5.9	4.6	3.6	24	32
7	6.8						20	*5.9	4.2	4.0	24	36
8	*6.8						33	5.9	4.2	4.0	19	42
9	7.1						*32	5.9	4.2	7.4	18	35
10	7.1						26	5.9	4.6	7.7	13	31
11	6.5		(*)				19	5.6	5.0	*7.4	19	27
12	6.5						17	5.0	*4.4	4.8	21	*25
13	7.1						18	4.6	4.2	4.0	38	22
14	7.1						19	4.2	4.2	3.6	32	21
15	6.5						19	4.2	5.0	3.2	*22	19
16	7.4	7	7.5	4.5	5	4.5	15	4.2	11	2.6	18	17
17	8.3						14	4.0	20	2.4	16	16
18	9.2						11	4.0	15	2.2	19	16
19	10						9.0	4.2	13	2.0	16	15
20	9.8						7.0	4.4	8.3	2.6	13	20
21	11						5.2	4.8	6.2	4.4	15	35
22	10			(*)			4.4	5.6	5.0	3.2	34	25
23	9.2						*4.0	6.8	4.0	2.8	23	22
24	9.2						3.8	7.1	3.4	2.6	17	20
25	9.2						3.6	5.6	3.0	2.4	17	19
26	8.3						4.2	4.4	2.6	3.4	20	18
27	7.1	(*)	(*)		(*)	(*)	5.6	4.2	2.4	3.2	17	*18
28	6.2						5.0	*4.0	2.2	2.8	23	18
29	6.6						6.5	4.6	2.0	2.2	19	17
30	7.2						6.8	4.6	1.6	*1.6	*17	16
31	7.0							4.4		1.4	30	
Total	238.9	210	232.5	139.5	140	139.5	354.3	159.2	175.1	101.1	586.8	706
Mean	7.71	7	7.5	4.5	5	4.5	11.8	5.14	5.84	3.26	18.9	23.5
Ac-ft	474	417	461	277	278	277	703	316	347	201	1,160	1,400

Calendar year 1962: Max 151 Min - Mean 26.7 Ac-ft 19,310  
Water year 1962-63: Max 42 Min 1.2 Mean 8.72 Ac-ft 6,310

Peak discharge (base, 110 cfs).--No peak above base.

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 28 to Apr. 8 (stage-discharge relation affected by ice during most of period), Apr. 17-23, May 7, 8, Sept. 2-10, 17-26.



Location.--Lat 39°12'33", long 105°16'02", in SE 1/4 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.

Records available.--October 1924 to September 1963. 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.

Extremes.--Maximum discharge during year, 515 cfs July 22 (gage height, 2.62 ft); minimum daily, 11 cfs Mar. 1-15.

1924-63: Maximum discharge during year, 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)  
(Shifting-control method used June 2-17)

0.2	5.1	1.0	113
.3	13	1.5	216
.4	23	2.0	343
.6	50	3.0	656

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	119	78	40	47	65	11	65	207	311	332	277	290
2	64	78	40	47	65	11	99	205	274	329	269	290
3	54	76	40	47	65	11	106	205	250	295	259	292
4	47	70	40	47	68	11	128	205	250	247	235	303
5	47	65	39	49	70	11	146	205	285	252	262	298
6	47	65	36	47	64	11	162	205	343	269	290	324
7	47	82	35	47	49	11	179	198	329	257	308	343
8	47	99	35	47	50	11	172	179	269	242	287	324
9	50	92	36	47	50	11	189	192	210	262	287	335
10	50	86	26	47	50	11	240	214	172	277	290	343
11	47	61	21	47	49	11	235	214	189	277	285	338
12	47	84	20	47	49	11	196	203	233	279	295	338
13	47	101	20	47	49	11	196	198	233	282	308	360
14	47	75	20	47	49	11	201	198	216	282	319	385
15	64	76	20	46	49	11	233	203	216	269	329	399
16	96	94	20	46	49	12	212	221	114	240	335	399
17	106	108	20	46	40	12	214	228	40	252	349	399
18	111	81	26	46	31	12	198	228	158	274	340	399
19	111	65	30	46	31	15	179	272	113	277	327	321
20	110	50	30	46	31	20	181	429	61	259	329	264
21	110	40	30	47	26	20	196	405	26	285	305	203
22	138	42	30	56	12	20	214	420	176	447	292	43
23	132	42	30	56	12	20	214	429	174	429	277	129
24	121	40	30	56	12	26	198	417	194	414	266	214
25	138	40	28	56	12	47	189	332	203	423	287	221
26	138	40	27	58	12	47	183	300	214	397	290	221
27	101	40	31	64	13	47	181	319	242	250	272	221
28	81	42	37	70	13	53	192	332	240	242	277	223
29	103	43	39	67	-	61	207	321	285	242	269	223
30	86	42	46	67	-----	51	212	295	308	252	277	223
31	78	-----	46	65	-----	53	-----	295	-----	269	285	-----
Total	2584	1997	968	1598	1135	681	5517	8274	6328	9103	9077	8665
Mean	83.4	66.6	31.2	51.5	40.5	22.0	184	267	211	294	293	289
Ac-ft	5,130	3,960	1,920	3,170	2,250	1,350	10,940	16,410	12,550	18,060	18,000	17,190

Calendar year 1962:	Max	660	Min	20	Mean	186	Ac-ft	134,600
Water year 1962-63:	Max	447	Min	11	Mean	153	Ac-ft	110,900

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 1963. 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.--26 years, 73.8 cfs (53,430 acre-ft per year).

Extremes.--Maximum discharge during year, 142 cfs June 16 (gage height, 3.22 ft); minimum daily, 13 cfs Jan. 16-23.

1908-13, 1942-63: 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. 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)

2.4	13	3.0	85
2.6	27	3.2	128
2.8	52		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	27	23	21	17	17	15	28	35	78	51	21	70
2	27	24	21	17	18	15	21	35	83	58	25	60
3	26	24	21	17	18	15	21	41	85	66	34	55
4	25	24	21	17	19	15	23	51	80	80	45	54
5	25	24	19	17	20	15	25	52	75	83	39	60
6	25	24	21	17	20	15	25	62	73	82	41	58
7	25	20	22	17	20	15	34	65	73	82	41	80
8	25	21	23	17	19	15	42	62	75	76	42	68
9	25	24	24	17	18	16	42	68	75	70	55	60
10	25	22	22	17	18	16	38	73	73	78	51	60
11	25	22	22	16	18	16	34	75	68	68	63	58
12	25	21	23	15	18	16	34	75	66	65	73	58
13	25	21	22	15	19	16	38	63	66	58	70	66
14	24	23	21	14	19	15	39	65	70	55	57	57
15	25	21	22	14	20	16	39	65	78	51	51	54
16	25	21	22	13	20	16	34	71	124	44	51	57
17	26	20	22	13	19	16	32	71	100	42	55	54
18	26	15	22	13	19	16	27	75	91	38	57	51
19	25	19	22	13	19	16	26	76	82	35	46	49
20	25	23	21	13	18	17	26	70	76	35	45	83
21	25	23	21	13	18	17	26	71	73	34	48	83
22	25	21	21	13	18	18	26	75	73	31	57	85
23	25	21	19	13	18	21	25	75	70	31	55	73
24	24	19	18	14	17	21	28	76	68	36	60	65
25	24	19	18	14	16	21	28	78	65	31	60	62
26	22	19	18	14	15	20	32	76	62	31	58	60
27	22	19	18	14	15	22	38	73	60	30	68	58
28	21	18	18	15	15	29	30	76	57	25	62	58
29	23	17	18	15	-	31	25	78	52	25	63	57
30	23	18	17	16	-----	30	28	80	49	22	60	54
31	23	-----	17	16	-----	29	-----	82	-----	21	63	-----
Total	763	630	637	466	508	571	914	2,090	2,220	1,534	1,616	1,867
Mean	24.6	21.0	20.5	15.0	18.1	18.4	30.5	67.4	74.0	49.5	52.1	62.2
Ac-ft	1,510	1,250	1,260	924	1,010	1,130	1,810	4,150	4,400	3,040	3,210	3,700

Calendar year 1962: Max 299

Min 15

Mean 66.7

Ac-ft 48,270

Water year 1962-63: Max 124

Min 13

Mean 37.9

Ac-ft 27,390

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

## 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 1963. 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.--51 years, 155 cfs (112,200 acre-ft per year).

Extremes.--Maximum discharge during year, 224 cfs June 16 (gage height, 2.62 ft); minimum daily, 20 cfs Jan. 13, 26-28.

1909-10, 1913-63: 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)  
(Shifting-control method used Nov. 2-4)

1.6	27
1.8	40
2.0	61
2.3	122
2.6	220

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	51	44	35	30	28	32	57	42	79	51	43	117
2	48	49	33	31	32	32	55	48	83	54	43	105
3	47	46	32	32	37	31	42	50	92	60	54	92
4	46	45	30	34	43	30	43	55	85	71	79	88
5	46	48	29	34	45	29	44	61	79	83	98	115
6	46	47	29	31	44	31	44	64	75	88	96	131
7	46	40	30	31	42	32	46	69	72	90	96	151
8	46	30	31	31	37	32	57	69	74	96	92	179
9	48	32	31	31	36	35	67	67	81	92	100	151
10	46	36	30	29	35	36	72	69	81	92	100	136
11	46	35	29	25	30	35	63	72	81	85	105	134
12	45	33	28	21	27	34	59	71	74	79	110	108
13	44	34	28	20	29	31	60	69	72	72	117	100
14	40	37	27	24	31	32	69	64	72	66	103	98
15	38	37	27	26	34	32	74	64	83	61	88	90
16	42	32	28	25	32	33	67	64	157	55	79	88
17	42	29	28	23	32	36	59	71	163	50	81	85
18	44	28	28	22	35	37	54	69	125	47	100	81
19	48	31	28	22	36	36	45	72	110	43	83	77
20	47	35	27	22	37	35	44	77	92	40	72	90
21	45	41	25	22	35	34	44	74	83	51	72	163
22	47	38	25	22	32	35	41	72	79	54	79	142
23	43	37	24	22	35	36	39	79	74	59	85	122
24	42	35	24	21	36	39	39	79	69	61	88	103
25	42	36	23	21	35	40	41	79	66	61	90	94
26	41	38	23	20	34	43	43	79	63	59	88	92
27	38	38	24	20	33	45	49	74	61	60	98	83
28	40	38	25	20	32	47	55	72	61	60	108	85
29	42	37	30	21	-	63	44	74	57	53	105	90
30	43	35	32	21	-----	61	38	79	53	47	108	88
31	42	-----	31	22	-----	60	-----	81	-----	44	115	-----
Total	1,371	1,121	874	776	974	1,164	1,554	2,129	2,496	1,984	2,775	3,278
Mean	44.2	37.4	28.2	25.0	34.8	37.5	51.8	68.7	83.2	64.0	89.5	109
Ac-ft	2,720	2,220	1,730	1,540	1,930	2,310	3,080	4,220	4,950	3,940	5,500	6,500

Calendar year 1962: Max 570 Min 23 Mean 128 Ac-ft 92,800

Water year 1962-63: Max 179 Min 20 Mean 56.2 Ac-ft 40,640

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

Note.--Stage-discharge relation affected by ice Nov. 9 to Dec. 22. No gage-height record Dec. 23 to Mar. 25 (stage-discharge relation affected by ice during most of period).

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 1963. 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.--70 years (1887-91, 1895-97, 1898-99, 1900-63) 356 cfs (257,700 acre-ft per year).

Extremes.--Maximum discharge during year, 545 cfs July 22 (gage height, 3.11 ft); minimum daily, 52 cfs Dec. 25, 26.

1887-92, 1895-97, 1898-1963: 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 good except those for period of ice effect, 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)

1.1	47	2.5	301
1.5	88	3.1	540
2.0	176		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	191	135	95	90	119	72	126	250	376	354	295	410
2	143	133	96	91	128	71	150	256	383	379	292	387
3	121	132	95	90	120	69	150	258	344	354	317	376
4	108	130	90	93	123	61	168	264	336	323	307	383
5	106	124	74	94	134	61	191	269	340	314	340	402
6	105	123	78	92	138	67	199	269	391	340	376	422
7	105	117	78	89	130	66	230	281	410	344	402	502
8	106	133	82	89	118	70	242	264	354	330	376	502
9	108	112	76	92	118	69	242	258	307	314	376	478
10	106	108	72	86	111	61	295	286	264	361	376	474
11	106	103	68	83	94	62	317	298	248	340	376	470
12	105	93	65	76	80	56	267	292	284	336	376	439
13	105	100	65	76	70	58	261	278	295	330	414	456
14	103	105	68	79	80	58	267	275	278	323	406	470
15	103	110	70	81	93	65	301	275	292	323	402	483
16	139	104	72	85	107	63	278	292	368	278	391	478
17	156	94	72	86	103	61	272	317	225	269	406	478
18	172	86	72	86	103	63	258	317	248	289	431	470
19	174	90	70	83	99	72	232	333	278	286	391	435
20	174	95	65	78	95	75	222	506	195	281	379	368
21	174	98	62	77	90	82	232	502	154	286	372	410
22	182	90	58	78	85	87	253	506	250	418	364	292
23	208	87	56	81	79	92	261	530	250	502	358	202
24	180	85	54	83	75	88	242	530	253	431	340	307
25	195	85	52	88	72	97	235	460	267	456	350	323
26	197	86	52	88	68	103	225	387	264	474	368	323
27	186	86	57	95	68	106	230	395	292	320	358	314
28	137	88	61	94	66	109	238	406	295	289	372	314
29	154	88	68	96	-	139	248	406	298	281	358	320
30	156	94	88	103	-----	132	253	376	350	278	376	314
31	135	-----	90	110	-----	126	-----	376	-----	289	414	-----
Total	4,440	3,114	2,221	2,712	2,766	2,461	7,085	10,712	8,889	10,492	11,459	12,002
Mean	143	104	71.6	87.5	98.8	79.4	236	346	296	338	370	400
Ac-ft	8,810	6,180	4,410	5,380	5,490	4,880	14,050	21,250	17,630	20,810	22,730	23,810

Calendar year 1962: Max 1,120 Min 52 Mean 340 Ac-ft 246,100  
 Water year 1962-63: Max 530 Min 52 Mean 215 Ac-ft 155,400

Note--Stage-discharge relation affected by ice Nov. 9 to Mar. 18 (no gage-height record Jan. 4-8, Jan. 10 to Feb. 6, Feb. 18-26).

## 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 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 1963. 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.--37 years, 173 cfs (125,200 acre-ft per year).

Extremes.--Maximum discharge during year, 460 cfs June 16 (gage height, 1.83 ft); minimum daily, 2.8 cfs Mar. 30 to Apr. 1.  
1926-63: 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)

0.5	1.0	0.9	44
.6	3.0	1.1	98
.7	10	1.3	169
.8	24	1.6	315

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	59	16	18	16	19	8.6	2.8	23	173	131	78	195
2	34	17	17	14	18	8.6	3.7	42	186	161	78	173
3	26	16	18	18	18	8.6	3.7	46	158	142	95	139
4	18	16	18	16	17	8.0	3.0	52	146	114	121	146
5	14	16	17	18	14	7.4	3.7	62	135	86	131	165
6	17	14	20	18	11	9.3	3.7	56	158	114	178	186
7	17	14	21	14	10	9.3	4.4	59	182	121	199	271
8	13	17	20	16	14	11	5.1	62	139	124	161	298
9	16	20	20	17	11	11	65	64	95	131	150	276
10	14	20	18	20	13	11	92	92	75	174	150	246
11	16	20	17	15	10	11	105	86	49	131	154	236
12	16	14	17	14	10	11	56	66	86	121	190	203
13	16	26	17	15	11	11	44	52	86	114	222	212
14	16	24	16	16	12	11	49	42	59	108	208	226
15	14	18	18	17	13	10	64	42	75	105	199	250
16	18	17	17	15	11	13	59	56	260	72	191	255
17	18	38	16	15	12	9.3	52	62	178	64	195	260
18	28	32	16	14	12	9.3	46	81	131	69	222	255
19	34	17	18	13	13	8.6	28	81	208	66	195	231
20	34	18	17	12	15	8.6	18	131	108	75	161	142
21	34	16	18	13	14	7.9	18	105	86	64	146	222
22	36	18	18	14	14	4.4	34	118	54	66	142	135
23	56	20	17	13	16	4.4	44	142	38	86	135	54
24	32	14	16	15	14	4.4	32	146	34	66	111	86
25	46	17	14	13	10	3.7	28	222	42	84	121	101
26	56	16	14	13	10	3.7	18	169	49	75	142	98
27	52	14	15	13	8.6	3.7	18	161	84	78	139	89
28	18	16	19	15	8.6	3.0	30	182	75	84	154	89
29	17	20	18	16	-	3.7	52	186	69	75	158	86
30	23	18	17	16	-----	2.8	38	161	121	72	161	81
31	16	-----	17	17	-----	2.8	-----	158	-----	72	217	-----
Total	824	559	539	471	359.2	240.1	1,020.1	3,007	3,339	3,045	4,904	5,406
Mean	26.6	18.6	17.4	15.2	12.8	7.75	34.0	97.0	111	98.2	158	180
Ac-ft	1,630	1,110	1,070	934	712	476	2,020	5,960	6,620	6,040	9,730	10,720

Calendar year 1962: Max 856 Min 13 Mean 169 Ac-ft 122,500  
Water year 1962-63: Max 298 Min 2.8 Mean 65.0 Ac-ft 47,020

Note.--No gage-height record Jan. 13, 14, Feb. 11-22 (stage-discharge relation affected by ice during part of periods), Mar. 4, 5, 9-12. Stage-discharge relation affected by ice Dec. 23-29, Jan. 11, 12, Jan. 15 to Feb. 2.

## 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, 1¼ miles downstream from Indian Creek, and 7½ miles upstream from mouth.

Drainage area.--302 sq mi.

Records available.--October 1947 to September 1963.

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.--16 years, 21.6 cfs (15,640 acre-ft per year).

Extremes.--Maximum discharge during year, 290 cfs Sept. 19 (gage height, 3.73 ft); no flow for many days. 1947-63: 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, 1963.

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

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.2	2.5	3.2	1.4	2.0	7.7	5.8	5.8	0.2	0.1	0.1	0.2
2	.4	2.5	3.2	1.5	1.8	9.9	2.0	3.2	.7	.1	.2	.1
3	1.4	2.5	4.4	9.0	1.6	1.4	3.2	1.6	.2	.1	.2	.1
4	1.4	3.2	4.4	9.0	1.8	9.0	2.5	.9	.2	.1	1.4	.1
5	.2	3.2	3.8	7.0	2.1	1.5	3.2	.7	.2	.1	.2	.1
6	.9	2.5	4.4	6.4	1.8	1.7	6.4	.6	.2	.1	.1	.1
7	1.4	2.5	5.1	3.8	1.5	1.8	5.1	.6	.2	.1	.2	.2
8	1.1	2.5	5.1	7.0	1.5	1.8	5.8	.7	.2	.1	.1	.1
9	.7	3.2	5.1	7.7	1.4	1.8	4.4	.7	.2	.1	.1	.1
10	.7	3.2	4.4	8.4	1.4	1.8	4.4	.9	0	.1	.1	.1
11	.7	3.2	5.1	2.5	1.1	1.5	3.8	.8	0	.5	0	.1
12	.9	3.2	4.4	1.6	9.0	1.4	3.8	.8	0	.3	0	.1
13	.9	3.2	5.1	5.8	1.2	1.3	3.2	.8	0	.2	5.4	.1
14	.9	3.2	5.1	5.8	1.5	1.3	3.8	.7	1.7	.1	.1	.1
15	.9	4.4	5.1	4.4	1.6	1.4	3.8	.4	.4	0	.1	.1
16	1.1	3.2	5.8	4.4	1.4	1.4	6.4	.2	7.0	0	.1	.1
17	1.6	3.2	5.1	5.1	1.2	9.9	5.1	.7	1.1	.1	.1	.1
18	1.6	2.5	5.1	7.0	1.5	9.9	2.5	.2	.1	.1	.1	.1
19	2.0	2.5	6.4	5.8	1.5	4.4	5.8	.2	.2	.1	.1	1.5
20	2.3	2.5	6.4	6.4	1.3	4.4	7.0	1.1	.2	.1	.1	.4
21	2.0	2.5	6.4	9.0	1.1	7.7	9.0	.7	.1	.1	.1	.1
22	2.0	2.3	7.0	9.0	9.9	8.4	8.4	.7	.1	.1	2.7	.1
23	2.0	2.0	7.7	7.0	9.0	8.4	7.0	1.4	.1	.1	.1	.1
24	2.0	2.0	4.4	7.0	8.4	1.1	7.0	.9	.4	.1	.1	.1
25	2.3	2.0	4.4	6.4	8.4	1.1	8.4	.9	.2	.1	.1	.1
26	2.3	2.5	4.4	6.4	5.8	1.1	8.4	.7	.1	.1	0	.1
27	2.3	3.2	7.0	6.0	5.8	1.1	7.7	.4	.1	.1	0	.1
28	2.3	2.5	7.7	6.0	5.1	1.1	8.4	.2	.1	.1	0	.1
29	2.3	3.8	1.1	7.0	-	9.9	9.0	.2	.1	.1	0	.1
30	2.5	3.8	1.3	7.0	-----	1.1	9.0	.2	.1	.1	4.1	.1
31	2.5	-----	1.4	9.0	-----	8.4	-----	.2	-----	.2	-----	-----
Total	45.8	85.5	183.7	215.9	364.4	365.0	170.3	28.1	25.3	3.7	28.8	18.4
Mean	1.48	2.85	5.93	6.96	13.0	11.8	5.68	0.91	0.84	0.12	0.93	0.61
Ac-ft	91	170	364	428	723	724	338	56	50	7.3	57	36

Calendar year 1962: Max 194 Min 0.1 Mean 19.8 Ac-ft 14,310

Water year 1962-63: Max 21 Min 0 Mean 4.21 Ac-ft 3,040

Peak discharge (base, 220 cfs)--Sept. 19 (2045) 290 cfs (3.73 ft).

Note.--No gage-height record May 6-13, June 20-25, July 10-15, Aug. 5-12, 25-29.

## 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 1963.

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.--22 years, 226 cfs (163,600 acre-ft per year).

Extremes.--Maximum discharge during year, 434 cfs June 16 (gage height, 4.67 ft); maximum gage height, 4.68 ft Jan. 31 (ice jam); minimum daily discharge, 10 cfs Oct. 15, 16.

1941-63: 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 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	64	18	40	41	64	30	26	15	115	64	23	190
2	44	22	38	45	50	29	29	17	135	102	17	163
3	36	30	40	42	54	34	30	24	108	88	17	135
4	24	29	39	44	57	28	27	26	94	72	65	120
5	19	31	37	42	56	30	26	33	86	46	41	132
6	16	31	36	41	50	34	24	34	108	54	75	157
7	14	30	39	41	41	34	22	31	143	74	138	265
8	13	30	37	40	42	31	23	38	110	75	108	320
9	12	32	34	44	40	33	33	39	84	75	90	304
10	14	38	34	38	37	36	108	49	45	135	94	249
11	14	32	38	26	37	36	96	60	32	92	94	234
12	12	33	34	22	30	38	56	45	39	79	108	206
13	12	36	36	22	40	34	31	34	51	68	152	193
14	11	45	36	26	41	31	30	27	41	54	146	200
15	10	38	36	32	39	34	49	23	41	50	127	230
16	10	39	36	32	39	37	57	26	224	42	120	238
17	13	46	37	32	37	33	44	26	268	22	127	238
18	12	48	36	24	37	34	38	32	115	21	146	216
19	18	37	38	24	36	33	29	37	206	19	127	213
20	24	32	37	30	33	36	19	98	122	17	113	143
21	23	36	34	32	36	34	13	106	62	20	100	216
22	27	33	37	26	33	37	22	96	56	22	79	187
23	41	37	38	20	33	32	38	113	40	46	79	65
24	38	33	30	25	32	34	36	115	27	25	53	74
25	34	32	29	30	32	30	26	144	20	36	53	86
26	48	34	32	22	28	30	21	125	12	25	68	94
27	44	36	30	30	31	30	11	106	29	22	75	88
28	32	38	30	35	27	30	11	122	33	27	88	84
29	15	38	36	30	-	28	33	118	14	24	94	81
30	25	39	41	40	-----	27	39	118	53	26	108	75
31	25	-----	41	59	-----	28	-----	104	-----	17	172	-----
Total	744	1,033	1,116	1,037	1,112	1,012	1,047	1,981	2,513	1,539	2,897	5,196
Mean	24.0	34.4	36.0	33.5	39.7	32.6	34.9	63.9	83.8	49.6	93.5	173
Ac-ft	1,480	2,050	2,210	2,060	2,210	2,010	2,080	3,930	4,980	3,050	5,750	10,310

Calendar year 1962: Max 1,060 Min 10 Mean 196 Ac-ft 141,900  
 Water year 1962-63: Max 320 Min 10 Mean 58.2 Ac-ft 42,120

Note.--Stage-discharge relation affected by ice Dec. 24-29, Jan. 10 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.

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 1963. 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.--48 years (1890-91, 1896-97, 1898-99, 1900-1901, 1919-63), 53.9 cfs (39,020 acre-ft per year).

Extremes.--Maximum discharge during year, 200 cfs June 16 (gage height, 5.00 ft), from rating curve extended above 43 cfs; minimum daily, 2.0 cfs Aug. 2.

1887-91, 1895-1901, 1919-63: 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 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 tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to June 15			June 15 to Sept. 30		
3.0	5.0		3.0	2.0	3.7
3.1	8.0		3.1	3.5	4.0
3.2	13		3.2	5.5	4.3
3.4	30		3.4	12	4.7
					120

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	12	12	12	8.6	13	8.0	17	10	10	4.7	2.6	37
2	12	12	12	8.6	14	7.7	17	10	9.5	4.7	2.0	31
3	12	12	9.5	8.8	15	8.5	11	12	13	4.9	3.2	28
4	12	12	12	9.1	14	6.6	10	12	13	4.5	20	26
5	12	12	7.4	10	13	6.8	13	13	10	7.3	20	31
6	12	12	8.0	9.0	13	8.8	12	13	8.5	11	20	32
7	12	12	9.8	8.2	12	9.8	14	15	8.0	8.2	26	47
8	12	8.5	9.0	8.2	12	11	18	15	7.7	7.0	28	60
9	12	6.5	8.5	8.3	12	11	20	15	12	8.8	22	51
10	12	12	8.0	7.6	11	12	22	14	12	9.9	24	44
11	12	11	9.0	7.0	9.4	11	17	15	10	10	37	41
12	12	8.5	8.6	4.0	6.6	10	15	14	9.5	8.5	45	40
13	12	7.7	9.0	4.4	6.0	11	15	12	8.0	7.3	50	40
14	12	12	9.1	4.7	6.8	11	16	11	7.4	5.5	43	39
15	12	18	10	5.4	7.6	12	19	11	15	5.3	34	37
16	12	13	10	5.1	7.2	13	15	11	10.4	5.1	30	37
17	13	13	10	5.1	7.2	13	14	12	63	4.9	28	36
18	14	8.5	8.0	4.7	7.6	12	14	12	47	4.7	33	33
19	14	8.0	9.5	4.5	8.2	11	10	12	37	4.5	28	32
20	15	8.8	10	4.6	8.5	12	9.5	15	28	4.3	24	44
21	15	12	7.4	5.4	9.0	15	10	12	22	3.9	26	82
22	15	11	8.6	6.4	11	18	11	12	18	3.5	26	62
23	14	11	7.2	5.4	10	20	9.5	15	15	3.4	26	51
24	13	11	6.6	5.4	9.0	18	10	15	13	4.5	27	46
25	13	13	6.2	8.0	8.5	15	10	13	11	5.1	27	44
26	12	13	6.6	6.8	8.0	12	10	12	9.6	5.1	26	43
27	12	14	7.0	6.8	8.0	14	11	10	9.2	4.7	36	42
28	12	10	7.8	7.6	6.9	15	12	9.5	7.9	4.7	33	40
29	12	10	8.2	9.1	-	20	11	10	6.7	4.5	31	40
30	12	11	8.2	10	-----	18	9.5	11	5.3	4.1	30	38
31	13	-----	8.4	12	-----	18	-----	11	-----	2.8	35	-----
Total	391	335.5	271.6	218.8	274.5	389.2	402.5	384.5	550.3	177.4	842.8	1,254
Mean	12.6	11.2	8.76	7.06	9.80	12.6	13.4	12.4	18.3	5.72	27.2	41.8
Ac-ft	776	665	539	434	544	772	798	763	1,090	352	1,670	2,490

Calendar year 1962: Max 139 Min 6.2 Mean 32.0 Ac-ft 23,130  
Water year 1962-63: Max 104 Min 2.0 Mean 15.0 Ac-ft 10,890

Note.--Stage-discharge relation affected by ice Nov. 19-23, Dec. 6-8, Dec. 22 to Feb. 3 (no gage-height record Jan. 11 to Feb. 1), Feb. 10-19, 28, Mar. 4-17.



## 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 1963. 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.--36 years (1927-63), 33.8 cfs (24,470 acre-ft per year).

Extremes.--Maximum discharge during year, 325 cfs June 16 (gage height, 4.21 ft); minimum daily 0.2 cfs Aug. 2. 1914, 1927-63: 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 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 Nov. 9-15, Feb. 23 to Mar. 13, Apr. 17 to May 30, June 10-15, 17, July 1 to Aug. 23, Sept. 9-19)

1.9	0.1	2.4	6.5
2.0	.3	2.7	22
2.1	.8	2.9	40
2.2	1.8	3.2	84
2.3	3.7	3.6	166

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.4	8.8	11	12	20	9.2	6.5	1.4	0.3	1.6	0.3	4.5
2	5.3	7.0	11	13	21	8.8	6.2	2.4	1.5	1.8	.2	2.2
3	5.3	5.9	10	13	17	9.2	6.2	3.5	1.3	1.6	.4	2.2
4	5.3	5.4	10	14	17	8.8	7.0	4.0	1.1	1.4	2.0	3.7
5	6.1	4.0	10	12	14	11	7.4	3.3	1.0	1.4	1.0	4.0
6	5.7	3.3	12	12	13	10	8.8	2.8	.8	2.8	1.0	2.4
7	5.7	3.3	12	14	13	10	9.2	2.2	1.3	4.8	1.2	4.0
8	5.7	2.9	11	15	12	11	7.8	1.0	1.3	2.9	1.2	2.0
9	6.1	2.4	11	15	12	13	8.8	.8	12	4.5	1.1	2.2
10	6.1	2.4	10	7.4	11	11	7.0	.8	1.5	6.2	.8	2.6
11	6.4	2.4	10	6	9.2	11	5.4	1.0	1.4	4.0	.6	2.9
12	9.6	2.8	10	6	11	12	5.9	2.0	1.5	2.0	1.1	3.5
13	10	2.2	11	7	12	9.6	5.9	1.6	1.3	1.4	8.8	4.0
14	11	2.4	11	9	13	6.5	5.1	1.1	2.6	1.3	7.8	3.1
15	10	5.3	12	12	13	7.0	6.1	.9	4.2	.7	5.4	3.7
16	6.5	3.5	10	12	12	8.3	2.5	.8	150	.9	4.5	3.1
17	6.5	5.4	10	11	11	8.8	.6	.4	54	1.5	4.8	1.3
18	6.5	4.0	10	10	11	9.2	.8	.3	9.6	.7	4.3	.9
19	7.8	3.3	11	10	12	9.2	1.0	.6	2.0	.9	5.1	2.8
20	8.3	4.0	12	13	11	9.6	1.7	.4	1.9	1.3	5.7	1.8
21	6.2	3.5	12	15	11	9.6	.9	.4	1.8	.8	4.8	7.2
22	7.4	3.5	12	12	12	9.6	.8	.4	1.8	.9	4.3	6.9
23	8.8	3.1	10	12	11	9.6	1.5	.3	1.8	1.1	5.1	1.6
24	7.0	2.9	10	14	9.2	8.8	.8	.3	1.7	1.1	4.3	8.8
25	6.2	3.1	12	14	8.3	9.2	.8	.4	1.7	1.1	4.8	4.5
26	7.0	2.9	11	13	8.8	8.2	.8	.4	1.7	1.3	5.1	4.3
27	7.0	4.3	12	13	8.3	7.8	.6	.3	1.6	1.1	4.8	6.5
28	7.8	1.4	14	15	8.8	7.8	.6	.3	1.6	1.2	4.5	6.5
29	5.9	12	17	15	-	7.0	.6	.3	1.4	1.4	4.5	12
30	6.2	11	15	17	-----	7.4	1.0	1.0	1.5	.8	4.8	14
31	8.8	-----	14	19	-----	7.4	-----	.6	-----	.5	5.1	-----
Total	217.6	141.0	354	382.4	342.6	285.6	118.3	36.0	305.0	55.0	109.4	286.7
Mean	7.02	4.70	11.4	12.3	12.0	9.21	3.94	1.16	10.2	1.77	3.53	9.56
Ac-ft	432	280	702	758	680	566	235	71	605	109	217	569

Calendar year 1962: Max 135 Min 2.0 Mean 26.5 Ac-ft 19,200  
 Water year 1962-63: Max 150 Min 0.2 Mean 7.22 Ac-ft 5,220

Note.--No gage-height record Oct. 1-11, Jan. 11-31 (stage-discharge relation affected by ice during part of period), Apr. 16-19, May 20 to June 7, June 10, 11, 19-27, July 11-13, July 31 to Aug. 8.

## 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 1¼ miles upstream from Russellville Gulch and 2¼ miles south of Franktown.

Drainage area.--169 sq mi.

Records available.--November 1939 to September 1963.

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.--23 years (1940-63), 9.59 cfs (6,940 acre-ft per year).

Extremes.--Maximum discharge during year, 815 cfs Aug. 25 (gage height, 6.02 ft); minimum daily, 0.6 cfs July 6.  
1939-63: Maximum discharge, 9,170 cfs 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)  
(Shifting-control method used Oct. 3-19, Nov. 25 to Dec. 6, Dec. 27  
to Jan. 10, Apr. 22-28, May 20 to June 3, June 11-16)

1.6	0.6	2.5	5.8
1.8	1.2	3.0	17
2.1	2.7	3.5	60

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.9	1.5	3.3	2.0	5.6	6.0	4.0	1.3	1.3	0.8	0.9	3.4
2	1.0	1.4	3.3	2.1	11	4.7	3.2	1.3	1.4	.8	1.1	3.3
3	1.1	1.5	3.3	2.5	6.0	4.6	2.6	1.3	1.1	.8	1.0	2.8
4	1.1	1.5	3.3	3.0	7.6	2.2	2.4	1.2	.8	.8	.9	2.5
5	1.1	1.5	2.2	2.2	8.4	3.8	2.2	1.3	.8	.7	.9	2.1
6	1.1	1.5	2.9	3.0	7.4	3.9	1.8	1.3	.8	.6	.9	3.2
7	1.1	1.4	2.8	2.7	8.0	5.2	1.8	1.4	.7	.7	20	16
8	1.1	1.4	3.3	3.0	7.0	5.4	1.9	1.4	.8	.7	4.0	5.7
9	1.1	1.5	3.2	3.3	5.6	4.4	1.8	1.4	.9	.8	2.8	5.1
10	1.1	1.5	2.8	2.6	4.5	4.7	1.5	1.3	.9	.8	1.4	5.2
11	1.1	1.8	3.2	1.8	3.7	5.1	1.4	1.3	.9	2.1	1.1	4.7
12	1.1	1.6	3.1	1.2	4.0	5.0	1.4	1.3	.8	.9	6.5	3.8
13	1.2	1.8	3.1	1.8	4.5	4.2	1.4	1.2	.8	.8	11	2.8
14	1.2	2.1	3.1	1.8	5.0	3.9	1.5	1.3	.9	.9	7.2	2.4
15	1.2	2.6	3.4	1.7	5.3	5.8	1.5	1.3	1.3	.8	5.0	2.2
16	1.3	2.9	3.9	1.7	4.7	9.3	1.4	1.3	2.2	.8	2.7	2.0
17	1.4	2.7	3.9	2.1	4.4	7.2	1.3	1.4	4.0	.8	8.7	1.6
18	1.6	2.5	4.1	2.1	4.5	9.0	1.3	1.3	2.3	.7	4.4	1.4
19	1.8	2.0	4.2	2.0	5.2	5.7	1.3	1.5	1.5	.7	2.6	1.4
20	1.6	3.0	3.8	1.8	5.4	10	1.2	1.6	1.2	.8	2.0	4.3
21	1.4	4.4	2.6	2.6	5.4	12	1.3	1.5	1.0	.8	1.7	2.3
22	1.4	4.4	2.2	2.4	5.0	13	1.4	1.6	1.0	.8	1.5	20
23	1.4	4.0	1.5	2.1	4.5	13	1.4	1.7	.9	.8	1.5	5.3
24	1.4	3.4	2.2	2.1	3.7	9.8	1.4	1.8	.9	.8	2.4	4.0
25	1.4	3.7	2.0	2.4	3.5	7.9	1.5	1.8	.9	.8	6.0	3.0
26	1.4	3.9	2.0	2.2	3.5	6.4	1.5	1.7	.9	.8	1.6	2.4
27	1.4	3.6	2.0	3.1	3.3	6.4	1.4	1.5	.9	.8	6.6	2.0
28	1.4	3.5	2.0	3.1	3.0	6.4	1.5	1.5	.8	.8	7.4	1.9
29	1.4	3.4	2.0	2.6	-	6.2	1.5	1.6	.8	.8	4.9	1.8
30	1.4	3.4	2.0	3.1	-----	4.7	1.2	1.4	.8	.7	4.4	1.8
31	1.4	-----	2.0	3.5	-----	4.4	-----	1.6	-----	.7	3.8	-----
Total	39.6	75.4	88.7	73.6	149.7	200.3	51.0	44.4	54.1	25.4	195.3	141.1
Mean	1.28	2.51	2.86	2.37	5.35	6.46	1.70	1.43	1.80	0.82	6.30	4.70
Ac-ft	79	150	176	146	297	397	101	88	107	50	387	280

Calendar year 1962: Max 40 Min 0.6 Mean 5.11 Ac-ft 3,700  
Water year 1962-63: Max 60 Min 0.6 Mean 3.12 Ac-ft 2,260

Peak discharge (base, 200 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
8-7	1900	5.43	536	9-21	2200	4.92	394
8-25	1730	6.02	815				

b Stage-discharge relation affected by ice.  
Note.--No gage-height record Dec. 25, Jan. 7, Jan. 11 to Mar. 1 (stage-discharge relation affected by ice during most of periods).

## 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.

Drainage area.--336 sq mi.

Records available.--October 1939 to September 1963.

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.--24 years, 13.3 cfs (9,630 acre-ft per year).

Extremes.--Maximum discharge during year, 10,800 cfs Aug. 3 (gage height, 7.3 ft, from floodmark), by slope-area measurement of peak flow; no flow for many days.

1939-63: 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 1962 to September 1963

Aug. 3.....	566	Sept. 20.....	5
4.....	8	22.....	5
6.....	5	23.....	2
7.....	1		
13.....	95		
14.....	5		

Month	Cfs-days	Maximum	Minimum	Mean	Runoff in ac-ft
August.....	674	566	0	21.7	1,340
September.....	12	5	0	0.40	24
Calendar year 1962.....	-	46	0	5.26	3,800
Water year 1962-63.....	-	566	0	1.88	1,360

Peak discharge (base, 1,400 cfs).--Aug. 3 (1630) 10,800 cfs (7.3 ft); Aug. 13 (1640) 1,700 cfs (about 4.1 ft).

Note.--Flow occurred only on days listed above.

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 1963.

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.--13 years, 3.16 cfs (2,290 acre-ft per year), unadjusted.

Extremes.--Maximum discharge during year, 260 cfs Aug. 7 (gage height, 4.80 ft); no flow for many days.

1951-63: Maximum discharge, 1,440 cfs July 31, 1956 (gage height, 6.07 ft); no flow for many days in 1957-63.

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

Remarks.--Records good. Discharge measurement or observation of no flow generally made two or more times a month. Flow regulated by Cherry Creek Reservoir (capacity, 95,960 acre-ft, revised). Reservoir was completed in June 1950. Permanent storage started May 15, 1957. Contents Sept. 30, 1963, 12,220 acre-ft. Change in contents during water year 1963, -1,830 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 July 9 to Aug. 10)

2.9	0	4.0	29
3.1	1.3	4.3	58
3.2	2.3	4.5	92
3.3	3.8	4.8	180
3.5	8.0	5.0	270
3.7	14		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.1						0	0.1	0.1	0.1	0.2	0.2
2	.1						0	.1	.1	.1	.2	.2
3	.1						0	.1	.1	.1	.2	.2
4	.1						0	.1	.1	.1	.1	.2
5	.1						0	.2	.1	.1	0	.2
6	.1						0	.2	.1	.1	0	.2
7	.1						0	.2	.1	.1	122	.2
8	.1						0	.2	.1	.1	245	.2
9	.1						0	.2	.2	.2	240	.2
10	.1						0	.2	.1	.1	216	.2
11	0						0	.2	.1	.1	.8	.2
12	0						0	.1	.2	.2	.5	.2
13	0						0	.1	.2	.2	.5	.2
14	0						0	.1	.2	.2	0	.2
15	0						0	.1	.2	.2	0	.2
16	0						0	.1	.2	.2	0	.2
17	0						0	0	.2	.2	0	.2
18	0						0	0	.2	.2	0	.2
19	0						0	.1	.2	.2	0	.2
20	0						0	.1	.2	.2	0	.2
21	0						0	0	.2	.2	79	.2
22	0						0	.1	.2	.2	93	.2
23	0						0	.1	.2	.2	.3	.1
24	0						0	0	.2	.2	.2	.1
25	0						0	0	.1	.2	.2	0
26	0						0	0	.1	.2	.2	0
27	0						0	0	.1	.2	.2	0
28	0						0	0	.1	.2	.2	0
29	0						0	.1	.1	.2	.2	0
30	0						.1	.1	.1	.2	.2	0
31	0							.1		.2	.2	
Total	1.0	0	0	0	0	0	0.1	3.2	4.4	5.2	999.4	4.6
Mean	0.03	0	0	0	0	0	0.003	0.10	0.15	0.17	32.2	0.15
Ac-ft	2.0	0	0	0	0	0	0.2	6.3	8.7	10	1,980	9.1

Calendar year 1962: Max 136 Min 0 Mean 3.85 Ac-ft 2,780  
 Water year 1962-63: Max 245 Min 0 Mean 2.79 Ac-ft 2,020

## PLATTE RIVER BASIN

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 1963.

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.--21 years, 16.3 cfs (11,800 acre-ft per year).

Extremes.--Maximum discharge during year, 1,490 cfs June 15 (gage height, 6.18 ft); minimum daily, 3.6 cfs Apr. 14. 1942-63: 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 period of no gage-height record, which are poor. Discharge measurements generally made twice a month. Several diversions above station for irrigation of about 1,900 acres. Flood flow regulated by Cherry Creek Reservoir 11 miles upstream (capacity, 95,960 acre-ft, revised).

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Apr. 14 to May 19, May 23 to June 9)

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 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	13	14	5.3	4.4	7.0	4.8	7.0	6.4	9.7	11	8.3	14
2	23	14	5.3	4.8	5.9	4.8	5.9	7.0	22	10	7.6	11
3	20	10	5.9	4.8	5.3	12	5.3	8.3	8.3	10	8.3	10
4	10	8.3	5.9	7.1	5.3	7.6	4.8	7.6	9.7	9.7	9.0	11
5	8.3	8.3	5.9	5.9	5.3	14	4.8	5.9	10	9.7	7.0	11
6	8.3	7.6	5.9	4.8	5.3	7.6	4.8	7.0	12	9.0	33	13
7	12	7.6	5.9	5.3	5.3	5.9	5.3	7.6	12	8.3	36	18
8	9.7	8.3	5.9	5.3	5.9	5.3	5.3	8.3	9.0	9.0	211	9.7
9	12	8.3	5.3	4.8	5.9	5.3	8.3	8.3	77	25	218	14
10	10	7.6	5.9	4.4	5.9	4.8	14	8.3	7.6	10	225	15
11	7.6	7.6	5.9	5.3	5.9	8.3	12	7.0	9.7	7.6	39	17
12	7.0	7.6	5.9	4.0	5.9	19	4.4	4.8	9.0	7.6	13	17
13	9.0	8.3	5.9	4.0	5.9	12	8.3	5.3	9.0	7.6	10	14
14	13	8.3	5.9	5.0	5.3	6.4	3.6	7.6	12	11	11	14
15	8.3	21	5.9	6.0	5.9	7.6	4.4	7.6	162	10	10	14
16	12	12	5.9	5.8	5.9	4.8	4.4	7.6	186	9.7	9.0	15
17	14	15	5.9	6.0	4.8	4.8	4.4	7.0	16	9.7	19	14
18	10	9.7	5.3	6.0	4.8	4.8	4.8	5.3	9.0	10	7.6	13
19	8.3	7.6	4.8	5.4	5.3	4.8	5.9	29	7.6	9.7	11	21
20	11	8.3	5.3	5.4	5.3	4.8	5.9	10	7.6	10	11	38
21	14	5.9	4.8	6.0	4.8	4.8	4.0	11	9.0	9.7	28	33
22	9.0	5.3	5.3	5.0	4.8	4.8	4.4	11	15	10	9.0	15
23	9.7	5.9	4.8	4.8	4.8	9.7	7.0	14	13	9.7	20	11
24	14	5.9	4.4	4.8	4.4	10	5.9	15	11	10	12	11
25	14	5.9	4.4	4.5	4.8	11	4.8	14	10	9.7	46	13
26	14	5.9	4.8	5.0	4.8	11	8.3	15	11	8.3	17	19
27	18	5.9	4.8	5.6	4.8	12	5.3	15	11	9.0	14	19
28	15	5.9	4.8	6.4	4.8	7.6	4.4	15	12	6.4	13	14
29	14	5.3	4.8	5.6	-	10	5.3	14	12	9.0	14	16
30	9.0	5.3	4.4	6.0	-----	4.8	5.9	18	11	8.3	14	17
31	12	-----	4.8	6.6	-----	5.9	-----	12	-----	8.3	15	-----
Total	369.2	256.6	166.0	164.8	150.1	241.0	178.9	319.9	720.2	303.0	1186.8	471.7
Mean	11.9	8.55	5.35	5.32	5.36	7.77	5.96	10.3	24.0	9.77	38.3	15.7
Ac-ft	732	509	329	327	298	478	355	635	1,430	601	2,350	936

Calendar year 1962: Max 149 Min 4.0 Mean 13.2 Ac-ft 9,550  
Water year 1962-63: Max 225 Min 3.6 Mean 12.4 Ac-ft 8,980

Note.--No gage-height record Jan. 15 to Feb. 1 (stage-discharge relation affected by ice during most of period).

## PLATTE RIVER BASIN

29

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 1963. 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.--68 years, 341 cfs (246,900 acre-ft per year).

Extremes.--Maximum discharge during year, 4,700 cfs June 15 (gage height, 4.35 ft), from rating curve extended above 330 cfs; minimum daily, 22 cfs May 16.

1889-90, 1895-63: 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 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, ground-water withdrawals and diversions for irrigation of about 79,000 acres and municipal use, and return flow from irrigated areas.

Rating tables (gage height in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Jan. 16-22, June 15-17)

Oct. 1 to June 15

June 15 to Sept. 30

0.3	18	1.2	230	0.3	23	1.3	350
.6	45	1.5	480	.4	35	1.7	705
.8	79	2.0	1,080	.6	72	2.1	1,210
1.0	136			.9	156		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	84	58	73	71	110	48	39	32	133	58	35	202
2	89	56	67	71	102	48	35	29	176	86	33	173
3	77	56	71	75	89	73	45	30	187	94	33	169
4	52	51	71	89	92	53	37	28	156	77	112	125
5	42	49	73	77	84	77	36	25	120	58	47	136
6	39	65	67	69	86	77	35	30	126	34	136	156
7	42	49	73	73	79	58	32	29	156	60	220	238
8	40	51	71	73	73	52	31	27	148	70	344	276
9	38	51	65	77	73	53	32	30	400	98	314	276
10	38	61	63	69	69	55	82	33	86	132	332	252
11	34	58	71	a 35	59	56	92	48	52	114	139	238
12	34	59	67	a 37	a 57	107	82	40	34	94	119	229
13	37	61	67	a 43	a 66	86	41	33	41	82	181	207
14	42	77	67	a 47	71	55	27	29	43	70	190	224
15	37	107	67	a 48	75	63	32	23	784	70	156	233
16	39	94	61	56	77	63	55	22	1,190	58	149	238
17	38	110	63	59	69	53	42	26	471	38	202	229
18	37	96	63	73	71	55	42	24	198	27	185	216
19	36	82	67	61	71	55	42	51	238	24	164	238
20	49	75	69	73	65	52	30	52	198	25	149	302
21	52	75	69	99	65	52	26	82	122	24	149	368
22	52	67	77	86	61	55	26	69	99	25	198	332
23	55	73	61	a 60	58	63	29	84	70	49	160	146
24	73	71	61	a 65	53	59	35	110	47	33	117	129
25	69	69	52	a 60	56	58	29	120	37	35	148	132
26	82	69	59	a 60	49	52	29	156	30	34	122	136
27	79	71	69	a 66	49	55	29	127	23	33	117	125
28	73	65	75	a 72	46	49	25	117	33	33	122	114
29	53	73	77	a 78	-	51	25	136	25	33	132	114
30	46	73	79	a 95	-----	44	35	148	25	27	136	114
31	56	-----	73	a 118	-----	39	-----	126	-----	34	173	-----
Total	1,614	2,072	2,108	2,135	1,975	1,816	1,177	1,909	5,448	1,729	4,814	6,067
Mean	52.1	69.1	68.0	68.9	70.5	58.6	39.2	61.6	182	55.8	155	202
Ac-ft	3,200	4,110	4,180	4,230	3,920	3,600	2,330	3,790	10,810	3,430	9,550	12,030

Calendar year 1962: Max 1,300 Min 34 Mean 249 Ac-ft 180,100

Water year 1962-63: Max 1,190 Min 22 Mean 90.0 Ac-ft 65,180

a No gage-height record.

## PLATTE RIVER BASIN

6-7165. Clear Creek near Lawson, Colo.

Location.--Lat 39°45'40", long 105°39'06", in SE¼ 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 1963. 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.--17 years, 138 cfs (99,910 acre-ft per year), adjusted for inflow from Jones Pass tunnel prior to 1959.

Extremes.--Maximum discharge during year, 370 cfs June 16 (gage height, 3.87 ft); maximum gage height, 3.90 ft Jan. 27 (backwater from ice); minimum daily discharge, 15 cfs Jan. 12, 13.

1946-63: 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)

2.2	19	3.0	118
2.3	24	3.5	245
2.5	42	4.0	415
2.7	65		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	49	36	30	30	22	22	35	46	204	190	71	127
2	49	36	30	30	22	22	34	44	220	187	84	112
3	48	34	29	27	22	23	30	48	204	*190	100	106
4	45	32	29	23	22	22	30	59	190	182	120	106
5	46	33	25	22	23	21	31	71	187	182	140	114
6	46	32	26	22	23	22	31	89	193	174	120	112
7	46	*24	*29	22	23	23	37	100	204	172	110	140
8	*48	26	26	21	23	22	41	104	*214	174	110	125
9	44	36	24	18	22	22	40	*127	204	206	100	108
10	43	30	24	17	21	22	39	145	187	187	105	106
11	41	30	24	16	22	22	37	172	*182	162	120	102
12	41	28	24	15	21	22	*39	162	198	147	148	*102
13	40	32	24	15	21	24	43	136	223	125	126	102
14	40	34	22	16	21	24	49	140	245	116	106	98
15	40	35	24	18	21	25	51	145	269	114	*98	102
16	41	34	25	18	*21	23	49	180	324	106	98	100
17	43	31	24	19	22	24	48	174	278	98	104	96
18	42	30	24	20	22	24	45	195	314	94	102	89
19	45	34	24	21	22	24	41	204	278	91	93	87
20	44	35	24	20	22	25	40	174	269	89	87	125
21	43	34	24	19	22	26	38	185	272	87	85	118
22	41	32	23	*18	25	27	38	182	278	85	93	104
23	40	32	22	18	22	28	34	180	269	91	108	98
24	39	33	21	18	22	27	37	195	254	108	110	94
25	37	32	21	19	22	*26	37	195	245	91	106	93
26	36	31	23	19	22	26	46	182	237	87	106	85
27	36	30	26	19	22	28	57	180	225	82	147	87
28	35	31	31	20	22	34	46	204	223	71	133	82
29	35	30	30	20	-	36	42	209	206	72	120	84
30	36	30	32	20	-----	36	41	206	193	72	116	78
31	36	-----	31	20	-----	36	-----	204	-----	70	125	-----
Total	1,295	957	795	620	617	788	1,206	4,637	6,989	3,902	3,391	3,082
Mean	41.8	31.9	25.6	20.0	22.0	25.4	40.2	150	233	126	109	103
Ac-ft	2,570	1,900	1,580	1,230	1,220	1,560	2,390	9,200	13,860	7,740	6,730	6,110

Calendar year 1962: Max 758 Min 21 Mean 140 Ac-ft 101,100  
Water year 1962-63: Max 324 Min 15 Mean 77.5 Ac-ft 56,090

Peak discharge (base, 600 cfs).--No peak above base.

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 5, 6, 9-11, 14, 21-27, Jan. 5-28, Feb. 10-17, 22, Feb. 28 to Mar. 2, Mar. 4-11, 13-17. No gage-height record Aug. 3-15.

## PLATTE RIVER BASIN

31

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 1963. 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.--53 years, 230 cfs (166,500 acre-ft per year), adjusted for inflow from Jones Pass tunnel and Berthoud Pass ditch 1940-58.

Extremes.--Maximum discharge during year, 670 cfs June 16 (gage height, 4.30 ft); minimum daily, 21 cfs Dec. 26.  
1908-9, 1911-63: Maximum discharge, 5,890 cfs Sept. 9, 1933 (gage height, 11.57 ft, present datum, from flood-marks), 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 table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

2.2	22	3.5	265
2.4	37	4.0	470
2.7	70	4.5	840
3.0	126		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	76	60	52	38	52	41	57	64	248	254	104	186
2	81	60	49	40	54	37	56	69	286	258	112	167
3	80	57	48	37	56	42	43	69	272	248	148	155
4	78	56	48	36	54	33	42	80	251	244	167	150
5	76	56	41	35	50	31	46	94	240	251	197	158
6	78	56	44	36	45	b32	42	108	237	237	221	165
7	76	45	b44	38	43	b33	48	139	248	218	194	240
8	76	36	b45	40	43	b35	55	137	272	221	178	218
9	73	42	46	41	42	b36	62	175	251	251	178	180
10	70	42	45	29	35	b37	66	180	221	244	170	172
11	69	43	b41	23	28	39	62	203	200	215	178	165
12	64	44	b39	23	b30	41	62	218	215	194	230	160
13	62	48	b38	26	b31	35	66	183	251	175	248	160
14	60	57	b39	30	b33	b36	73	189	290	162	200	155
15	60	57	b41	35	b34	b38	78	183	352	162	170	153
16	62	55	43	33	b36	40	73	230	558	153	158	162
17	62	54	47	30	b37	35	75	218	400	141	165	141
18	65	43	43	27	b39	43	69	234	412	135	172	139
19	65	49	47	26	41	37	58	262	368	126	148	133
20	73	54	46	27	42	39	62	218	340	122	137	192
21	72	58	42	30	43	43	64	224	320	118	135	209
22	67	54	39	35	43	47	61	224	328	116	146	175
23	69	53	33	30	44	49	56	227	320	124	158	160
24	67	52	30	31	38	49	58	240	304	162	172	153
25	66	54	b26	33	40	44	57	248	290	139	160	148
26	62	53	21	36	37	42	64	230	282	130	155	141
27	62	50	22	40	41	47	80	224	276	128	194	137
28	60	48	23	42	34	50	70	251	276	120	197	135
29	60	46	27	43	-	64	64	265	279	112	183	128
30	60	50	30	45	-----	56	64	254	258	112	172	126
31	60	-----	35	50	-----	57	-----	265	-----	106	178	-----
Total	2,111	1,532	1,214	1,065	1,145	1,288	1,833	5,905	8,845	5,378	5,325	4,863
Mean	68.1	51.1	39.2	34.4	40.9	41.5	61.1	190	295	173	172	162
Ac-ft	4,190	3,040	2,410	2,110	2,270	2,550	3,640	11,710	17,540	10,670	10,560	9,650

Calendar year 1962: Max 970 Min 21 Mean 207 Ac-ft 149,600  
Water year 1962-63: Max 558 Min 21 Mean 111 Ac-ft 80,340

Peak discharge (base, 1,100 cfs).--No peak above base.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 24, Dec. 26 to Feb. 5 (stage-discharge relation affected by ice during most of periods).



## PLATTE RIVER BASIN

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

Location.--Lat 39°49'42", long 104°57'30", in SW $\frac{1}{4}$ SW $\frac{1}{4}$  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 2 $\frac{1}{2}$  miles west of Derby.

Drainage area.--575 sq mi.

Records available.--April to November 1914, March 1927 to September 1963. 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.--36 years (1927-63), 88.7 cfs (64,220 acre-ft per year).

Extremes.--Maximum discharge during year, 970 cfs June 16 (gage height, 4.50 ft), from rating curve extended above 51 cfs; minimum daily, 1.8 cfs Apr. 30, May 1.

1914, 1927-63: 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 poor prior to June 7 and good thereafter except those above 60 cfs, which are fair. 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.

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	11	10	23	20	56	29	9.0	1.8	32	26	7.2	20
2	9.6	11	23	25	52	26	14	1.9	32	18	7.8	19
3	10	11	30	22	46	30	16	2.1	46	24	8.4	10
4	10	9.0	32	26	46	28	12	2.6	28	15	16	9.0
5	9.6	9.0	31	28	39	32	15	2.6	19	19	28	9.0
6	9.6	11	34	29	36	28	16	2.6	16	16	35	11
7	9.6	10	40	30	32	28	16	7.0	14	26	48	57
8	9.6	10	31	30	30	28	15	11	18	30	21	67
9	9.6	8.4	31	31	27	30	13	15	103	36	16	50
10	9.6	7.2	29	31	26	28	12	17	84	43	16	32
11	9.6	7.2	31	30	25	28	10	17	26	16	13	16
12	9.6	7.2	33	27	23	35	8.4	19	19	14	28	13
13	9.6	7.8	33	27	24	35	4.5	18	22	12	38	11
14	9.6	7.2	33	29	23	24	2.6	20	32	13	28	12
15	10	8.4	32	32	25	23	3.7	20	167	15	14	17
16	10	14	32	35	23	23	6.0	23	520	12	12	22
17	10	10	32	34	25	19	5.2	25	121	13	16	16
18	10	12	32	35	25	17	6.0	20	66	12	34	10
19	10	12	30	35	25	16	6.0	36	40	11	22	9.6
20	13	15	32	37	26	16	6.6	38	17	10	16	64
21	10	17	32	39	28	13	5.6	21	17	11	13	134
22	10	17	34	37	29	12	5.6	22	41	9.6	21	79
23	10	20	34	38	29	12	5.2	26	88	8.4	24	44
24	10	21	36	44	29	11	4.5	36	81	12	36	18
25	11	23	32	47	29	10	4.1	35	64	25	18	16
26	11	25	b 31	44	26	9.6	3.7	20	42	9.6	16	14
27	11	24	b 32	46	24	7.8	3.3	16	29	11	32	30
28	9.0	26	b 32	48	25	7.8	2.6	22	18	13	43	25
29	7.2	26	b 32	48	-	10	2.1	34	19	12	24	19
30	9.0	24	32	52	-----	9.0	1.8	33	14	10	15	18
31	11	-----	28	54	-----	9.0	-----	46	-----	9.6	21	-----
Total	308.8	420.4	979	1,090	853	634.2	235.5	610.6	1,835	512.2	687.4	871.6
Mean	9.96	14.0	31.6	35.2	30.5	20.5	7.85	19.7	61.2	16.5	22.2	29.1
Ac-ft	612	834	1,940	2,160	1,690	1,260	467	1,210	3,640	1,020	1,360	1,730

Calendar year 1962: Max 548 Min 7.1 Mean 91.7 Ac-ft 66,430

Water year 1962-63: Max 520 Min 1.8 Mean 24.8 Ac-ft 17,920

b Stage-discharge relation affected by ice.

Note.--No gage-height record Jan. 11 to Feb. 10 (stage-discharge relation affected by ice during part of period), May 7-17.

## PLATTE RIVER BASIN

33

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 1963. 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.--37 years, 323 cfs (233,800 acre-ft per year).

Extremes.--Maximum discharge during year, 3,940 cfs June 16 (gage height, 5.97 ft), from rating curve extended above 1,300 cfs; minimum daily, 9.4 cfs Nov. 5.

1926-63: 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 fair except those for periods of no gage-height record, which are poor. 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, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 1-19, May 27 to June 15, June 24  
to July 9, July 19 to Sept. 30)

0.9	4.0	2.0	195
1.0	10	2.5	425
1.1	22	3.0	750
1.3	50	4.0	1,600
1.6	96	6.0	3,980

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	102	12	83	70	98	72	65	108	155	*160	104	227
2	98	12	80	*76	115	72	68	96	142	138	108	171
3	90	11	82	76	110	77	77	98	267	138	108	165
4	*77	10	80	77	105	72	53	94	192	114	123	138
5	59	94	80	76	100	72	36	93	135	110	116	140
6	56	15	85	74	94	83	44	106	*116	108	235	145
7	53	21	85	*74	89	76	41	112	135	108	*418	316
8	68	28	82	77	83	72	28	116	160	118	330	370
9	62	40	78	78	78	71	30	114	608	148	306	370
10	56	25	*76	76	73	70	91	112	263	189	408	*280
11	52	20	72	69	*68	*71	*128	121	130	142	189	231
12	41	16	76	62	70	85	126	123	88	118	174	215
13	36	14	72	64	73	24	74	110	82	108	275	195
14	38	*11	76	68	77	83	47	110	91	102	330	211
15	*38	26	76	74	80	77	56	110	842	104	219	255
16	47	65	74	80	81	77	106	110	2,850	104	192	280
17	52	60	74	84	77	71	71	*114	580	102	241	251
18	52	60	76	80	77	76	59	106	160	*104	453	231
19	41	54	76	76	*77	78	58	133	148	102	263	223
20	27	56	76	90	77	77	47	118	*138	98	207	617
21	22	62	74	103	78	74	47	128	192	98	203	420
22	21	64	72	*80	77	90	50	123	155	98	*215	467
23	20	64	68	64	76	74	68	130	189	*106	231	142
24	20	64	68	58	72	71	94	135	168	106	227	112
25	25	64	68	58	74	65	93	138	148	114	293	108
26	21	65	68	58	74	71	91	160	114	112	203	108
27	18	65	71	60	74	*72	91	186	96	110	203	108
28	17	66	71	62	72	66	96	123	86	110	186	118
29	15	77	71	66	-	71	112	155	85	108	171	140
30	14	*82	71	70	-----	71	110	155	80	106	162	*180
31	14	-----	66	80	-----	64	-----	186	-----	108	174	-----
Total	1,352	1,238.4	2,327	2,260	2,299	2,315	2,157	3,823	3,595	3,591	7,067	6,934
Mean	43.6	41.3	75.1	72.9	82.1	74.7	71.9	123	286	116	228	231
Ac-ft	2,680	2,460	4,620	4,480	4,560	4,590	4,280	7,580	17,050	7,120	14,020	13,750

Calendar year 1962: Max 1,260 Min 9.4 Mean 333 Ac-ft 240,700

Water year 1962-63: Max 2,850 Min 9.4 Mean 120 Ac-ft 87,190

\* Discharge measurement made on this day.

Note.--No gage-height record Dec. 27 to Jan. 2, Jan. 11 to Feb. 19 (stage-discharge relation affected by ice during part of period).

## PLATTE RIVER BASIN

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 1963. 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.--14 years, 29.2 cfs (21,140 acre-ft per year).

Extremes.--Maximum discharge during year, 228 cfs June 16 (gage height, 3.68 ft); minimum daily, 1.8 cfs Jan. 12, 13, Mar. 2-4, 11, 12, 1925-27, 1928-31, 1954-63; 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 Oct. 1-11, June 2-9, June 15 to July 6, Sept. 1-3)

2.3	2.1	3.0	31
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

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	13	4.0	2.8	2.8	2.5	2.0	4.0	8.0	69	71	23	39
2	12	4.0	2.8	2.8	2.5	1.8	4.0	10	92	67	24	31
3	11	4.0	2.9	2.8	2.5	1.8	3.7	13	92	*72	31	28
4	8.0	4.0	3.1	2.8	2.5	1.8	3.6	14	89	74	45	*26
5	*7.6	3.8	3.3	2.6	2.5	1.9	3.5	16	*87	76	54	25
6	14	3.8	3.5	2.6	2.6	2.0	3.5	*23	74	66	53	25
7	12	3.8	3.8	2.6	*2.7	*2.0	3.7	28	69	57	43	37
8	15	3.8	3.6	2.6	2.4	2.0	*4.0	31	67	55	40	44
9	13	3.6	3.5	2.4	2.2	2.0	4.4	40	71	56	43	37
10	11	3.6	*3.2	2.4	2.0	2.0	4.7	44	57	59	35	33
11	7.0	3.6	3.2	2.0	2.0	1.8	4.6	50	*55	57	37	30
12	*5.0	3.6	3.5	1.8	2.2	1.8	4.6	54	57	*50	*46	28
13	5.0	*3.6	3.4	1.8	2.2	2.1	5.3	48	69	46	45	26
14	4.4	3.6	3.1	2.0	2.0	2.1	6.4	48	92	45	46	25
15	4.6	3.6	3.2	2.2	2.0	2.0	7.6	47	155	42	41	22
16	4.7	3.6	3.1	2.2	2.0	2.2	6.4	53	186	41	36	22
17	5.3	3.4	3.1	2.2	2.2	2.4	5.9	54	116	41	33	20
18	5.3	3.2	3.0	2.2	2.2	2.4	5.2	59	120	40	31	19
19	5.3	3.2	3.0	2.2	2.2	2.4	4.8	59	110	39	28	18
20	6.4	3.8	3.0	2.0	2.2	2.4	4.6	48	94	39	26	21
21	5.3	3.6	3.0	*2.0	2.2	2.6	5.1	48	116	39	26	24
22	4.7	3.4	3.0	2.7	2.2	2.5	5.0	50	110	37	28	24
23	4.6	3.4	2.9	2.0	2.2	2.6	5.0	55	99	39	36	21
24	4.1	3.4	2.7	2.2	2.2	2.6	5.0	62	99	45	44	20
25	4.1	3.4	2.5	2.0	2.2	2.6	6.0	62	92	40	42	19
26	3.6	3.2	2.4	2.2	2.2	2.5	7.3	59	89	35	38	18
27	4.0	3.2	2.6	2.4	2.0	2.5	10	57	87	33	45	17
28	4.0	3.0	2.8	2.7	2.0	2.9	7.6	67	81	30	44	17
29	4.0	2.8	3.0	2.7	-	3.2	6.4	69	78	28	38	16
30	4.0	2.8	3.0	2.7	-----	3.5	6.4	69	72	25	35	16
31	4.0	-----	3.0	2.7	-----	3.8	-----	69	-----	24	35	-----
Total	216.0	105.8	95.0	73.3	62.8	72.2	158.3	1,414.0	2,744	1,468	1,183	748
Mean	6.97	3.53	3.06	2.36	2.24	2.33	5.28	45.6	91.5	47.4	38.2	24.9
Ac-ft	428	210	188	145	125	143	314	2,800	5,440	2,910	2,350	1,480

Calendar year 1962: Max 210 Min 2.4 Mean 26.5 Ac-ft 19,180

Water year 1962-63: Max 186 Min 1.8 Mean 22.9 Ac-ft 16,530

Peak discharge (base 170 cfs).--June 16 (0400) 228 cfs (3.68 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 28-30, Nov. 3, 6-23, Nov. 29 to Dec. 6, Dec. 18, 19. No gage-height record Dec. 20 to Apr. 8 (stage-discharge relation affected by ice during most of period), Apr. 18-25, Sept. 27-30.

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 Highways 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 1963. 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.--72 years, 131 cfs (94,840 acre-ft per year).

Extremes.--Maximum discharge during year, 1,300 cfs June 16 (gage height, 4.64 ft); minimum daily, 2.8 cfs Dec. 5.

1887-91, 1895-1963: 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. 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 table (gage height, in feet, and discharge,  
in cubic feet per second)

2.0	2.0	2.7	54
2.1	4.0	2.9	117
2.2	7.0	3.2	226
2.4	16	3.5	346
2.5	22	3.8	500
2.6	33	4.2	820

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	24	9.0	9.0	11	18	5.8	28	24	278	211	50	142
2	20	9.4	9.8	11	18	5.5	29	30	338	218	54	114
3	19	9.8	8.6	11	17	6.4	20	33	346	226	94	97
4	18	10	6.1	12	15	5.2	20	50	342	207	117	91
5	18	10	2.8	10	13	6.1	20	63	330	226	145	91
6	17	10	6.1	10	12	6.7	18	91	302	196	188	87
7	18	9.8	18	9.8	11	6.1	18	124	282	177	156	128
8	18	5.8	17	7.8	11	6.1	12	134	294	170	218	142
9	17	8.6	14	3.4	9.8	6.1	13	203	314	170	258	117
10	14	7.4	11	4.0	7.0	5.5	10	230	226	170	184	104
11	12	6.4	8.6	6.4	5.2	6.1	7.8	254	177	156	166	100
12	12	6.1	6.4	5.8	5.2	6.1	5.8	266	181	142	234	97
13	11	5.8	9.4	7.0	7.4	6.7	5.2	211	211	134	266	97
14	11	7.4	8.2	8.6	9.0	6.4	7.8	203	242	124	250	84
15	12	9.4	15	9.4	8.6	7.0	14	199	314	114	211	81
16	12	9.4	14	10	6.7	6.7	18	250	806	104	184	69
17	12	8.6	14	5.2	6.4	6.4	17	242	464	107	166	63
18	14	5.2	12	3.8	6.1	7.0	15	278	420	100	163	75
19	14	4.0	14	4.0	6.1	5.5	8.6	314	390	94	148	75
20	16	7.4	14	6.4	6.1	7.0	7.8	218	298	87	134	94
21	15	14	8.6	11	6.4	8.2	14	215	318	87	128	134
22	14	9.8	9.0	14	5.8	11	17	230	342	84	131	100
23	12	8.2	8.6	12	6.1	16	18	238	322	87	128	72
24	11	6.7	5.5	7.4	5.8	16	16	278	310	107	163	52
25	11	6.7	5.2	7.4	6.1	16	14	254	270	94	145	46
26	9.8	10	4.3	7.4	5.8	13	17	242	222	87	128	35
27	9.4	12	5.5	7.4	6.1	13	28	218	196	87	199	29
28	7.8	9.8	11	7.4	5.5	15	33	242	192	84	174	21
29	7.4	6.4	16	7.4	-	29	29	274	226	72	148	19
30	6.7	7.4	16	7.0	-----	25	23	282	218	60	131	17
31	7.8	-----	13	11	-----	24	-----	286	-----	54	124	-----
Total	420.9	250.5	320.7	256.0	246.2	310.6	504.0	6,176	9,171	4,036	4,985	2,473
Mean	13.6	8.35	10.3	8.26	8.79	10.0	16.8	199	306	130	161	82.4
Ac-ft	835	497	636	508	488	616	1,000	12,250	18,190	8,010	9,890	4,910

Calendar year 1962: Max 594 Min 2.8 Mean 95.0 Ac-ft 68,810  
Water year 1962-63: Max 806 Min 2.8 Mean 79.9 Ac-ft 57,830

## PLATTE RIVER BASIN

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 1963. 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.--56 years, 54.0 cfs (39,090 acre-ft per year).

Extremes.--Maximum discharge during year, 264 cfs June 16; maximum gage height, 2.43 ft June 18; minimum daily discharge, 1.1 cfs Jan. 12.

1907-63: 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. Discharge measurements generally made twice a month. 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)  
(Shifting-control method used Dec. 29 to Jan. 4, Jan. 7-10, Feb. 12-16)

0.0	0	1.1	34
.1	1.7	1.5	91
.3	5.5	2.0	188
.5	9.5	3.0	420
.8	18		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	16	8.5	5.5	2.4	5.7	3.9	16	34	154	91	24	63
2	15	8.5	6.1	2.4	5.3	3.7	14	38	174	83	28	47
3	13	8.1	5.1	2.6	4.9	3.7	8.5	46	174	86	50	40
4	13	8.1	4.7	2.8	6.1	4.3	13	53	150	89	68	38
5	22	7.3	5.5	b2.2	6.1	3.9	11	63	142	83	64	36
6	24	7.1	5.5	b2.3	5.9	3.9	12	89	134	77	81	34
7	24	5.1	5.5	2.4	5.9	3.7	16	105	134	72	63	100
8	24	5.1	5.5	3.3	5.3	3.5	21	112	138	70	70	72
9	22	6.9	5.5	3.1	4.9	3.3	22	136	146	70	60	57
10	22	6.7	4.9	3.0	4.1	3.5	23	154	112	70	49	49
11	21	6.1	4.9	b2.2	3.9	3.1	20	184	98	66	60	45
12	21	b5.5	4.5	b1.1	2.6	3.5	20	162	108	60	86	40
13	20	6.9	4.9	b1.3	3.3	3.7	24	134	132	56	82	36
14	16	7.3	4.9	1.5	3.5	3.9	28	136	174	50	72	35
15	12	7.5	5.1	1.2	3.3	3.5	30	140	208	46	60	33
16	12	7.3	5.1	1.5	3.5	7.9	26	158	246	44	53	31
17	12	7.1	5.1	1.5	3.9	4.5	24	154	176	50	50	29
18	11	6.5	4.9	b1.6	3.9	4.1	22	180	186	54	46	28
19	12	6.7	5.1	1.7	3.3	3.9	18	164	174	52	40	28
20	13	7.7	4.9	b1.9	3.7	4.5	19	116	154	50	36	34
21	13	7.9	4.5	2.6	3.5	5.5	18	130	156	47	35	36
22	12	7.1	b4.5	b2.5	3.9	6.9	18	132	148	53	34	34
23	11	6.3	b4.5	b2.8	3.9	7.7	17	156	146	59	49	29
24	9.5	7.1	4.3	3.3	4.3	7.7	22	166	140	56	47	26
25	9.3	6.1	b3.3	3.7	3.5	6.9	24	158	128	49	40	26
26	8.5	b5.3	b3.0	b3.8	3.5	6.9	38	152	120	45	38	24
27	8.5	5.5	b3.0	b4.0	3.7	7.3	46	138	114	41	59	24
28	8.9	b5.1	2.8	b4.1	3.7	11	39	152	106	38	52	23
29	8.9	4.9	2.8	3.9	-	15	33	154	98	33	45	22
30	8.7	5.3	2.8	4.1	-----	13	31	146	89	27	42	21
31	8.9	-----	2.8	4.5	-----	14	-----	152	-----	26	56	-----
Total	452.2	200.6	141.5	81.3	119.1	181.9	673.5	3,994	4,359	1,793	1,646	1,140
Mean	14.6	6.69	4.56	2.62	4.25	5.87	22.4	129	145	57.8	53.1	38.0
Ac-ft	897	398	281	161	236	361	1,340	7,920	8,650	3,560	3,260	2,260

Calendar year 1962: Max 380 Min 2.8 Mean 58.1 Ac-ft 42,080  
Water year 1962-63: Max 246 Min 1.1 Mean 40.5 Ac-ft 29,320

Peak discharge (base, 280 cfs).--No peak above base.

b Stage-discharge relation affected by ice.

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 1963. 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.--55 years (1906-14, 1916-63), 92.0 cfs (66,610 acre-ft per year).

Extremes.--Maximum discharge during year, 328 cfs June 16 (gage height, 3.03 ft); minimum daily, 2.7 cfs Jan. 3, 4 1887-88, 1906-13, 1916-63: 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. 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 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	43	41	52	9.4	20	54	64	34	214	118	30	79
2	41	42	40	9.0	19	44	55	34	243	111	28	66
3	53	45	45	*2.7	19	48	50	34	263	105	42	57
4	43	42	49	2.7	19	51	53	38	207	109	72	50
5	45	42	54	4.2	24	43	38	39	164	*115	*109	*43
6	47	42	47	7.8	24	44	*42	46	143	115	122	43
7	47	42	58	7.2	24	*48	35	75	135	109	109	85
8	47	12	53	6.8	22	56	38	113	140	105	111	105
9	49	3.8	45	6.5	25	55	42	128	161	109	122	91
10	43	3.0	42	8.0	22	46	34	170	138	109	105	79
11	46	2.9	54	6.4	19	48	37	235	122	107	99	70
12	39	2.8	46	6.4	19	50	36	255	120	101	109	64
13	38	41	46	6.4	*19	44	42	173	125	93	118	68
14	45	*44	*48	6.4	19	50	30	*138	*140	89	111	74
15	43	49	54	7.0	19	57	31	143	179	83	101	69
16	43	51	40	*7.2	17	48	31	167	279	66	91	68
17	35	55	45	7.2	18	46	29	185	182	*62	87	66
18	42	43	48	7.2	20	51	29	188	149	60	83	63
19	40	50	49	7.2	20	49	*25	214	143	62	70	62
20	45	51	51	7.2	20	*39	32	170	128	56	*57	68
21	41	65	50	7.2	9.6	54	19	111	*130	56	52	85
22	*48	44	52	7.2	10	55	26	152	140	57	50	83
23	45	55	47	7.2	10	58	22	167	138	79	59	75
24	21	57	53	7.2	9.6	48	21	185	143	81	63	70
25	3.8	23	43	7.2	9.6	38	20	200	152	72	63	69
26	3.6	58	54	7.2	45	51	26	197	167	66	62	68
27	3.2	51	48	6.6	47	68	32	194	188	63	66	64
28	3.0	54	24	*6.2	49	60	31	182	170	63	72	62
29	25	51	20	6.2	-	67	32	185	140	50	70	60
30	43	57	20	6.2	-----	67	34	194	120	42	64	59
31	42	-----	15	2.0	-----	60	-----	188	-----	34	63	-----
Total	1,152.6	1,219.5	1,392	2,213	597.8	1,597	1,036	4,534	4,863	2,547	2,460	2,065
Mean	37.2	40.6	44.9	7.14	21.4	51.5	34.5	146	162	82.2	79.4	68.8
Ac-ft	2,290	2,420	2,760	439	1,190	3,170	2,050	8,990	9,650	5,050	4,880	4,100

Calendar year 1962: Max 442 Min 2.8 Mean 85.6 Ac-ft 61,990  
 Water year 1962-63: Max 279 Min 2.7 Mean 64.9 Ac-ft 46,990

\* Discharge measurement made on this day.

Note.--No gage-height record Dec. 26 to Jan. 3, Jan. 10 to Feb. 4, Feb. 11-20 (stage-discharge relation affected by ice during part of periods)

## PLATTE RIVER BASIN

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 Drw, 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 1963. 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.--57 years (1895-99, 1908-9, 1911-63), 76.9 cfs (55,670 acre-ft per year), adjusted for storage and diversion.

Extremes.--Maximum discharge during year, 311 cfs June 16 (gage height, 2.71 ft); minimum not determined.

1888-92, 1895-1901, 1940-63: 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 except those for Dec. 5 to Mar. 19 and June 26 to July 5, 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, 1963, 18,600 acre-ft. Change in contents during water year 1963, -17,430 acre-ft. City of Denver diverts water 1½ miles above station (61,740 acre-ft in water year 1963).

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 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8.1	11	10				13	30	132	68	17	47
2	8.1	12	10				15	28	132	68	19	47
3	7.6	11	9.7	(*)			17	28	132	68	14	48
4	7.6	11	10				17	28	128	68	10	48
5	8.5	11					*17	28	125	*54	*16	*44
6	8.5	10					14	33	128	54	23	42
7	7.2	10				(*)	14	42	122	54	44	42
8	7.2	10		8		8	13	50	120	54	55	42
9	*7.2	10					14	64	122	54	55	41
10	8.1	10					14	95	120	48	55	41
11	8.5	10					14	110	120	52	55	41
12	7.2	9.7	9.4				14	110	102	55	61	36
13	7.2	10			(*)		14	128	77	66	61	36
14	7.6	*9.7	(*)				13	*140	*81	75	61	36
15	7.6	10			6.5		12	140	81	57	61	36
16	8.1	10		(*)		6.6	12	143	175	46	61	36
17	8.1	10				6.0	12	146	223	*46	65	44
18	8.9	10		15		6.4	11	160	214	47	68	*46
19	8.9	10				6.4	*12	168	210	35	52	46
20	8.9	10				*6.8	13	168	175	21	*40	50
21	8.9	10				6.8	12	168	*143	16	36	50
22	*8.9	11				7.2	15	168	146	16	38	50
23	8.5	11				7.6	17	168	146	16	38	50
24	7.6	11				7.6	17	168	132	16	38	50
25	*7.2	11				7.6	16	168	122	15	38	50
26	7.2	11	11	12		7.6	17	172	95	20	40	52
27	12	10				7.6	19	168	68	25	44	38
28	8.9	10		(*)		7.6	18	146	68	25	48	28
29	9.7	*10				7.6	17	122	68	25	48	28
30	11	10				7.6	21	130	68	27	48	25
31	12	-----			-----	7.6	-----	130	-----	21	48	-----
Total	261.0	310.4	311.1	327	182.0	234.6	444	3,547	3,775	1,312	1,376	1,270
Mean	8.42	10.3	10.0	10.5	6.5	7.57	14.8	114	126	42.3	44.4	42.3
Ac-ft	518	616	617	649	361	465	881	7,040	7,490	2,600	2,730	2,520

Adjusted for storage in Gross Reservoir and diversion to Denver

Mean	8.60	6.65	4.7	8.3	8.5	12.1	19.2	107	125	38.4	46.3	38.2
Ac-ft	529	399	291	513	473	746	1,140	6,630	7,450	2,360	2,850	2,270

Observed

Calendar year 1962: Max	451	Min	-	Mean	70.9	Ac-ft	51,320
Water year 1962-63: Max	223	Min	-	Mean	36.6	Ac-ft	26,490

Adjusted

Calendar year 1962: Mean	66.2	Ac-ft	47,920
Water year 1962-63: Mean	35.4	Ac-ft	25,650

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 3, 4, 10, 11, 17, 18, 23-25, Nov. 19-21, 28, 29, Dec. 5 to Mar. 19, June 13, 14, 20, 21, June 26 to July 5, July 16.

PLATTE RIVER BASIN

39

6-7303. Coal Creek near Plainview, Colo.

Location.--Lat 39°52'40", long 105°16'36", in SE 1/4 sec.13, T.2 S., R.71 W., on left bank 40 ft upstream from culvert on State Highway 72, 1 1/2 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 1963.

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

Extremes.--Maximum discharge during year, 195 cfs June 16 (gage height, 2.44 ft) by contracted-opening measurement of peak flow; no flow for many days.

1959-63: Maximum discharge, that of June 16, 1963; 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.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used June 16, June 30 to July 5)

0.2	0	1.0	7.5
.3	.1	1.2	14
.4	.3	1.3	20
.5	.8	1.5	42
.6	1.4	1.7	80
.8	3.8		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0	0.1	0.2	0.2	0.7	0.4	1.4	0.5	0.1	1.9	0	1.0
2	0	.1	.3	.2	.6	.4	1.5	.4	.1	1.6	0	.7
3	0	.1	.3	.2	.6	.4	*1.2	.4	.2	*1.4	0	.6
4	0	.1	.2	.2	.8	.9	1.2	.3	.1	1.2	0	.5
5	*0	.1	.2	.3	.8	.8	1.0	.3	*1.1	*1.5	0	*.4
6	0	.1	.2	.3	.6	.6	1.0	*.3	0	1.2	0	.8
7	0	.1	.2	.3	*.6	*.5	1.1	.3	0	1.4	0	.21
8	0	.1	.2	.2	.6	.5	1.1	.3	0	2.1	0	1.9
9	0	.1	.2	.2	.5	.6	1.1	.2	1.0	1.3	0	1.7
10	0	.2	*.2	.2	.3	.6	1.0	.2	.5	1.2	0	1.3
11	0	.2	.2	.1	.6	.6	1.0	.2	.3	.8	0	1.1
12	0	.2	.2	.1	.6	1.3	.9	.2	.2	*.6	*.2	1.0
13	0	*.2	.2	.1	.6	1.1	.9	.2	.1	.4	1.0	.9
14	0	.2	.2	.1	.5	1.0	.7	.2	.1	.4	.5	.7
15	0	.2	.2	.1	.4	1.4	.8	.1	.4	.3	.3	.7
16	0	.2	.2	.2	.4	1.3	.8	.1	*.67	.3	.2	.6
17	0	.3	.2	.2	.5	1.3	.7	.1	*.44	.2	.2	.4
18	0	.2	.2	.2	.4	1.2	.7	.1	.30	.2	.2	.4
19	0	.2	.2	.1	.4	1.1	.6	.2	.23	.1	.1	.4
20	0	.3	.2	.1	.4	1.3	.6	.2	*.18	.1	.1	1.4
21	0	.3	.2	*.2	.4	1.6	.7	.2	1.6	.1	.1	2.0
22	0	.3	.3	.2	.4	1.8	.6	.2	1.2	.1	.3	2.1
23	.1	.3	.3	.1	.4	2.0	.6	.2	8.1	0	.5	1.6
24	.1	.2	.4	.1	.4	1.7	.6	.2	6.5	0	.4	1.3
25	.1	.3	.3	.2	.4	1.6	.5	.2	5.5	0	.3	1.2
26	.1	.3	.2	.1	.4	1.4	.5	.1	4.6	0	2.2	1.0
27	.1	.3	.2	.1	.4	1.4	.5	.1	4.0	0	.4	.9
28	.1	.3	.2	.2	.4	1.4	.6	.1	3.3	0	2.0	.8
29	.1	.2	.2	.3		1.7	.5	.1	2.5	0	1.5	.7
30	.1	.2	.2	.4	-----	1.5	.4	.1	2.1	0	1.4	.6
31	.1	-----	.2	.6	-----	1.5	-----	.1	-----	0	1.2	-----
Total	0.9	6.0	6.9	6.1	14.1	34.9	24.8	6.4	249.8	18.4	16.1	30.8
Mean	0.03	0.20	0.22	0.20	0.50	1.13	0.83	0.21	8.33	0.59	0.52	1.03
Ac-ft	1.8	12	14	12	28	69	49	13	495	36	32	61

Calendar year 1962: Max 33 Min 0 Mean 2.97 Ac-ft 2,150  
Water year 1962-63: Max 67 Min 0 Mean 1.14 Ac-ft 823

Peak discharge (base, 25 cfs).--June 16 (1100) 195 cfs (2.44 ft).

\* Discharge measurement made on this day.

Note.--No gage-height record Nov. 6-13, Jan. 10-31 (stage-discharge relation affected by ice during part of period), May 5, 6.



## PLATTE RIVER BASIN

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 1963. Prior to October 1923, 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.**--38 years (1904-6, 1927-63), 194 cfs (140,500 acre-ft per year).

**Extremes.**--Maximum discharge during year, 2,630 cfs June 17 (gage height, 5.72 ft); minimum daily, 28 cfs Apr. 28, Apr. 30 to May 5. 1904-6, 1915, 1927-63: 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 poor. Discharge measurements generally made twice a month. 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 Jan. 3-10, June 17-23, Sept. 23-30)

1.1	28	2.5	340
1.2	32	3.0	520
1.4	50	4.0	1,080
1.6	80	5.0	1,900
2.0	180	5.8	2,720

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	127	107	120	89	b112	91	104	28	104	114	72	137
2	124	107	120	91	b111	93	104	28	112	117	93	124
3	124	104	114	88	b118	93	100	28	130	130	104	112
4	124	104	112	87	b170	91	93	28	124	114	135	100
5	140	104	107	87	b152	107	87	28	120	107	117	91
6	358	102	110	82	137	117	72	29	117	100	104	91
7	264	102	110	80	132	114	64	29	104	104	102	91
8	195	102	110	82	130	117	64	31	98	112	98	127
9	166	100	107	84	130	120	64	47	226	114	220	150
10	158	100	110	74	130	124	60	74	274	120	164	140
11	153	100	107	b62	110	124	49	82	143	127	140	130
12	140	98	107	b56	98	127	47	80	117	161	137	125
13	135	95	107	b60	110	127	41	98	114	153	166	132
14	130	95	104	b70	110	122	38	87	112	135	153	125
15	124	110	104	b72	114	122	35	70	114	122	135	112
16	124	117	102	b82	117	127	32	67	611	112	137	107
17	124	117	100	b79	114	132	33	80	2,000	107	186	104
18	124	122	100	77	110	127	32	100	892	104	216	93
19	124	122	100	74	104	124	35	104	650	95	201	95
20	124	122	100	73	98	120	32	112	403	91	180	135
21	120	117	98	92	98	117	30	95	317	98	186	248
22	120	114	98	108	82	117	33	75	261	112	213	264
23	120	114	95	b98	77	114	35	102	220	100	226	201
24	117	114	95	b94	69	114	31	112	198	104	220	161
25	117	114	91	b91	74	107	30	107	175	102	201	140
26	117	110	91	86	74	102	29	107	156	80	177	130
27	112	114	98	84	80	112	29	107	132	80	164	127
28	112	117	102	90	87	112	28	100	107	104	150	124
29	110	120	98	93	-	112	29	89	104	98	132	114
30	107	117	91	98	-----	112	28	87	110	80	135	112
31	107	-----	89	105	-----	114	-----	98	-----	75	135	-----
Total	4,341	3,281	3,197	2,588	3,048	3,552	1,488	2,309	9,345	3,372	4,799	3,942
Mean	140	109	103	83.5	109	115	49.6	74.5	278	109	155	131
Ac-ft	8,610	6,510	6,340	5,130	6,050	7,050	2,950	4,580	16,550	6,690	9,520	7,820

Calendar year 1962: Max 660 Min 57 Mean 202 Ac-ft 146,400  
Water year 1962-63: Max 2,000 Min 28 Mean 121 Ac-ft 87,800

b Stage-discharge relation affected by ice.

Note.--No gage-height record Jan. 18-22, 26-31 (stage-discharge relation affected by ice during most of periods), Sept. 11-16.

PLATTE RIVER BASIN

41

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 1963. 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.--17 years, 128 cfs (92,670 acre-ft per year), adjusted for inflow from Alva B. Adams tunnel Aug. 10, 1947, to Aug. 2, 1950.

Extremes.--Maximum discharge during year, 860 cfs June 16 (gage height, 5.32 ft); minimum daily, 7.0 cfs Jan. 5, 14, 15, 17-19. 1946-63: 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 periods of no gage-height record, 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, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.2	5.0	2.0	175
.3	8.4	2.5	250
.4	13	3.0	335
.8	40	4.0	531
1.2	77	5.0	760
1.6	123		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	43	26	15	7.4	10	11	25	45	318	250	89	129
2	42	25	13	7.4	12	11	24	48	379	272	120	113
3	40	24	14	7.4	13	11	24	51	398	283	221	104
4	38	23	10	7.4	14	9.4	19	78	359	262	228	97
5	37	23	14	7.0	15	8.9	18	99	341	268	210	95
6	45	21	14	7.4	18	8.4	18	142	304	243	212	96
7	42	b20	14	b7.7	17	8.4	22	181	297	239	207	128
8	42	16	13	b8.1	17	8.9	27	225	302	243	197	143
9	39	18	13	b8.4	16	8.9	27	292	334	260	184	124
10	36	19	12	b8.1	14	8.4	27	300	270	287	161	112
11	34	21	13	7.7	15	8.1	24	335	244	262	280	104
12	33	20	13	7.4	14	8.1	24	314	254	246	267	100
13	31	19	13	7.1	13	8.4	26	230	299	206	273	101
14	28	19	12	7.0	12	b9.4	30	244	352	185	227	92
15	28	20	14	7.0	11	b11	36	246	467	171	191	90
16	32	20	14	7.1	10	11	35	283	692	164	168	85
17	33	20	13	7.0	9.0	11	33	280	548	164	160	78
18	33	17	12	7.0	10	12	31	344	646	156	153	77
19	34	16	13	7.0	10	12	30	359	521	152	136	71
20	36	20	12	7.1	10	13	26	236	443	143	126	92
21	32	20	8.9	7.4	10	14	25	265	431	143	125	145
22	31	22	12	7.4	10	16	26	297	419	140	129	126
23	30	19	9.4	7.1	10	17	25	265	389	139	123	106
24	28	18	8.9	7.1	10	b18	24	316	370	160	131	95
25	27	18	8.4	7.4	10	b19	22	277	350	147	138	85
26	26	18	8.1	7.4	10	20	28	277	328	140	135	82
27	24	16	7.7	7.4	11	23	42	246	309	135	174	77
28	24	16	7.4	7.1	11	23	44	297	299	120	149	73
29	25	16	7.4	7.4	-	26	38	314	290	106	133	70
30	26	16	7.7	7.7	-----	22	36	316	260	96	121	68
31	26	-----	7.7	8.1	-----	24	-----	332	-----	89	117	-----
Total	1,025	586	354.6	229.2	342.0	420.3	836	7,534	11,213	5,871	5,285	2,958
Mean	33.1	19.5	11.4	7.39	12.2	13.6	27.9	243	374	189	170	98.6
Ac-ft	2,030	1,160	703	455	678	834	1,660	14,940	22,240	11,640	10,480	5,870

Calendar year 1962: Max 709 Min 7.4 Mean 131 Ac-ft 94,830  
Water year 1962-63: Max 692 Min 7.0 Mean 100 Ac-ft 72,690

Peak discharge (base, 600 cfs).--June 16 (1000) 860 cfs (5.32 ft).

b Stage-discharge relation affected by ice.  
Note.--No gage-height record Dec. 24 to Jan. 6, Jan. 11 to Feb. 6, Feb. 13-27, Mar. 16-23 (stage-discharge relation affected by ice during most of periods).

## PLATTE RIVER BASIN

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 1963. 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, 412 cfs June 16 (gage height, 3.41 ft); minimum daily, 12 cfs Jan. 13-15, 18-26, 28. 1930-63: 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. Discharge measurements generally made twice a month. 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 1963); 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 (31,690 acre-ft in 1963) 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)

0.3	8.4	1.5	111
.4	13	2.0	175
.7	33	3.0	335
1.0	58		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	50	31	22	16	13	17	31	51	121	118	96	105
2	48	31	20	16	13	17	30	53	184	144	125	90
3	46	30	20	14	14	17	30	59	156	157	155	82
4	43	30	17	13	13	17	26	84	139	112	134	73
5	43	29	22	13	17	17	25	106	136	114	118	70
6	46	30	20	13	22	16	24	148	125	108	120	71
7	46	29	20	13	24	16	27	126	130	129	114	101
8	46	24	20	13	22	17	33	145	136	138	104	93
9	45	24	20	13	22	16	33	191	170	135	101	83
10	42	26	19	13	20	16	33	156	107	133	121	78
11	41	27	19	13	20	16	30	184	107	115	203	71
12	40	26	20	13	20	16	29	129	128	112	149	82
13	37	25	19	12	22	17	31	109	156	106	130	86
14	34	25	19	12	21	17	36	107	172	109	112	77
15	33	26	19	12	18	16	42	99	218	112	118	76
16	39	27	19	13	17	16	42	136	265	111	120	72
17	40	26	18	13	17	16	39	131	182	109	117	65
18	40	28	17	12	17	16	36	197	182	102	111	62
19	39	22	18	12	17	16	36	161	140	111	92	56
20	42	27	17	12	17	16	32	101	148	109	100	70
21	38	26	14	12	17	17	30	145	135	108	107	84
22	37	26	17	12	16	18	31	148	125	106	111	67
23	35	25	14	12	16	18	31	109	121	105	105	67
24	34	24	17	12	16	18	30	135	134	126	113	73
25	32	24	17	12	16	22	29	108	145	113	120	71
26	31	24	17	12	16	26	33	120	133	105	117	68
27	30	22	20	13	16	28	49	114	113	101	138	64
28	30	22	21	12	16	28	51	140	123	104	106	60
29	30	23	16	13	-	23	45	129	123	106	104	57
30	31	22	16	13	-----	28	44	145	111	101	97	52
31	30	-----	16	13	-----	30	-----	147	-----	96	91	-----
Total	1,198	781	570	397	495	594	1,018	3,913	4,365	3,555	3,649	2,226
Mean	38.6	26.0	18.4	12.8	17.7	19.2	33.9	126	146	115	118	74.2
Ac-ft	2,380	1,550	1,130	787	982	1,180	2,020	7,760	8,660	7,050	7,240	4,420

Calendar year 1962: Max 697 Min 14 Mean 84.3 Ac-ft 61,010  
 Water year 1962-63: Max 265 Min 12 Mean 62.4 Ac-ft 45,160

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

Location (revised).--Lat 40°25'18", long 105°13'34", in SW¼SW¼ sec.3, T.5 N., R.70 W., on right bank at mouth of canyon, 400 ft upstream from Handy Ditch diversion dam and 6.0 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 1963. 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, 610 cfs June 16 (gage height, 3.30 ft); minimum daily, 11 cfs Dec. 24. 1887-92, 1895-1903, 1926-33, 1938-49, 1951-63: 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 1963); 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 (31,690 acre-ft in 1963), and Dille tunnel since Apr. 20, 1959 (9,720 acre-ft in 1963), 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)

1.1	10	2.0	136
1.2	16	2.5	270
1.4	34	3.0	465
1.7	77		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	59	38	32	22	24	19	41	49	143	79	98	104
2	59	38	32	23	24	19	41	57	178	98	124	92
3	54	38	31	22	22	23	35	65	188	120	141	81
4	52	35	26	19	*24	22	36	79	158	96	136	*70
5	53	35	*17	17	22	27	*33	102	160	100	141	72
6	60	35	29	18	22	29	31	*122	128	94	*126	74
7	54	35	30	17	29	23	31	141	*122	100	130	110
8	52	31	30	18	31	*23	35	130	126	118	120	114
9	52	30	22	16	29	23	41	188	155	*116	112	90
10	*49	31	20	16	25	23	39	180	128	116	130	90
11	52	31	21	16	17	21	40	180	112	94	128	81
12	42	32	21	16	19	21	35	168	112	108	143	77
13	39	*30	23	15	27	20	35	112	116	96	134	108
14	42	32	19	15	27	18	36	128	126	108	148	106
15	41	33	30	15	30	24	46	112	160	110	141	102
16	42	35	22	15	22	22	50	141	364	112	112	98
17	47	32	*27	15	20	17	49	143	252	110	106	88
18	47	30	22	14	22	24	42	180	255	112	100	*88
19	45	32	24	13	*22	20	42	200	188	116	104	74
20	49	32	30	13	22	21	38	120	128	122	*90	86
21	49	36	13	13	22	22	36	143	86	118	102	146
22	46	36	16	13	20	26	35	172	83	120	118	118
23	40	36	15	13	22	29	*35	128	60	116	108	94
24	40	30	11	13	21	23	35	153	*67	120	110	81
25	40	33	14	13	22	25	34	124	65	110	110	85
26	39	34	21	13	21	32	35	141	44	*106	108	77
27	36	*31	27	13	22	*35	47	122	35	108	118	77
28	35	29	35	14	19	38	54	*155	63	100	79	72
29	*35	29	34	15	-	40	54	153	98	98	88	72
30	38	30	25	15	-----	40	49	143	81	98	96	72
31	40	-----	22	18	-----	38	-----	175	-----	86	90	-----
Total	1,428	989	741	488	649	787	1,190	4,206	3,981	3,305	3,661	2,699
Mean	46.1	33.0	23.9	15.7	23.2	25.4	39.7	136	133	107	118	90.0
Ac-ft	2,830	1,960	1,470	968	1,290	1,560	2,360	8,340	7,900	6,560	7,260	5,350

Calendar year 1962: Max 670 Min 11 Mean 94.9 Ac-ft 68,700

Water year 1962-63: Max 364 Min 11 Mean 66.1 Ac-ft 47,850

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 5-12, 17, 19-27, Jan. 3-10, Feb. 5-12, 20-28. No gage-height record Dec. 13-16, Dec. 28 to Jan. 2, Jan. 11 to Feb. 4, Feb. 13-19, Mar. 8-15 (stage-discharge relation affected by ice during most of periods), May 1, 2.

## PLATTE RIVER BASIN

## 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 1963. 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, 97,340 acre-ft Mar. 28 (elevation, 8,596.87 ft); minimum observed, 69,330 acre-ft Aug. 30 (elevation, 8,587.51 ft). Maximum contents observed during period 1932-63, 103,400 acre-ft Mar. 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 1963. 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, 50,280 acre-ft Oct. 1 (gage height, 174.46 ft); minimum observed, 18,470 acre-ft Aug. 3 (gage height, 112.34 ft). Maximum contents observed during 1900-1901, 1902-63, 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°10'06", in NW¼SW¼ sec.6, T.7 N., R.69 W., on right bank near abutment of Horsetooth Dam on tributaries of Cache la Poudre River, 4.8 miles west of city hall in Fort Collins. Records available, April 1951 to September 1963. 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, 117,900 acre-ft Apr. 26 (elevation, 5,415.75 ft); minimum contents, 27,100 acre-ft Sept. 30 (elevation, 5,345.20 ft). Maximum contents observed during period 1951-63, 141,100 acre-ft June 23, 25, 1961 (elevation, 5,428.75 ft); minimum observed, 3,040 acre-ft Sept. 33, 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°19'28", long 105°12'41", 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, 7.0 miles west of Berthoud, and 8.9 miles (revised) upstream from mouth. Records available, March 1954 to September 1963. 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, 104,100 acre-ft May 2 (elevation, 5,754.75 ft); minimum observed, 25,630 acre-ft Oct. 22 (elevation, 5,670.60 ft). Maximum contents observed during period 1954-63, 108,900 acre-ft June 27, 1962; (elevation, 5,758.94 ft); 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.

## Reservoirs in South Platte River basin--Continued

Month-end elevation and contents, water year October 1962 to September 1963

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.....	8,596.72	96,840	-	174.67	50,420	-
Oct. 31.....	8,596.69	96,740	-100	169.70	47,170	-3,250
Nov. 30.....	8,596.75	96,940	+200	167.03	45,480	-1,690
Dec. 31.....	8,596.69	96,740	-200	167.79	45,960	+480
Calendar year 1962...	-	-	-1,970	-	-	-32,570
Jan. 31.....	8,596.71	96,810	+70	163.56	43,340	-2,620
Feb. 28.....	8,596.72	96,840	+30	163.05	43,020	-320
Mar. 31.....	8,596.71	96,810	-30	168.28	46,270	+3,250
Apr. 30.....	8,596.61	96,470	-340	157.52	39,750	-6,520
May 31.....	8,596.73	96,870	+400	133.38	27,200	-12,550
June 30.....	8,595.93	94,200	-2,670	118.42	20,790	-6,410
July 31.....	8,591.46	80,340	-13,860	112.74	18,620	-2,170
Aug. 31.....	8,589.55	74,900	-5,440	118.92	20,990	+2,370
Sept. 30.....	8,587.57	69,490	-5,410	128.28	24,900	+3,910
Water year 1962-63...	-	-	-27,350	-	-	-25,520
Horsetooth Reservoir			Carter Lake			
Sept. 30.....	-	a49,790	-	5,681.44	33,600	-
Oct. 31.....	5,361.10	42,490	-7,300	5,672.36	26,870	-6,730
Nov. 30.....	5,370.90	53,440	+10,950	5,692.30	42,320	+15,450
Dec. 31.....	5,384.10	69,970	+16,530	5,708.38	56,420	+14,100
Calendar year 1962...	-	-	-41,030	-	-	-16,030
Jan. 31.....	5,393.60	83,090	+13,120	5,723.32	70,730	+14,310
Feb. 28.....	5,399.50	91,780	+8,690	5,738.65	86,500	+15,770
Mar. 31.....	-	a111,600	+19,820	-	a94,410	+7,910
Apr. 30.....	5,413.85	114,700	+3,100	5,754.65	104,000	+9,590
May 31.....	5,399.60	91,930	-22,770	5,739.51	87,410	-16,590
June 30.....	5,399.70	92,080	+150	5,731.08	78,600	-8,810
July 31.....	5,388.35	75,710	-16,370	5,709.20	57,170	-21,430
Aug. 31.....	-	a45,070	-30,640	5,693.61	43,420	-13,750
Sept. 30.....	5,345.20	27,100	-17,970	5,676.98	30,230	-13,190
Water year 1962-63...	-	-	-22,690	-	-	-3,370

† Elevation or gage height at 1700.

a No elevation record; contents estimated.

## PLATTE RIVER BASIN

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

Location.--Lat 40°21'00", long 104°47'04", in SW $\frac{1}{4}$ SE $\frac{1}{4}$  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 1963. 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, 904 cfs June 17 (gage height, 4.57 ft); minimum daily, 0.7 cfs May 1, 4. 1914-15, 1927-63: 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 table (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 12-24, Nov. 21 to Mar. 15, June 1-15, Sept. 3-22)

0.3	0	1.5	126
.4	1.0	2.0	213
.5	8.0	3.0	440
1.0	60	4.0	730

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	76	73	125	81	104	57	49	0.7	25	22	45	92
2	72	93	125	78	108	57	50	1.0	16	21	46	99
3	73	108	125	78	89	60	52	1.2	24	25	51	58
4	82	108	122	80	94	52	50	.7	33	26	58	35
5	98	109	115	77	89	56	49	1.7	26	26	90	33
6	234	112	109	76	85	60	49	.8	23	26	57	30
7	143	108	119	75	82	58	49	3.1	15	26	71	30
8	123	109	123	78	71	57	48	1.0	15	29	49	49
9	120	109	120	77	68	59	47	.9	47	34	40	58
10	118	111	116	72	66	60	49	15	57	36	39	59
11	115	108	101	66	56	61	47	20	48	41	36	64
12	113	106	90	64	54	61	46	17	42	48	40	88
13	115	101	89	68	57	61	46	6.6	33	40	39	90
14	116	96	86	70	60	58	46	.9	20	37	61	179
15	112	104	86	72	60	59	45	2.4	37	41	44	198
16	113	129	85	74	58	61	44	2.4	426	40	47	205
17	111	133	85	68	58	64	44	3.1	458	36	45	183
18	109	130	82	68	58	65	49	3.8	177	38	57	170
19	111	127	82	66	58	65	54	10	139	47	50	170
20	109	127	81	70	57	62	58	23	109	33	44	123
21	108	129	80	72	57	60	65	11	97	37	58	238
22	106	129	80	66	57	58	59	14	84	39	75	213
23	104	130	78	60	58	57	33	22	68	38	71	136
24	106	127	80	64	57	54	21	32	47	37	68	97
25	99	125	76	60	58	52	11	33	38	38	65	80
26	97	125	71	56	58	51	5.9	25	34	42	73	72
27	97	126	84	56	58	51	6.6	19	26	45	86	77
28	96	125	81	56	57	51	13	17	20	53	95	76
29	96	123	78	57	-	50	4.5	10	21	48	86	75
30	84	125	80	58	-----	50	1.0	21	21	44	84	66
31	78	-----	80	59	-----	49	-----	28	-----	46	86	-----
Total	3,334	3,465	2,934	2,122	1,892	1,776	1,191.0	358.1	2,226	1,139	1,856	3,143
Mean	108	116	94.6	68.5	67.6	57.3	39.7	11.6	74.2	36.7	59.9	105
Ac-ft	6,610	6,870	5,820	4,210	3,750	3,520	2,360	710	4,420	2,260	3,680	6,230

Calendar year 1962: Max 502 Min 17 Mean 126 Ac-ft 91,440  
Water year 1962-63: Max 458 Min 0.7 Mean 69.7 Ac-ft 50,440

Note.--No gage-height record Jan. 11-30.

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 1963.

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

Average discharge.--7 years, 260 cfs (188,200 acre-ft per year).

Extremes.--Maximum discharge during year, 1,200 cfs June 16 (gage height, 4.90 ft); minimum daily, 8.0 cfs Jan. 12.

1956-63: Maximum discharge, 3,610 cfs June 29, 1957 (gage height, 7.12 ft); minimum daily, that of, Jan. 12, 1963.

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)

1.5	8.0	3.0	226
1.7	16	3.5	390
2.0	36	4.0	620
2.3	66	5.0	1,280
2.6	120		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	49	*19	11	8.8	9.8	10	19	94	525	406	210	344
2	*44	17	11	8.8	10	10	18	*100	570	*394	210	310
3	42	17	10	9.0	11	10	15	84	694	406	250	293
4	38	14	9.6	9.0	*11	9.6	14	94	550	383	250	256
5	38	15	10	9.0	11	*9.6	14	113	*610	369	300	226
6	43	16	11	8.8	11	9.6	14	202	694	348	350	217
7	43	12	12	*9.0	12	9.8	17	293	670	366	*310	235
8	44	13	12	8.8	11	9.8	24	422	625	344	300	211
9	43	11	11	8.8	11	10	21	580	620	376	280	*196
10	42	12	10	8.6	10	9.8	20	605	565	457	220	196
11	38	12	*10	8.2	9.0	9.6	18	610	511	422	502	190
12	35	13	11	8.0	9.2	9.4	18	530	493	398	418	188
13	34	13	11	8.2	9.6	8.8	21	444	511	358	418	182
14	32	14	9.6	8.4	10	8.8	24	535	724	320	344	174
15	31	15	10	8.6	9.8	9.6	29	565	1,010	300	247	174
16	32	15	9.6	8.6	9.4	9.2	31	640	1,140	303	196	171
17	34	14	10	8.6	9.6	9.4	29	600	1,000	334	163	163
18	34	14	9.2	8.4	9.8	9.6	27	676	934	313	214	160
19	33	13	9.2	8.2	9.8	9.4	25	670	864	286	193	158
20	34	14	9.0	8.6	10	9.2	24	660	814	259	182	188
21	34	14	8.8	8.8	10	9.4	23	706	784	256	196	226
22	34	13	9.2	8.6	9.8	9.8	30	778	772	253	193	84
23	31	13	9.2	8.4	9.8	12	23	754	706	277	238	58
24	30	13	9.2	8.6	10	11	26	802	660	271	235	50
25	28	13	9.0	8.6	10	11	29	620	635	247	229	46
26	26	13	8.6	8.4	11	12	32	457	625	247	226	43
27	24	13	8.8	8.4	11	*14	52	402	560	244	265	42
28	24	12	9.0	8.6	11	16	91	565	520	241	238	41
29	25	11	9.0	8.8	-	18	98	610	470	220	235	40
30	26	10	9.0	9.0	-----	17	89	610	439	214	238	38
31	21	-----	8.8	9.4	-----	19	-----	580	-----	210	256	-----
Total	1,066	408	304.8	268.0	286.6	340.4	915	15,401	20,295	9,822	8,106	4,900
Mean	34.4	13.6	9.83	8.65	10.2	11.0	30.5	497	676	317	261	163
Ac-ft	2,110	809	605	532	568	675	1,810	30,550	40,250	19,480	16,080	9,720

Calendar year 1962: Max 1,850 Min 8.6 Mean 291 Ac-ft 210,900

Water year 1962-63: Max 1,140 Min 8.0 Mean 170 Ac-ft 123,200

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 20, 22-26, Nov. 28 to Dec. 3, Dec. 10, 11, 14, 16, 18, 20, 21, Dec. 23 to Jan. 10. No gage-height record Jan. 11 to Mar. 27 (stage-discharge relation affected by ice during most of period), July 31 to Aug. 7.



## PLATTE RIVER BASIN

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 1963.

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

Extremes.--Maximum discharge during year, 49 cfs June 15 (gage height, 2.43 ft); minimum daily, 0.1 cfs Jan. 11-13, 19, 20, 23, 24. 1960-63: Maximum discharge, that of June 15, 1963; minimum daily, that of Jan. 11-13, 19, 20, 23, 24, 1963.

Remarks.--Records good 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)  
(Shifting-control method used Apr. 30 to May 16)

0.4	0	1.1	5.2
.5	.4	1.6	12
.6	.8	1.9	20
.7	1.4	2.3	40
.8	2.1		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*2.4	1.0	0.7	0.3	0.4	0.3	0.6	1.0	18	15	7.0	6.9
2	2.4	1.0	.7	.3	.4	.3	.6	1.2	20	*15	8.8	6.3
3	2.2	.9	.7	.3	.5	.3	.5	1.2	24	16	9.6	5.8
4	2.0	.9	.7	.4	.6	.3	.4	1.7	21	15	9.1	5.7
5	2.3	.8	.6	.4	.7	.3	.4	3.2	19	14	9.2	*5.7
6	2.7	.6	.6	.4	.8	.3	.4	5.0	19	13	8.8	5.9
7	2.5	.6	.6	.5	.8	.5	.5	7.2	19	13	*8.1	6.3
8	2.2	.7	.6	.5	.7	.5	.5	9.1	18	12	8.0	5.8
9	2.0	.8	.5	.4	.5	.4	.5	12	18	15	8.0	5.6
10	1.7	.7	.5	.2	.4	.4	.5	13	14	16	11	5.4
11	1.7	.8	*.5	.1	.2	.3	.5	14	15	15	15	5.3
12	1.7	.8	.5	.1	.2	.3	*.5	12	16	13	15	5.3
13	1.6	.8	.5	.1	.2	.3	.5	*9.6	*18	12	15	5.0
14	1.5	.8	.5	.2	.2	.2	.8	11	26	11	13	5.0
15	1.5	.8	.5	.2	.3	*.3	.9	12	37	10	11	4.7
16	1.6	.9	.5	*.2	.3	.4	.7	14	39	10	10	4.5
17	1.7	.8	.4	.2	.3	.4	.5	14	32	9.6	10	4.3
18	1.5	.8	.5	.2	.3	.3	.5	16	32	9.6	9.6	4.2
19	1.7	.9	.4	.1	.3	.4	.5	14	27	9.1	8.8	4.0
20	1.6	.8	.4	.1	*.3	.3	.5	10	24	9.2	8.7	5.3
21	1.5	.9	.4	.2	.3	.3	.5	13	25	9.4	10	5.9
22	1.3	.9	.4	.2	.3	.3	.5	13	23	10	9.6	4.9
23	1.2	.9	.4	.1	.3	.4	.4	14	22	10	9.2	4.3
24	1.1	.8	.4	.1	.3	.4	.5	17	22	10	8.7	4.0
25	1.1	.8	.4	.3	.3	.4	.5	15	21	9.4	8.3	3.8
26	1.1	.8	.4	.2	.3	.4	.8	14	19	9.1	8.4	3.7
27	1.1	.8	*.3	.2	.3	.4	1.2	*15	19	8.8	8.4	3.5
28	1.1	.8	.3	.3	.3	.5	.8	18	18	8.1	8.1	3.4
29	1.1	.7	.3	.3	-	.5	.7	18	17	7.4	7.7	3.3
30	1.0	.7	.3	.4	-----	.5	.8	20	16	7.0	7.2	3.1
31	1.0	-----	.3	.4	-----	.6	-----	19	-----	6.8	7.2	-----
Total	51.1	24.3	14.8	7.9	10.8	11.5	17.5	357.2	658	348.5	296.5	146.9
Mean	1.65	0.81	0.48	0.25	0.39	0.37	0.58	11.5	21.9	11.2	9.56	4.90
Ac-ft	101	48	29	16	21	23	35	708	1,310	691	588	291

Calendar year 1962: Max 31 Min 0.3 Mean 5.87 Ac-ft 4,250  
Water year 1962-63: Max 39 Min 0.1 Mean 5.33 Ac-ft 3,860

Peak discharge (base, 30 cfs).--June 15 (0030) 49 cfs (2.43 ft).

\* Discharge measurement made on this day.

Note.--No gage-height record Jan. 7-16, Jan. 19 to Feb. 20, Mar. 13-15.

## PLATTE RIVER BASIN

49

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 1963.

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, 6.4 cfs June 3 (gage height, 1.27 ft); minimum daily, 0.05 cfs Mar. 2 to Apr. 30.  
1960-63: 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 table (gage height, in feet, and discharge,  
in cubic feet per second)

0.3	0.02	0.7	0.93
.4	.09	.8	1.5
.5	.26	1.0	3.0
.6	.53	1.2	5.4

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*0.31	0.22	0.16	0.09	0.06	0.06	0.05	0.06	4.0	2.1	0.60	0.56
2	.30	*.22	.15	.09	.06	.05	.05	.06	4.3	*2.1	.75	.54
3	.30	.22	.15	.09	.06	.05	.05	.06	5.1	2.0	.75	.50
4	.30	.22	.15	.09	.06	.05	.05	.08	4.6	1.8	.64	.50
5	.30	.22	.15	.09	.06	.05	.05	.11	*4.4	1.6	.67	.50
6	.30	.20	.15	.09	.06	.05	.05	.16	4.3	1.7	.67	.52
7	.28	.18	.13	.09	.06	.05	.05	.18	4.0	1.6	.64	.54
8	.28	.18	.13	.08	.06	.05	.05	.28	3.7	1.5	.64	.52
9	.28	.20	.13	.08	.06	.05	.05	.44	3.5	1.6	.64	.47
10	.28	.18	.13	.08	.06	.05	.05	.71	3.3	1.5	.67	.44
11	.28	.18	.12	.08	.06	.05	*0.5	1.1	3.3	1.4	.80	.47
12	.28	.18	*.12	.08	.06	.05	.05	1.2	3.4	1.2	.84	.50
13	.28	.18	.11	.08	.06	*.05	.05	.84	3.4	1.2	1.0	.47
14	.26	.18	.11	.08	.06	.05	.05	1.3	3.7	1.1	.80	.44
15	.26	.18	.11	*.08	.06	.05	.05	2.0	3.8	1.1	.67	.44
16	.26	.18	.11	.07	.06	.05	.05	2.5	4.7	1.0	.64	.44
17	.26	.18	.11	.07	.06	.05	.05	2.6	4.4	1.0	.64	.44
18	.26	.18	.12	.07	.06	.05	.05	3.1	3.8	.98	.60	.44
19	.26	.18	.12	.07	.06	.05	.05	2.6	3.6	.88	.60	.44
20	.24	.18	.12	.07	.06	.05	.05	1.9	3.7	.84	.56	.56
21	.24	.18	.12	.07	.06	.05	.05	2.8	3.7	.80	.64	.60
22	.24	.18	.12	.07	.06	.05	.05	3.1	3.4	.80	.64	.47
23	.24	.18	.11	.07	.06	.05	.05	2.9	3.2	.80	.60	.44
24	.24	.16	.11	.07	.06	.05	.05	3.9	3.1	.80	.60	.44
25	.24	.16	.11	.07	.06	.05	.05	3.7	2.9	.75	.60	.44
26	.24	.16	.11	.07	.06	.05	.05	3.2	2.7	.71	.64	.41
27	.24	.16	.11	.07	.06	.05	.05	3.6	2.6	.71	.64	.41
28	.24	.16	.11	.07	.06	.05	.05	4.3	2.4	.64	.60	.41
29	.24	.16	.11	.07	-	.05	.05	4.2	2.3	.67	.56	.41
30	.26	.16	.09	.07	-----	.05	.05	4.7	2.1	.60	.56	.41
31	.24	-----	.09	.06	-----	.05	-----	4.0	-----	.60	.56	-----
Total	8.23	5.50	3.77	2.38	1.68	1.56	1.50	61.68	107.4	36.08	20.46	14.17
Mean	0.265	0.183	0.122	0.077	0.060	0.050	0.050	1.99	3.58	1.16	0.660	0.472
Ac-ft	16	11	7.5	4.7	3.3	3.1	3.0	122	213	72	41	28

Calendar year 1962: Max 9.7 Min 0.08 Mean 1.16 Ac-ft 838  
Water year 1962-63: Max 5.1 Min 0.05 Mean 0.724 Ac-ft 525

Peak discharge (base, 10 cfs).--No peak above base.

\* Discharge measurement made on this day.

Note.--No gage-height record Jan. 5-15, Aug. 27 to Sept. 9.

## PLATTE RIVER BASIN

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 1963.

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

Extremes.--Maximum discharge during year, 54 cfs June 16 (gage height, 1.26 ft); minimum daily, 1.0 cfs Jan. 13, Feb. 12-25.  
1961-63: Maximum discharge, 92 cfs June 9, 1961 (gage height, 1.55 ft); minimum daily, 1.0 cfs Mar. 3-12, 1961, Jan. 13, Feb. 12-25, 1963.

Remarks.--Records excellent except those for periods of 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)

0.2	0.6	0.6	7.0
.3	1.4	.7	10
.4	2.9	.9	21
.5	4.8	1.1	37

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	* 2.2	1.8	1.7	1.7	1.2	1.1	2.2	2.4	15	7.9	2.6	4.8
2	2.3	* 1.8	1.7	1.7	1.2	1.1	1.6	* 2.6	17	8.8	3.3	4.2
3	2.2	1.8	1.6	1.7	1.2	1.1	1.3	3.5	20	8.5	4.8	4.0
4	2.2	1.8	1.7	1.7	1.2	1.2	1.2	3.7	18	8.8	5.7	4.0
5	2.4	2.0	1.6	1.6	1.2	1.2	1.3	3.7	* 17	7.6	4.8	4.0
6	2.8	1.8	1.7	1.6	1.2	1.2	1.6	4.4	16	7.9	* 5.2	4.2
7	2.4	1.2	1.7	1.6	1.2	1.2	2.0	5.2	15	7.6	5.0	5.0
8	2.3	1.6	1.7	1.4	1.2	1.2	2.6	5.9	15	7.6	4.0	4.8
9	2.3	2.3	1.7	1.3	1.1	1.2	* 2.6	7.0	16	8.2	4.2	4.0
10	2.2	1.8	1.7	1.2	1.1	1.2	2.4	7.3	14	7.6	4.2	4.0
11	2.2	1.3	1.7	1.3	1.1	1.2	2.0	8.2	14	6.3	6.8	3.8
12	2.2	1.7	* 1.7	1.2	1.0	1.2	2.2	8.5	13	6.1	6.2	3.8
13	2.2	1.7	1.8	1.0	1.0	1.3	2.4	6.6	13	5.7	5.7	3.7
14	1.8	1.7	1.8	1.1	1.0	* 1.3	2.6	7.6	14	5.5	5.4	3.5
15	1.8	1.7	1.8	* 1.1	1.0	1.3	3.1	9.1	18	5.2	6.1	3.5
16	1.8	1.7	1.7	1.1	1.0	1.3	2.6	10	3.4	5.0	5.0	3.5
17	1.8	1.6	1.7	1.1	1.0	1.4	2.2	10	25	5.0	5.0	3.3
18	1.7	1.2	1.6	1.1	1.0	1.3	1.8	12	22	4.8	5.9	3.1
19	1.8	1.7	1.6	1.1	* 1.0	1.3	1.7	12	19	4.2	5.0	2.9
20	1.8	2.0	1.7	1.1	1.0	1.3	1.7	8.5	16	4.0	4.4	4.8
21	1.7	2.0	1.8	1.1	1.0	1.3	1.8	9.4	15	3.8	5.0	5.9
22	1.7	1.8	1.8	1.1	1.0	1.3	1.6	12	14	3.8	5.5	4.8
23	1.8	2.0	1.7	* 1.1	1.0	1.4	1.6	12	13	3.8	5.5	3.7
24	1.8	1.8	1.7	1.1	1.0	1.4	1.6	14	12	4.4	5.2	3.3
25	1.7	1.8	1.6	1.1	1.0	1.3	1.7	15	12	4.2	4.8	2.9
26	1.8	1.8	1.4	1.1	1.1	1.3	1.8	13	10	3.8	5.0	2.9
27	1.8	2.0	1.7	1.2	1.1	1.4	2.3	14	9.7	3.7	5.7	2.9
28	1.8	1.8	1.7	1.2	1.1	1.7	2.0	15	9.4	3.5	5.0	2.9
29	1.8	1.8	1.8	1.2	-	1.8	1.8	16	8.8	2.9	4.8	2.8
30	1.8	1.8	1.7	1.2	-----	1.8	1.8	17	8.2	2.9	4.8	2.9
31	1.8	-----	1.7	1.2	-----	2.2	-----	17	-----	2.8	4.4	-----
Total	61.9	52.8	52.5	39.3	30.2	41.5	59.1	292.6	463.1	171.9	165.0	113.9
Mean	2.00	1.76	1.69	1.27	1.08	1.34	1.97	9.44	15.4	5.55	5.32	3.80
Ac-ft	123	105	104	78	60	82	117	580	919	341	327	226

Calendar year 1962: Max 41 Min 1.2 Mean 7.72 Ac-ft 5,600

Water year 1962-63: Max 34 Min 1.0 Mean 4.23 Ac-ft 3,060

Peak discharge (base, 40 cfs).--June 16 (1100) 54 cfs (1.26 ft).

\* Discharge measurement made on this day.

Note.--No gage-height record Jan. 12-23 (stage-discharge relation affected by ice during part of period), Feb. 2-19.

## PLATTE RIVER BASIN

51

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 1963.

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

Average discharge--7 years, 65.3 cfs (47,280 acre-ft per year).

Extremes--Maximum discharge during year, 390 cfs June 16 (gage height, 3.43 ft); minimum not determined.  
1956-63: Maximum discharge, 1,120 cfs June 29, 1957 (gage height, 4.70 ft); 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.  
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)

1.7	10	2.3	60
1.8	13	2.7	123
1.9	19	3.1	230
2.1	35	3.4	355

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	22	16					14	15	157	102	37	55
2	*22	*16					13	*16	170	105	43	48
3	21	16					11	17	182	*107	63	46
4	20	16					10	19	182	99	68	43
5	21	16					10	22	*179	95	63	*42
6	25	15					11	28	162	89	61	42
7	22	13					13	35	144	89	*63	48
8	22	b13					16	39	121	86	61	46
9	21	b14					*16	63	131	110	64	41
10	20	b15					16	73	107	119	63	39
11	20	15	(*)				14	80	88	100	136	36
12	19	b13					13	77	86	94	121	37
13	19	b13					15	56	103	84	138	35
14	18	b14					16	78	142	80	131	33
15	18	16				(*)	17	89	218	74	144	33
16	18	16	12	7	7.5	7.5	16	100	328	71	125	31
17	19	15		(*)			15	102	212	73	129	30
18	19	b14					15	116	185	56	131	29
19	20	b15			(*)		12	123	157	51	116	28
20	20	b18					13	100	152	47	107	47
21	18	b15					14	114	162	46	114	61
22	18	b17					14	127	170	50	109	50
23	17	b15					12	136	170	59	80	40
24	17	b15					13	154	162	56	76	35
25	17	b16					13	154	149	55	74	33
26	17	b15					14	149	125	55	71	31
27	16	b15					15	144	107	52	77	30
28	16	b15					15	154	114	46	71	30
29	16	b14					14	160	110	43	55	30
30	16	b13					14	162	103	41	54	29
31	16	-----					-----	165	-----	39	52	-----
Total	590	450	372	217	210.0	232.5	414	2,867	4,578	2,273	2,697	1,158
Mean	19.0	15.0	12	7	7.5	7.5	13.8	92.5	153	73.3	87.0	38.6
Ac-ft	1,170	893	738	430	417	461	821	5,690	9,080	4,510	5,350	2,300

Calendar year 1962: Max 332 Min 8.6 Mean 62.0 Ac-ft 44,900  
Water year 1962-63: Max 328 Min - Mean 44.0 Ac-ft 31,860

Peak discharge (base, 250 cfs)--June 16 (0500) 390 cfs (3.43 ft).

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note--No gage-height record Dec. 1 to Apr. 9 (stage-discharge relation affected by ice during most of period).

## PLATTE RIVER BASIN

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, headgate in sec.12, T.6 N., R.76 W., and many small tributaries and Agnes Creek (tributary to Michigan River), headgate in sec.15, 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 1962 to September 1963

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	538	4,500	0	0	868	5,910
June.....	0	0	2,050	7,920	0	0	154	10,120
July.....	0	0	0	3,480	0	0	42	3,520
August.....	0	0	0	772	0	0	0	772
September.....	0	0	0	0	0	0	0	0
Water year 1962-63.....	0	0	2,590	16,670	0	0	1,060	20,320

## PLATTE RIVER BASIN

53

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 1963.

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.--18 years, 45.7 cfs (33,090 acre-ft per year).

Extremes.--Maximum discharge during year, 320 cfs Apr. 27 (gage height, 4.69 ft); no flow for many days.

1929-31, 1947-63: 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 1961-63.

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

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Natural flow of stream affected by transbasin diversions (see elsewhere in this report), storage reservoirs, and diversions for irrigation (15,870 acre-ft in water year 1963).

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

2.5	0	3.1	11
2.6	.7	3.3	22
2.7	1.5	3.7	62
2.8	2.5	4.0	110
2.9	4.8	4.5	240

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	53	*8.9	9.5	9.5	5.4	0.1	0	6.1	5.8	3.6	0.5	6.7
2	*4.1	9.2	9.5	9.5	5.4	.1	0	5.8	5.8	*3.2	.5	6.7
3	36	9.2	9.5	9.5	a 3.4	.1	0	*3.9	5.8	1.6	.5	6.7
4	36	9.2	9.5	9.5	*a .1	.1	0	5.4	5.8	1.5	.5	7.0
5	37	9.2	9.5	9.5	.1	** .1	0	7.7	5.8	1.5	.5	7.0
6	36	9.2	9.5	9.5	0	0	0	8.9	*5.8	1.4	.5	7.0
7	36	7.4	9.5	*9.5	0	0	0	7.7	5.8	1.4	*.4	7.0
8	53	6.4	9.5	8.9	0	0	*6.3	6.1	5.8	1.4	.5	6.7
9	60	6.1	9.5	5.1	0	0	88	5.1	5.8	1.4	.5	*5.1
10	60	7.4	9.5	b 5.1	0	0	88	4.1	5.4	1.4	.4	3.9
11	60	7.7	9.5	b 5.1	0	4.4	87	2.7	5.4	1.4	.4	3.9
12	60	7.4	*9.5	b 5.1	.1	1.4	120	2.0	5.4	1.7	.7	3.9
13	60	7.7	9.5	b 5.1	0	1.4	140	2.0	5.4	1.9	4.4	3.9
14	60	8.9	9.5	5.1	0	6.4	138	2.3	5.4	1.9	1.2	3.9
15	60	9.5	9.5	5.1	0	.4	56	3.0	5.8	1.9	5.4	3.6
16	60	9.5	9.5	a .2	0	.2	17	2.7	1.8	2.5	4.8	3.6
17	59	9.5	9.5	a .1	0	.1	17	2.7	3.7	4.8	5.1	3.4
18	59	9.5	9.5	a .1	0	.1	21	2.5	2.7	4.8	5.1	3.4
19	59	9.5	9.5	a .1	0	0	23	2.5	9.8	4.8	5.1	2.4
20	39	9.5	9.8	s 2.0	11.9	0	29	2.7	9.8	4.8	4.1	3.5
21	26	9.5	9.8	b 5.4	14.8	0	13	4.3	9.8	4.8	3.6	9.4
22	21	9.5	9.5	b 5.4	14.5	0	38	5.8	9.8	4.3	3.6	2.6
23	22	9.5	9.5	5.4	9.5	0	52	5.8	9.8	4.1	3.6	3.6
24	22	9.5	9.5	5.4	.8	0	52	5.8	9.8	4.1	3.6	1.5
25	19	9.5	9.5	5.4	.4	0	50	5.8	9.8	4.1	3.6	1.9
26	11	9.5	9.5	5.8	.3	0	49	5.8	8.9	4.1	3.6	1.9
27	9.2	9.5	9.5	5.8	.1	0	206	5.8	4.1	3.6	3.4	1.9
28	9.2	9.5	9.5	5.4	.1	0	214	5.8	3.9	1.4	4.8	1.3
29	9.2	9.5	9.5	5.4	-	0	58	5.8	3.9	1.1	6.7	9.5
30	9.2	9.5	9.5	5.4	-----	0	17	5.8	2.6	.6	6.7	9.5
31	8.9	-----	9.5	5.4	-----	0	-----	5.8	-----	.6	6.7	-----
Total	1,190.7	265.9	295.1	173.8	523.2	40.1	1,636	148.2	260.0	81.7	101.8	358.4
Mean	38.4	8.86	9.52	5.61	18.7	1.29	54.5	4.78	8.67	2.64	3.28	11.9
Ac-ft	2,360	527	585	345	1,040	80	3,240	294	516	162	202	711

Calendar year 1962: Max 370 Min 0 Mean 67.2 Ac-ft 48,630  
 Water year 1962-63: Max 214 Min 0 Mean 13.9 Ac-ft 10,060

\* Discharge measurement made on this day.

\*\* Field estimate made on this day.

a No gage-height record.

b Stage-discharge relation affected by ice.

## PLATTE RIVER BASIN

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

Location (revised).--Lat 40°39'52", long 105°13'26", in NW¼ sec.15, T.8 N., R.70 W., on left bank at mouth of canyon, 0.5 mile downstream from headgate of Poudre Valley Canal, 1.2 miles upstream from Lewstone Creek, and 9.3 miles northwest of court house in Fort Collins.

Drainage area.--1,055 sq mi.

Records available.--June to August 1881, May to July 1883, October 1883 to September 1963. 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 5,220 ft, revised (from topographic map).

Average discharge.--80 years (1883-1963), 395 cfs (286,000 acre-ft per year).

Extremes.--Maximum discharge during year, 1,450 cfs June 16 (gage height, 3.90 ft); minimum daily, 4.0 cfs Mar. 5, 8. 1881, 1883-1963: 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 (27,910 acre-ft in water year 1963), and diversions for municipal use (9,010 acre-ft in water year 1963).

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

1.1	5.0	2.2	222
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

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	65	41	32	35	35	11	23	101	520	359	43	222
2	65	41	36	25	33	9.2	26	112	514	343	65	254
3	62	41	32	21	37	8.0	25	109	669	354	153	227
4	58	40	35	19	40	8.2	21	90	606	343	20E	182
5	60	36	18	20	42	4.0	22	109	514	321	19E	138
6	73	33	23	20	28	6.0	19	150	634	268	222	147
7	58	32	36	21	21	b 5.0	18	205	606	268	222	150
8	62	26	40	22	15	b 4.0	20	306	532	254	202	159
9	90	30	35	23	14	b 6.0	23	424	526	259	18E	132
10	78	31	30	21	13	b 9.4	23	514	490	359	12E	115
11	76	30	28	19	12	b 9.6	22	508	400	354	354	118
12	76	23	30	18	13	b 9.4	21	478	354	316	25C	112
13	73	26	32	17	15	b 9.6	88	316	338	263	43C	98
14	76	32	28	16	18	b 10	112	370	526	212	41E	93
15	76	40	37	15	19	b 12	71	442	910	182	302	101
16	76	44	34	13	18	b 14	50	532	1,310	178	191	115
17	78	39	30	12	17	b 14	51	496	1,050	208	15C	104
18	78	36	25	12	16	18	54	564	774	166	16E	96
19	78	32	25	12	15	16	62	669	802	153	15E	86
20	71	34	32	13	14	18	54	557	802	115	11E	141
21	60	48	30	15	13	22	41	627	760	109	12C	297
22	50	43	24	14	12	31	67	739	739	112	15C	185
23	47	39	22	13	11	23	83	690	704	118	12E	38
24	47	34	20	13	10	14	80	795	627	104	12E	27
25	47	36	20	14	10	14	73	676	578	96	12E	53
26	40	37	20	13	11	13	71	538	676	86	12E	54
27	35	39	20	16	11	13	219	394	606	80	144	54
28	34	38	21	18	9.2	13	273	478	526	65	16E	64
29	34	32	24	20	-	12	175	592	502	53	22E	83
30	39	25	30	21	-----	13	129	585	460	41	21E	76
31	46	-----	40	22	-----	13	-----	599	-----	25	21E	-----
Total	1,908	1,058	889	553	522.2	382.4	2,016	13,765	19,055	6,164	5,901	3,721
Mean	61.5	35.3	28.7	17.8	18.7	12.3	67.2	444	635	199	199	124
Ac-ft	3,780	2,100	1,760	1,100	1,040	758	4,000	27,300	37,800	12,230	11,707	7,380

Calendar year 1962: Max 2,170 Min 14 Mean 352 Ac-ft 254,900  
 Water year 1962-63: Max 1,310 Min 4.0 Mean 153 Ac-ft 110,900

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 25 to Feb. 25, Mar. 3-6 (stage-discharge relation affected by ice during most of periods).

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 1963. 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.**--44 years (1914-19, 1924-63), 96.3 cfs (69,720 acre-ft per year).

**Extremes.**--Maximum discharge during year, 731 cfs June 17 (gage height, 5.38 ft); minimum daily, 7.5 cfs May 18. 1903-4, 1914-19, 1924-63: Maximum daily discharge, 4,220 cfs June 24, 26, 1917; minimum daily, 0.8 cfs Oct. 3, 1946.

**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, diversion for municipal supply, diversions above station for irrigation of about 250,000 acres, and return flow from irrigated areas.

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

2.7	7.0	3.4	84
2.8	12	4.0	240
3.0	32	5.0	570

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	71	125	162	160	213	101	105	12	24	*16	11	46
2	79	128	158	*158	234	97	101	12	26	16	11	31
3	*88	125	162	155	195	97	103	11	36	16	12	28
4	99	125	165	158	207	99	97	10	17	14	23	21
5	129	122	165	152	204	92	88	9.5	*16	16	18	20
6	348	122	155	148	192	99	76	10	17	13	16	25
7	237	120	138	152	186	97	71	10	18	12	*38	22
8	219	128	150	155	175	97	79	11	25	12	23	32
9	210	120	162	*160	162	97	79	18	68	13	26	42
10	183	120	162	142	158	97	78	25	86	13	32	*25
11	155	118	*155	110	126	101	73	26	63	11	36	24
12	150	118	135	100	92	101	71	24	40	8.0	40	25
13	142	120	130	108	*94	97	71	10	26	8.5	34	33
14	135	112	128	111	108	97	68	8.5	16	8.5	30	30
15	*128	*118	125	119	110	97	*68	8.5	60	8.5	19	26
16	122	125	142	130	105	92	66	9.0	255	10	18	24
17	115	120	155	130	105	90	56	*9.5	446	9.5	68	24
18	103	115	155	130	110	*92	55	7.5	198	*11	78	17
19	101	128	158	108	108	99	54	8.0	110	13	73	15
20	99	142	155	109	*108	110	46	26	81	13	68	161
21	94	145	162	140	110	110	38	11	*64	23	63	309
22	94	142	158	*159	108	110	35	19	50	18	*58	195
23	110	148	145	142	110	120	30	38	28	17	56	108
24	145	145	142	141	112	125	25	34	15	*13	51	79
25	142	142	115	145	112	130	20	33	15	13	45	68
26	140	145	110	130	112	125	16	40	12	22	114	56
27	135	145	130	120	112	*125	18	36	12	26	230	50
28	135	145	142	*130	108	125	16	19	14	14	130	48
29	132	160	145	132	-	112	23	10	16	12	73	48
30	130	*162	148	142	-----	112	17	10	15	12	50	*42
31	130	-----	152	145	-----	112	-----	17	-----	11	44	-----
Total	4,300	3,930	4,566	4,221	3,876	3,255	1,743	532.5	1,869	423.0	1,588	1,674
Mean	139	131	147	136	138	105	58.1	17.2	62.3	13.6	51.2	55.8
Ac-ft	8,530	7,800	9,060	8,370	7,690	6,460	3,460	1,060	3,710	839	3,150	3,320

Calendar year 1962: Max 1,420 Min 12 Mean 182 Ac-ft 131,800  
 Water year 1962-63: Max 446 Min 7.5 Mean 87.6 Ac-ft 63,450

\* Discharge measurement made on this day.

Note.--No gage-height record Jan. 10-28, Feb. 11-13, Apr. 21-25.



## PLATTE RIVER BASIN

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

Location.--Lat 40°24'44", long 104°33'46", in 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 1963. 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.--60 years, 730 cfs (528,500 acre-ft per year).

Extremes.--Maximum discharge during year, 7,430 cfs June 17 (gage height, 7.11 ft); minimum daily, 41 cfs May 16. 1901-3, 1905-63: 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 poor. Discharge measurements generally made two or more times a month. Natural flow of stream affected by transmountain 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 Mar. 1-29, June 27 to Aug. 16)

1.9	40	4.0	1,090
2.1	66	5.0	2,440
2.5	158	6.0	4,400
3.0	360	7.0	7,100
3.5	690		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	372	501	557	578	680	438	508	47	78	97	84	214
2	366	501	550	557	904	420	494	47	78	95	84	202
3	390	536	550	536	784	468	494	47	90	90	95	180
4	426	550	543	529	840	494	501	46	99	90	120	161
5	468	557	536	501	768	501	474	45	99	97	140	158
6	976	543	536	508	683	522	444	45	104	84	135	150
7	960	529	522	543	641	522	420	45	90	76	148	148
8	832	536	543	571	606	522	408	45	99	72	135	150
9	753	543	557	592	592	529	396	47	155	72	140	174
10	718	536	557	530	585	536	390	50	258	76	206	164
11	676	529	550	470	536	550	360	50	298	76	177	168
12	669	515	515	450	480	557	350	50	202	78	168	171
13	648	508	508	470	480	557	340	45	155	78	158	184
14	627	501	508	480	522	557	302	44	130	78	153	210
15	606	529	508	500	515	550	254	42	161	76	140	230
16	592	571	522	540	515	557	190	41	1,290	76	125	230
17	578	557	536	530	501	578	155	42	6,440	78	158	214
18	585	550	529	520	494	585	125	42	3,410	78	396	198
19	592	564	536	470	468	592	113	42	1,610	80	438	194
20	585	578	536	460	456	592	110	55	976	80	426	434
21	585	585	536	510	450	585	110	48	599	84	366	1,130
22	585	571	536	570	444	578	104	53	468	99	360	1,450
23	585	571	508	530	432	585	86	60	355	88	390	1,150
24	571	564	480	470	426	585	68	66	254	88	372	816
25	578	557	468	520	438	564	62	74	210	90	340	613
26	564	571	460	500	456	550	56	70	150	95	315	529
27	557	550	450	470	462	543	55	63	130	97	456	494
28	543	557	500	480	456	536	52	62	113	88	335	462
29	536	564	543	460	-	543	52	60	110	86	278	450
30	515	571	564	450	-----	536	52	63	104	84	230	426
31	501	-----	571	540	-----	515	-----	68	-----	84	210	-----
Total	18,539	16,395	16,315	15,835	15,614	16,747	7,525	1,604	19,315	2,610	7,278	11,454
Mean	598	546	526	511	558	540	251	51.7	610	84.2	235	382
Ac-ft	36,770	32,520	32,360	31,410	30,970	33,220	14,930	3,180	36,330	5,180	14,440	22,720

Calendar year 1962: Max 3,170 Min 161 Mean 836 Ac-ft 604,900  
Water year 1962-63: Max 6,440 Min 41 Mean 406 Ac-ft 294,000

Note.--No gage-height record Dec. 25-28, Jan. 10 to Feb. 1 (stage-discharge relation affected by ice during part of periods).

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 1963 (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, 65 cfs July 27 (gage height, 14.96 ft); no flow for many days. Maximum inflow 1,880 cfs (average for 5-minute interval) July 27, computed from outflow and change in reservoir contents; no rainfall or reservoir surface during time of peak inflow.

1955-63: 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.

Note.--Figure of monthly total for September 1962 was published in error in Surface Water Records of Colorado, 1962; correct figure is 0.31.

Discharge, in cubic feet per second, water year October 1962 to September 1963												
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1								(*)		0	0.3	(*) .03
2										0	.3	
3									(*)	0	.2	
4	(*)									0	.4	
5		(*)								0	.5	
6										0	.4	.7
7										0	.4	
8										0	.1	.2
9	0.01									0	.1	
10										0	.1	.05
11										0		
12										0		
13										0	.04	
14										0		
15							(*)	(*)		0		(*)
16	(*)								(*)	0	.9	
17										*0	.3	
18										0		
19										0		
20										0		.4
21										0	.02	.1
22	.02									0		
23										0		.02
24										0	2.0	
25										0	4.3	
26										0	.1	
27										23		
28	.01									7.8		.05
29									(*)	*.5		
30										.2		
31										.3		
Total	0.38	-	-	-	-	-	-	0	0	31.8	10.99	2.31
Mean	0.012	-	-	-	-	-	-	0	0	1.03	0.355	0.077
(††)	0.50	-	-	-	-	-	-	0	1.90	2.36	3.71	2.20

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

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

Note.--No gage-height record May 1, July 15-17, Aug. 28 to Sept. 3.

## PLATTE RIVER BASIN

6-7580. Kiowa Creek at Elbert, Colo.

Location.--Lat 39°12'35", long 104°32'00", in SE $\frac{1}{4}$ NE $\frac{1}{4}$  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 1963.

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

Average discharge.--8 years, 0.18 cfs (130 acre-ft per year).

Extremes.--No flow during year.

1955-63: 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.--No flow since Apr. 30, 1962. Observations of no flow generally made twice a month. Floodflows decreased by a series of about 24 retarding dams on Kiowa Creek and tributaries above station. Figures for the calendar year 1962 are as follows: Maximum daily discharge, not determined; minimum daily, zero; mean, 0.01 cfs; runoff, 9.1 acre-ft.

6-7581. West Kiowa Creek at Elbert, Colo.

Location.--Lat 39°12'38", long 104°32'16", in SE $\frac{1}{4}$ NE $\frac{1}{4}$  sec.3, T.10 S., R.64 W., on right bank 260 ft downstream from bridge on State Highway 217, a quarter of a mile south of Elbert, and half a mile upstream from mouth.

Drainage area.--35.9 sq mi.

Records available.--August 1962 to September 1963.

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

Extremes.--1962: Maximum discharge during period August to September, 2.8 cfs Aug. 12 (gage height, 1.43 ft); no flow for many days.

1962-63: Maximum discharge during water year, 92 cfs Aug. 31 (gage height, 2.22 ft); no flow for many days.

Remarks.--Records fair. Discharge measurements or observations of no flow generally made twice a month. Floodflows decreased by a series of about 12 retarding dams on West Kiowa Creek and tributaries above station.

## Discharge, in cubic feet per second, 1962

Day	Aug.	Sept.	Day	Aug.	Sept.	Day	Aug.	Sept.	Day	Aug.	Sept.	Day	Aug.	Sept.
1		0	7		0	13		0.1	19		0.1	25		0.1
2		0	8		0	14		.1	20		.1	26		.2
3		0	9		0	15		.1	21		.1	27		.1
4		0	10		0	16		.1	22		.1	28		.1
5		0	11		0	17		.1	23		.1	29		.1
6		0	12		0	18		.1	24		.1	30		.1
												31		-
Total													0	1.9
Mean													0	0.06
Runoff in acre-feet													0	3.8

## Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.1	0.3	0.3	0.3	0.7	0.1	0.2	0.2	0	0	0	0.2
2	.1	.3	.3	.3	.6	.3	.2	.2	0	0	0	.1
3	.1	.3	.3	.3	.5	.2	.2	.2	0	0	0	0
4	.1	.3	.3	.3	.6	.1	.2	.2	0	0	0	0
5	.2	.3	.3	.2	.4	.3	.2	.2	0	0	0	0
6	.2	.3	.3	.3	.4	.3	.2	.1	0	0	0	0
7	.2	.3	.3	.3	.4	.2	.2	.1	0	0	0	2.4
8	.2	.3	.3	.3	.3	.2	.2	.1	0	0	0	2.7
9	.2	.3	.3	.3	.3	.2	.2	.1	0	2.4	0	.7
10	.2	.3	.3	.2	.2	.2	.2	.1	0	.1	0	.3
11	.2	.3	.3	.2	.2	.2	.3	.1	0	0	0	.1
12	.2	.3	.3	.2	.3	.2	.3	.1	0	0	2.7	.1
13	.2	.3	.3	.2	.4	.3	.2	.1	0	0	6.0	.1
14	.2	.4	.3	.2	.5	.3	.2	0	0	0	.2	0
15	.2	.4	.3	.2	.4	.4	.1	0	0	0	0	0
16	.2	.4	.3	.2	.4	.4	.1	0	.1	0	0	0
17	.2	.4	.3	.2	.4	.4	.1	0	0	0	0	0
18	.2	.4	.3	.1	.4	.3	.1	0	.1	0	0	0
19	.3	.4	.3	.1	.3	.5	.2	.2	0	0	0	0
20	.4	.4	.3	.1	.2	.6	.2	.1	0	0	0	.2
21	.2	.4	.3	.1	.2	.6	.2	.1	0	0	0	.1
22	.2	.4	.2	.1	.1	.6	.2	.1	0	0	0	.1
23	.3	.4	.3	.1	.1	.5	.2	.1	0	0	0	0
24	.2	.3	.2	.1	.1	.5	.2	0	0	0	0	0
25	.2	.3	.1	.1	.1	.4	.2	0	0	0	0	0
26	.2	.3	.1	.1	.1	.3	.2	0	0	0	0	0
27	.2	.3	.1	.1	.1	.3	.2	0	0	0	0	0
28	.2	.3	.1	.2	.1	.2	.2	0	0	0	0	0
29	.2	.3	.2	.2	-	.3	.2	0	0	0	0	0
30	.3	.3	.2	.2	-	.2	.2	0	0	0	0	0
31	.2	-	.2	.3	-	.2	-	0	-	0	9.3	-
Total	6.3	10.0	8.0	6.4	8.8	9.8	5.9	2.4	0.2	2.5	18.2	8.1
Mean	0.20	0.33	0.26	0.21	0.31	0.32	0.20	0.08	0.01	0.08	0.59	0.27
Ac-ft	12	20	16	13	17	19	12	4.8	0.4	5.0	36	16

Calendar year 1962: Max - Min - Mean - Ac-ft -  
 Water year 1962-63: Max 9.3 Min 0 Mean 0.24 Ac-ft 171

Note.--Stage-discharge relation affected by ice Dec. 24 to Jan. 11, Jan. 16-31. No gage-height record Oct. 1-4, Dec. 1-6.

## PLATTE RIVER BASIN

59

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 1963.

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

Average discharge.--8 years, 3.35 cfs (2,430 acre-ft per year).

Extremes.--Maximum discharge during year, 2,870 cfs Aug. 25 (gage height, 6.44 ft), from rating table extended above 250 cfs on basis of contracted-opening measurement of peak flow; no flow for many days.

1955-63: 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 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1				0	(*)	(*)	0.8	0	0	0	0	1.0
2				0			.8	*.1	0	0	0	0
3				*0	2.5		1.0	0	0	0	0	0
4	(*)			0			1.9	0	0	0	0	0
5		(*)		0			2.7	0	0	0	0	.1
6			(*)	0			2.5	0	0	0	0	.2
7				0			1.6	0	0	0	0	**4
8				0	1.0	0.8	1.2	0	0	0	0	2.1
9				0			1.2	0	0	0	0	2.3
10				0			1.6	0	0	0	0	1.2
11				0			3.2	0	0	.6	0	.1
12				0			1.6	0	0	0	0	0
13				0			1.0	0	0	0	*.27	.1
14				0			.2	0	0	0	.58	.1
15				0			.2	0	0	0	2.4	.1
16				0	.1		0	0	0	0	*0	.1
17			(*)	*0			.1	0	**2.6	*0	.3	*0
18	(*)			0			0	0	.2	0	0	0
19				0		(*)	*0	0	0	0	0	0
20				0		3.0	.1	0	0	0	0	1.1
21				0	(*)		.1	0	0	0	0	.6
22				0			.1	0	0	0	0	0
23				0			0	0	0	0	0	0
24				0			0	0	0	0	.3	0
25				0	.9		0	0	0	0	*205	0
26				0		2.0	.1	0	0	0	*115	0
27				0		2.0	0	0	0	0	7.5	0
28				0		1.0	.1	0	0	0	4.5	0
29				0		*.6	.2	0	*0	*0	1.1	0
30				0		.5	.1	0	0	0	1.0	0
31				1.2		.5		*0		0	1.7	
Total	0	0	0	1.9	25.7	48.6	22.4	0.1	1.0	0.6	423.8	9.5
Mean	0	0	0	0.06	0.9	1.57	0.75	0.003	0.03	0.02	13.7	0.32
Ac-ft	0	0	0	3.8	51	96	44	0.2	2.0	1.2	841	19

Calendar year 1962: Max 11 Min 0 Mean 1.57 Ac-ft 1,140

Water year 1962-63: Max 205 Min 0 Mean 1.46 Ac-ft 1,060

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

\*\* Field estimate made on this day.

Note.--No gage-height record Dec. 25 to Mar. 29 (stage-discharge relation affected by ice during most of period).

## PLATTE RIVER BASIN

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. Highways 36, 40, and 287 relocated, and 1 mile east of Bennett.

Drainage area.--236 sq mi.

Records available.--March 1960 to September 1963.

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, 3,420 cfs Sept. 22 (gage height, 3.70 ft, from floodmark), from rating curve extended above 810 cfs on basis of slope-area measurement of peak flow; no flow for most of time.  
1960-63: Maximum discharge, that of Sept. 22, 1963; no flow for many days in each year.

Remarks.--Records poor. 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 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1						*0			0	0	*0	0
2						0			0	0	0	0
3						0			0	0	0	*0
4	(*)					0			0	0	0	0
5		(*)				0			0	0	.1	0
6			(*)			0			0	0	*124	0
7						0			*0	0	46	0
8						0			0	0	117	0
9						0			0	2	*60	0
10						0			0	0	*23	0
11						0			0	0	0	0
12						0			0	0	0	0
13						0			0	0	0	0
14						0			0	0	0	0
15						0			10	0	.5	0
16						0			*5.9	0	0	0
17				(*)		0			0	0	0	0
18			(*)			0			0	0	3.3	0
19						0			0	0	*0	0
20						.6			0	0	0	0
21						*.1			0	0	0	0
22						0		(*)	0	0	0	*307
23						0			0	0	0	5.7
24						0			0	0	0	.7
25						0			0	0	0	0
26						0			0	0	*293	0
27						0			0	0	*100	0
28						0			0	0	11	0
29						0			0	0	1.0	0
30						0	(*)		0	0	0	0
31		-----		(*)	-----	0	-----		-----	0	0	-----
Total	0	0	0	0	0	0.7	0	0	15.9	0.2	778.9	313.4
Mean	0	0	0	0	0	0.02	0	0	0.53	0.01	25.1	10.4
Ac-ft	0	0	0	0	0	1.4	0	0	32	0.4	1,540	622

Calendar year 1962: Max 55 Min 0 Mean 2.39 Ac-ft 1,730  
Water year 1962-63: Max 307 Min 0 Mean 3.04 Ac-ft 2,200

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

## PLATTE RIVER BASIN

61

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

Location.--Lat 40°19'20", long 103°55'15", in SW $\frac{1}{4}$ SW $\frac{1}{4}$  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 1963.

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

Average discharge.--11 years, 445 cfs (322,200 acre-ft per year).

Extremes.--Maximum discharge during year, 2,060 cfs June 18 (gage height, 5.50 ft), from rating curve extended above 250 cfs; minimum daily, 85 cfs July 2.

1952-63: Maximum discharge, 14,200 cfs May 11, 1957 (gage height, 9.92 ft); minimum daily, 43 cfs Dec. 9, 1952.

Remarks.--Records good below 400 cfs and fair above 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 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 Oct. 1, 2)

Oct. 1 to Mar. 15

Mar. 16 to Sept. 30

2.6	85	4.0	640	2.8	85	4.0	720
3.0	185	4.5	1,020	3.1	195	5.0	1,600
3.5	365			3.5	410	6.0	2,660

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	450	132	122	390	610	331	164	109	122	91	94	434
2	405	145	122	361	604	320	159	109	126	85	103	356
3	313	145	120	345	731	345	164	109	136	106	129	356
4	209	135	115	289	868	355	164	109	154	225	275	344
5	170	132	115	264	820	370	136	140	168	270	260	322
6	150	125	115	257	634	380	103	177	172	295	230	317
7	365	128	112	254	514	385	100	190	172	295	250	312
8	492	132	115	278	520	380	164	245	164	265	200	275
9	460	135	115	282	487	390	220	260	182	250	215	190
10	415	138	115	317	482	393	317	168	215	240	159	168
11	390	135	112	308	487	393	322	143	280	245	186	154
12	339	138	118	305	470	395	295	150	220	240	177	154
13	301	138	118	322	455	395	275	150	159	240	172	154
14	285	138	125	335	450	398	245	159	240	200	200	154
15	260	140	122	350	435	398	177	190	265	182	215	186
16	257	138	122	356	405	415	172	190	339	150	225	172
17	250	138	125	351	385	420	240	168	559	168	230	132
18	289	140	128	335	400	404	215	164	1,820	159	275	115
19	246	138	130	335	365	446	186	164	950	140	285	100
20	176	138	145	350	329	464	164	146	300	182	290	100
21	120	130	142	365	321	464	140	122	154	205	250	210
22	110	125	142	385	333	464	136	115	362	225	136	610
23	108	122	132	420	333	458	129	118	339	245	112	769
24	103	125	170	400	333	434	126	126	225	250	118	707
25	101	125	226	410	333	416	126	112	129	215	118	554
26	97	125	185	390	340	285	118	140	200	168	164	470
27	91	128	212	390	345	190	115	129	172	140	195	416
28	93	125	297	395	338	172	112	126	146	100	350	362
29	93	125	365	410	-	164	109	118	109	94	374	334
30	93	122	435	395	-----	164	112	118	97	88	339	306
31	128	-----	425	b 500	-----	150	-----	126	-----	100	334	-----
Total	7,359	3,980	5,142	10,844	13,127	11,138	5,205	4,590	8,676	5,858	6,660	9,233
Mean	237	133	166	350	469	359	174	148	289	189	215	308
Ac-ft	14,600	7,890	10,200	21,510	26,040	22,090	10,320	9,100	17,210	11,620	13,210	18,310

Calendar year 1962: Max 1,620 Min 71 Mean 559 Ac-ft 404,900  
Water year 1962-63: Max 1,820 Min 85 Mean 252 Ac-ft 182,100

b Stage-discharge relation affected by ice.

Note.--No gage-height record Jan. 11-30 (stage-discharge relation affected by ice during part of period), Feb. 22 to Mar. 18.

## PLATTE RIVER BASIN

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 1963. 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.--47 years, 363 cfs (262,800 acre-ft per year).

Extremes.--Maximum discharge during year, 3,260 cfs Sept. 23; minimum daily, 10 cfs Oct. 30, 31.

1916-63: 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 above 600 cfs and those for Jan. 26 to Feb. 13, Mar. 24-28, which are poor. Discharge measurements generally made twice a month. Natural flow of stream affected by transmountain 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.

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	193	11	24	94	364	285	29	151	149	100	69	239
2	92	11	24	83	538	443	24	145	130	95	64	297
3	75	11	24	64	637	462	21	134	135	79	62	283
4	60	12	23	54	619	508	21	126	126	88	93	261
5	46	12	23	45	680	562	21	112	111	101	201	240
6	52	11	23	41	587	667	18	143	109	97	177	245
7	49	11	24	35	470	707	20	131	110	117	148	282
8	100	11	24	33	412	723	90	95	108	125	146	275
9	127	11	28	29	386	701	133	95	110	118	140	280
10	107	11	22	27	362	672	146	82	117	132	167	321
11	93	11	21	25	340	662	175	86	129	141	120	270
12	80	11	21	22	319	678	170	116	158	169	135	210
13	56	14	21	24	305	705	161	129	144	174	141	147
14	45	20	21	25	294	712	155	132	126	175	126	130
15	40	22	20	27	297	670	162	128	174	163	159	124
16	34	21	19	31	280	672	190	133	240	169	193	152
17	36	21	19	33	253	613	193	139	353	152	250	137
18	34	22	18	35	260	560	194	132	384	165	333	116
19	42	22	19	34	244	574	189	130	622	156	281	105
20	44	23	20	35	209	601	199	132	356	129	274	109
21	24	23	20	48	159	634	178	127	313	118	284	146
22	20	21	19	61	130	644	160	126	185	122	209	360
23	16	21	18	76	119	623	141	133	269	154	129	2,290
24	14	21	18	79	102	587	134	145	281	157	93	1,370
25	11	20	19	92	95	529	150	138	197	144	79	998
26	12	22	22	115	94	395	150	126	149	154	81	756
27	11	22	27	148	95	209	144	119	167	295	104	573
28	11	22	29	173	85	83	138	113	159	186	123	520
29	11	22	30	219	-	38	139	126	144	136	171	478
30	10	23	41	251	-----	35	144	137	115	94	225	447
31	10	-----	71	282	-----	32	-----	246	-----	78	238	-----
Total	1,555	516	752	2,340	8,735	15,986	3,789	4,007	5,850	4,283	5,015	12,161
Mean	50.2	17.2	24.3	75.5	312	516	126	129	195	138	162	405
Ac-ft	3,080	1,020	1,490	4,640	17,330	31,710	7,520	7,950	11,600	8,500	9,950	24,120

Calendar year 1962: Max 1,730 Min 10 Mean 463 Ac-ft 334,900  
 Water year 1962-63: Max 2,290 Min 10 Mean 178 Ac-ft 128,900

Note.--Stage-discharge relation affected by ice on main channel Dec. 23-25, Dec. 28 to Jan. 4, Jan. 10-26, and on secondary channel Dec. 26, 27, Jan. 11-13, 26, 27. No gage-height record on main channel Dec. 26, 27, Jan. 27 to Feb. 13 (stage-discharge relation affected by ice during parts of periods), Mar. 24-28, May 27 to June 3 and on secondary channel Mar. 29 to Apr. 16.

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 1963. 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.--61 years, 461 cfs (333,800 acre-ft per year).

Extremes.--Maximum discharge during year, 1,200 cfs Feb. 7; minimum daily, 16 cfs Sept. 4, 8, 9.

1902-63: 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 once a week. 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 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	239	360	348	320	360	462	281	46	142	23	20	23
2	278	356	338	335	360	456	247	49	128	20	23	19
3	297	357	337	362	450	492	222	42	120	20	24	18
4	286	354	335	392	600	590	220	45	111	21	23	16
5	253	354	327	367	800	617	226	86	101	27	62	17
6	285	352	332	326	900	681	233	109	87	27	34	18
7	338	346	337	311	1,000	750	223	76	72	26	30	18
8	353	341	335	356	1,030	819	194	66	60	24	45	16
9	334	344	338	388	890	877	184	62	62	19	46	16
10	334	345	344	363	771	904	194	50	48	20	43	18
11	352	341	334	250	720	933	229	42	35	19	38	18
12	360	344	332	210	680	940	209	45	35	25	31	17
13	360	336	341	240	650	925	169	44	33	211	23	21
14	357	342	334	260	622	925	138	40	32	84	21	23
15	363	342	337	270	605	930	129	42	36	45	23	24
16	360	352	335	280	578	940	125	41	71	41	23	26
17	365	354	333	280	563	884	113	47	47	31	23	26
18	360	350	333	260	561	863	97	51	37	26	24	24
19	360	352	334	210	559	869	89	53	31	22	20	22
20	378	349	348	230	549	858	83	46	27	23	20	24
21	382	349	356	260	538	851	65	41	21	23	21	40
22	376	344	344	270	526	860	60	39	23	23	21	62
23	370	342	318	240	519	857	56	39	21	23	21	95
24	346	344	298	240	498	825	51	45	20	22	19	76
25	336	345	292	250	479	810	48	42	21	21	20	147
26	355	345	160	240	460	670	48	37	22	23	20	622
27	357	335	180	230	466	645	46	35	22	22	21	618
28	358	310	195	230	466	576	46	31	21	20	21	573
29	360	336	210	250	-	494	48	28	22	23	18	492
30	358	338	230	280	-----	478	46	29	22	23	18	450
31	364	-----	270	320	-----	215	-----	166	-----	20	19	-----
Total	10,574	10,379	9,585	8,820	17,200	23,096	4,119	1,614	1,530	997	816	3,579
Mean	341	346	309	285	614	745	137	52.1	51.0	32.2	26.3	119
Ac-ft	20,970	20,590	19,010	17,490	34,120	45,810	8,170	3,200	3,030	1,980	1,620	7,100

Calendar year 1962: Max 2,230 Min 28 Mean 603 Ac-ft 436,300  
 Water year 1962-63: Max 1,030 Min 16 Mean 253 Ac-ft 183,100

Note.--Stage-discharge relation affected by ice Dec. 26-31, Jan. 11 to Feb. 7. No gage-height record Jan. 27 to Feb. 2, Feb. 11-13.



## KANSAS RIVER BASIN

6-8220. North Fork Republican River near Wray, Colo.

Location.--Lat 40°04'24", long 102°17'06", in NE¼ sec. 9, T.1 N., R.44 W., on right bank 150 ft upstream from bridge on State Highway 29, 3½ miles upstream from Chief Creek, and 3.2 miles west of Wray.

Records available.--March 1937 to September 1946, October 1951 to September 1957, October 1962 to September 1963.

Gage.--Water-stage recorder. Prior to Aug. 2, 1940, staff gage and Aug. 2, 1940, to Sept. 30, 1946, water-stage recorder, at site ¾ mile upstream at different datum. Oct. 31, 1951, to Sept. 30, 1957, at present site and datum.

Average discharge.--16 years, 22.1 cfs (16,000 acre-ft per year).

Extremes.--Maximum discharge during year, 46 cfs July 27 (gage height, 3.73 ft), from rating curve extended above 26 cfs; minimum daily, 17 cfs June 13-15.

1937-46, 1951-57, 1962-63: Maximum discharge, 283 cfs Aug. 11, 1956 (gage height, 5.43 ft), from rating curve extended above 80 cfs; minimum daily, 6.9 cfs Apr. 4, 1938.

Remarks.--Records good except those for periods of no gage-height record and those for Aug. 23 to Sept. 16, which are poor. Discharge measurements generally made twice a month. Diversions above station for irrigation.

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

2.0 17  
2.4 30

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	22	23	23	23	24	24	26	24	22	19	20	20
2	22	23	23	23	24	24	26	24	22	20	20	20
3	22	23	23	23	25	24	24	24	22	19	20	20
4	22	23	23	23	25	25	24	24	22	19	20	22
5	22	23	23	23	25	23	24	24	21	19	22	24
6	22	23	23	23	25	24	24	24	21	19	22	22
7	22	23	22	23	24	25	24	23	21	19	19	22
8	21	23	23	23	24	26	24	23	21	19	18	23
9	21	24	23	24	25	25	24	23	21	19	18	26
10	21	24	23	24	24	25	24	23	19	20	18	26
11	21	23	23	24	24	26	25	23	18	20	18	24
12	21	23	23	18	24	28	25	23	18	19	18	22
13	22	23	23	18	24	26	23	22	17	20	18	22
14	22	23	23	18	24	26	23	22	17	20	18	21
15	22	23	23	20	24	26	23	22	17	19	20	21
16	22	24	23	22	24	25	22	22	18	19	20	22
17	22	24	23	23	24	25	22	22	18	20	20	22
18	23	24	23	25	24	24	23	22	18	19	27	22
19	23	24	24	25	24	25	23	22	18	20	25	22
20	24	24	24	25	24	24	24	22	20	20	22	24
21	24	24	24	25	25	25	25	22	20	20	21	29
22	23	23	24	25	25	24	24	21	20	20	21	30
23	23	23	23	25	25	23	24	22	20	19	20	27
24	23	23	23	25	24	24	24	22	20	19	20	25
25	23	23	23	24	24	24	24	22	19	20	20	23
26	23	23	23	24	24	25	24	23	20	19	19	23
27	23	23	22	24	23	26	24	23	20	25	19	23
28	23	23	22	24	24	26	24	23	19	21	19	22
29	23	23	22	24	-	26	24	22	19	20	21	22
30	23	23	23	24	-	26	24	22	19	20	21	22
31	23	-	23	24	-	26	-	22	-	20	20	-
Total	693	698	713	718	679	775	718	702	587	611	624	693
Mean	22.4	23.3	23.0	23.2	24.2	25.0	23.9	22.6	19.6	19.7	20.1	23.1
Ac-ft	1,370	1,380	1,410	1,420	1,350	1,540	1,420	1,390	1,160	1,210	1,240	1,370

Calendar year 1962: Max - Min - Mean - Ac-ft -  
Water year 1962-63: Max 30 Min 17 Mean 22.5 Ac-ft 16,260

Peak discharge (base, 100 cfs).--No peak above base.

Note.--No gage-height record Jan. 11 to Feb. 1, Feb. 9, 10, June 15-18, July 11-16, 28-31.

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 1963.

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.--13 years, 33.8 cfs (24,470 acre-ft per year).

Extremes.--Maximum discharge during year, 3,260 cfs Sept. 7 (gage height, 8.53 ft), from rating curve extended above 46 cfs on basis of slope-area measurement at gage height 8.40 ft and contracted-opening measurement at gage height 10.21 ft; no flow July 4-9, July 20 to Aug. 3.

1950-63: Maximum discharge, 14,300 cfs May 16, 1957; maximum gage height, 10.21 ft June 25, 1962; no flow at times in 1952-54, 1959-61, 1963.

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.--Twelve discharge measurements furnished by Bureau of Reclamation.

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	21	25	35	31	b35	35	27	26	17	1.6	0	19
2	23	26	35	31	b54	38	26	26	18	.2	0	18
3	23	27	35	31	b60	35	28	26	16	.1	0	48
4	19	30	34	35	61	38	30	25	16	0	228	32
5	19	29	33	36	51	55	29	25	14	0	61	27
6	20	28	35	38	46	38	26	19	12	0	9.5	23
7	24	28	35	33	38	37	25	18	11	0	411	396
8	26	31	35	30	35	42	26	20	12	0	195	129
9	24	32	35	31	37	44	26	20	10	0	39	38
10	19	32	33	22	33	47	26	19	10	19	28	26
11	19	30	33	20	b31	52	27	13	6.0	19	22	26
12	21	30	34	18	b30	57	27	7.4	5.2	160	25	25
13	22	30	35	17	b33	46	27	6.0	4.4	38	24	25
14	22	33	35	17	b35	47	27	4.8	2.4	19	22	23
15	24	36	36	18	b35	51	28	5.2	1.2	10	14	26
16	25	40	37	19	b34	46	27	7.4	3.6	1.1	8.1	27
17	27	38	37	b20	b34	42	27	11	2.6	.1	11	24
18	27	39	37	b20	34	44	27	12	19	.1	19	23
19	27	40	38	b20	34	42	27	16	16	.1	16	26
20	29	40	40	b19	35	42	27	19	12	0	12	148
21	26	38	39	b20	38	39	27	21	8.1	0	12	165
22	25	38	38	b23	37	38	26	25	8.1	0	11	44
23	25	38	b35	b25	37	38	26	23	8.8	0	10	28
24	26	38	b30	b26	40	37	26	24	7.4	0	10	26
25	26	37	b27	b26	41	34	26	25	5.2	0	11	26
26	26	37	b26	26	40	34	26	23	5.6	0	11	24
27	26	37	b27	26	35	33	26	20	7.4	0	19	25
28	26	36	b28	27	34	34	28	20	4.8	0	22	24
29	27	36	b28	28	-	34	29	17	2.8	0	43	25
30	27	36	b29	29	-----	30	26	18	1.8	0	17	26
31	25	-----	31	30	-----	26	-----	17	-----	0	18	-----
Total	746	1,015	1,045	792	1,087	1,255	806	558.8	324.2	268.3	1,328.6	1,542
Mean	24.1	33.8	33.7	25.5	38.8	40.5	26.9	18.0	10.8	8.65	42.9	51.4
Ac-ft	1,480	2,010	2,070	1,570	2,160	2,490	1,600	1,110	643	532	2,640	3,060

Calendar year 1962: Max 706 Min 0.1 Mean 29.2 Ac-ft 21,160

Water year 1962-63: Max 411 Min 0 Mean 29.5 Ac-ft 21,360

Peak discharge (base, 1,000 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
8-4	1500	7.10	1,050	9-7	1820	8.53	3,260
8-7	1920	8.31	2,760				

b Stage-discharge relation effected by ice.

Note.--No gage-height record Jan. 11-16, 26-31 (stage-discharge relation affected by ice during most of periods).

## KANSAS RIVER BASIN

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.--268 sq mi (revised).

Records available.--May 1950 to September 1963.

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.--13 years, 4.80 cfs (3,480 acre-ft per year).

Extremes.--Maximum discharge during year, 2,020 cfs Aug. 7 (gage height, 7.89 ft), from rating curve extended above 13 cfs on basis of slope-area measurement at gage height, 8.01 ft; minimum daily, 0.1 cfs for many days.

1950-63: 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-three discharge measurements furnished by Bureau of Reclamation.

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.4	0.8	1.3	1.7	2.8	1.6	1.6	1.0	0.9	0.3	0.1	0.4
2	.4	.8	1.2	1.9	2.4	1.9	1.4	.9	.8	.1	.1	.3
3	.5	.7	1.2	2.0	2.3	1.9	1.3	1.0	.7	.3	.1	95
4	.4	.7	1.2	2.0	2.8	1.0	1.4	1.0	.6	.1	.3	1.0
5	.4	.7	1.2	1.9	2.9	1.2	1.3	.9	.6	.2	.3	.4
6	.5	.9	1.3	1.9	2.8	2.0	1.2	.9	.6	.4	.1	.3
7	.4	1.0	1.3	1.9	2.5	2.0	1.2	.8	.4	.4	224	233
8	.4	.9	1.3	2.0	2.2	2.0	1.3	1.0	.3	.4	113	21
9	.3	1.0	1.3	1.8	2.1	2.1	1.1	1.3	.3	.2	1.6	1.3
10	.4	1.1	1.3	1.4	1.9	2.0	1.2	1.3	.3	.4	1.2	.8
11	.3	.9	1.1	1.3	1.3	2.6	1.1	1.2	.3	.4	.8	.6
12	.4	1.0	1.3	1.2	1.8	2.0	1.2	1.2	.3	1.5	.6	.6
13	.4	1.0	1.3	1.1	1.7	2.4	1.1	1.4	.7	1.1	.3	.6
14	.4	1.0	1.3	.9	1.8	2.6	1.0	1.6	.6	.1	.1	.6
15	.4	1.1	1.3	1.0	1.8	3.1	1.1	1.3	7.6	.1	.5	.7
16	.5	1.4	1.3	1.1	1.7	3.8	1.2	3.4	7.5	.4	.1	.7
17	.5	1.4	1.3	1.2	1.6	3.2	1.3	1.9	.8	.1	.1	.6
18	.5	1.4	1.3	1.2	1.6	3.1	1.3	1.0	.5	.2	.3	.7
19	.5	1.3	1.5	1.2	1.6	2.7	1.3	.9	.5	.1	.2	.9
20	.6	1.3	1.7	1.0	1.6	2.5	1.3	1.0	.8	.3	.2	2.1
21	.6	1.3	2.0	1.3	1.5	2.4	1.1	.9	.8	.3	.2	116
22	.5	1.3	1.8	1.6	1.5	2.4	1.0	1.0	.6	.1	.1	4.2
23	.5	1.3	1.8	1.5	1.5	2.2	1.1	1.0	.5	.1	.1	2.5
24	.5	1.3	1.5	1.4	1.5	2.1	1.3	1.1	.3	.2	.1	1.9
25	.6	1.3	1.6	1.4	1.5	2.0	1.2	1.2	.1	.2	.1	1.6
26	.6	1.3	1.5	1.4	1.5	2.0	1.2	1.0	.4	.1	.3	1.5
27	.6	1.3	1.6	1.4	1.5	2.0	1.2	.9	.5	.2	.4	1.2
28	.6	1.3	1.6	1.4	1.6	1.7	1.0	.9	.4	.3	.3	1.0
29	.7	1.3	1.7	1.5	-	1.6	.9	.8	.2	.1	.6	1.0
30	.6	1.3	1.7	1.5	-----	1.6	1.0	.8	.4	.1	.6	.8
31	.6	-----	1.7	1.6	-----	1.6	-----	.8	-----	.1	.8	-----
Total	15.0	33.4	44.5	45.7	53.3	67.3	35.9	83.1	29.3	22.4	347.6	493.3
Mean	0.48	1.11	1.44	1.47	1.90	2.17	1.20	2.68	0.98	0.72	11.2	16.4
Ac-ft	30	66	88	91	106	133	71	165	58	44	689	978

Calendar year 1962: Max 643 Min 0.2 Mean 7.63 Ac-ft 5,520  
 Water year 1962-63: Max 233 Min 0.1 Mean 3.48 Ac-ft 2,520

Peak discharge (base, 350 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-16	2245	6.11	556	9-7	1650	7.67	1,840
8-7	2145	7.89	2,020	9-21	1545	5.67	630
9-3	1615	7.03	1,370				

Note.--No gage-height record Oct. 18-31, Nov. 16 to Dec. 5, Jan. 25-31.

6-8260. Bonny Reservoir near Hale, Colo.

Location.--Lat 39°38'00", long 102°10'40", in SE½SE¼ 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 1963.

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

Extremes.--Maximum contents observed during year, 43,540 acre-ft Apr. 9 (elevation, 3,673.06 ft); minimum observed, 34,760 acre-ft Aug. 4 (elevation, 3,668.61 ft).

1950-63: 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 1962 to September 1963												
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	35.220	35.390	36.860	38.250	39.650	41.420	43.470	42.540	37.370	36.500	34.950	35.410
2	35.170	35.430	36.900	38.290	39.730	41.460	43.490	42.350	37.370	36.400	34.860	35.390
3	35.150	35.440	36.920	38.350	39.750	41.530	43.490	42.160	37.370	36.350	34.800	35.350
4	35.150	35.500	36.970	38.410	39.860	41.570	43.410	41.960	37.370	36.250	34.760	35.780
5	35.110	35.540	36.990	38.470	39.960	41.650	43.490	41.770	37.320	36.180	34.930	35.800
6	35.100	35.590	37.030	38.530	40.080	41.710	43.490	41.550	37.370	36.140	34.980	35.800
7	35.060	35.610	37.070	38.590	40.140	41.770	43.490	41.340	37.300	36.100	34.870	35.800
8	35.040	35.610	37.120	38.660	40.220	41.830	43.520	41.120	37.280	36.030	35.950	36.930
9	35.040	35.650	37.160	38.720	40.320	41.900	43.540	40.910	37.180	35.990	36.330	37.200
10	35.040	35.690	37.220	38.780	40.380	41.960	43.490	40.710	37.090	35.970	36.350	37.280
11	35.040	35.740	37.260	38.840	40.380	42.230	43.470	40.480	37.090	35.950	36.350	37.330
12	35.020	35.740	37.300	38.880	40.400	42.370	43.470	40.200	37.010	35.970	36.330	37.370
13	35.020	35.760	37.370	38.880	40.460	42.450	43.450	39.980	36.990	36.140	36.230	37.390
14	35.020	35.820	37.430	38.900	40.520	42.560	43.450	39.610	36.900	36.140	36.160	37.390
15	35.000	35.890	37.490	38.940	40.610	42.660	43.430	39.430	36.870	36.060	36.120	37.390
16	34.970	36.010	37.520	38.960	40.670	42.770	43.350	39.210	37.240	35.990	36.030	37.390
17	34.930	36.050	37.560	38.960	40.730	42.850	43.290	38.940	37.300	35.860	35.880	37.390
18	34.910	36.060	37.600	39.000	40.830	42.890	43.310	38.740	37.370	35.800	35.860	37.350
19	34.930	36.140	37.680	39.020	40.890	42.950	43.180	38.510	37.370	35.710	35.840	37.330
20	35.000	36.210	37.750	39.060	40.950	42.970	43.100	38.310	37.370	35.650	35.820	37.330
21	35.020	36.330	37.790	39.150	40.990	43.040	43.010	38.060	37.330	35.590	35.760	37.870
22	35.060	36.360	37.850	39.210	41.010	43.100	42.950	37.850	37.180	35.560	35.690	38.330
23	35.080	36.420	37.870	39.210	41.070	43.180	42.950	37.640	37.120	35.460	35.650	38.470
24	35.100	36.460	37.910	39.290	41.120	43.240	42.910	37.410	37.050	35.410	35.580	38.550
25	35.100	36.500	37.930	39.310	41.180	43.290	42.890	37.390	36.930	35.370	35.500	38.600
26	35.130	36.570	37.950	39.310	41.220	43.290	42.850	37.390	36.820	35.330	35.430	38.640
27	35.190	36.630	37.990	39.370	41.260	43.310	42.790	37.390	36.780	35.280	35.460	38.680
28	35.220	36.690	38.020	39.430	41.320	43.330	42.740	37.390	36.760	35.220	35.440	38.700
29	35.240	36.740	38.060	39.490	-	43.370	42.680	37.370	36.590	35.150	35.430	38.740
30	35.280	36.800	38.120	39.530	-----	43.390	42.580	37.370	36.540	35.100	35.410	38.740
31	35.330	-----	38.180	39.590	-----	43.410	-----	37.370	-----	35.020	35.410	-----
(†)	3,668.91	3,669.69	3,670.41	3,671.13	3,671.99	3,673.00	3,672.60	3,669.99	3,669.55	3,668.74	3,668.95	3,670.70
(‡)	+30	+1,470	+1,380	+1,410	+1,730	+2,090	-830	-5,210	-830	-1,520	+390	+3,330

Calendar year 1962..... +730  
Water year 1962-63..... +3,440

† 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 SW¼ 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 1963.

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.--12 years (1951-63), 25.0 cfs (18,100 acre-ft per year).

Extremes.--Maximum discharge during year, 112 cfs May 19 (gage height, 4.63 ft); minimum daily, 5.5 cfs for many days.

1946-48, 1951-63: 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 (3,550 acre-ft diverted in 1963).

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		

Discharge, in cubic feet per second, water year October 1962 to September 1963

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	8.2	82	7.0	5.5	5.5	6.5
2	6.5	6.5	6.2	6.2	6.5	6.5	8.2	102	6.5	5.8	5.5	6.5
3	6.5	6.5	6.5	6.2	6.5	6.5	7.0	99	6.5	5.5	5.5	7.6
4	7.0	6.5	6.2	6.2	6.5	6.5	7.0	99	6.5	5.8	5.8	7.6
5	7.0	6.5	6.2	6.2	6.5	6.5	6.2	102	6.5	5.8	6.2	7.6
6	7.0	6.5	6.2	6.2	6.5	6.5	6.2	102	6.5	6.2	6.2	7.0
7	6.5	6.5	6.2	6.2	6.5	6.5	6.2	102	6.2	6.2	7.0	9.8
8	6.5	7.0	6.2	6.2	6.5	6.5	6.5	102	6.2	6.2	6.5	8.7
9	7.0	6.5	6.2	6.2	6.5	6.5	19	106	6.2	6.5	6.2	7.6
10	6.5	6.5	6.2	6.2	6.2	6.5	31	106	6.2	7.0	6.2	7.0
11	6.5	6.5	6.5	a 6.2	6.2	6.5	32	109	6.5	6.5	6.2	7.0
12	6.5	6.5	6.5	a 6.2	6.2	6.5	32	109	6.5	6.5	6.2	7.0
13	6.5	6.5	6.5	a 6.2	6.2	6.5	32	109	6.2	6.5	6.5	7.0
14	6.5	6.5	6.5	a 6.2	6.2	6.5	34	109	6.2	6.5	6.5	6.5
15	6.5	7.0	6.5	a 6.3	6.2	6.5	34	109	7.0	7.6	6.5	6.5
16	6.5	7.0	6.5	a 6.5	6.2	7.0	32	109	8.7	7.6	6.5	6.5
17	6.5	6.5	6.5	6.5	6.2	6.2	32	109	7.0	7.0	6.2	6.2
18	6.5	7.0	7.0	6.5	6.2	6.5	32	109	6.5	6.5	6.5	6.2
19	6.5	7.0	7.0	6.5	6.2	6.5	32	109	6.5	6.2	6.2	6.2
20	6.5	7.0	7.0	6.5	6.2	6.5	32	106	6.2	6.2	6.2	6.5
21	6.2	7.0	6.5	6.5	6.2	6.5	32	106	6.5	5.8	6.2	7.0
22	6.5	6.5	7.0	6.5	6.2	7.0	32	106	6.5	5.5	6.2	6.2
23	6.5	6.5	7.0	6.5	6.2	7.0	31	106	6.5	5.5	6.2	6.2
24	6.5	6.5	6.5	7.0	6.2	7.0	31	54	6.2	5.5	6.2	5.8
25	6.5	6.5	6.2	7.0	6.5	7.0	31	8.2	5.8	5.5	6.2	5.8
26	6.5	6.5	6.2	7.0	6.5	7.6	29	7.6	5.8	5.5	6.5	5.8
27	7.0	7.0	6.2	7.0	6.5	7.6	31	7.6	5.8	5.5	6.5	5.8
28	7.0	6.5	6.2	7.0	6.5	7.6	31	7.0	5.5	5.5	6.5	5.8
29	7.0	6.5	6.2	7.0	-	7.6	32	8.2	5.5	5.5	6.5	5.8
30	6.5	6.5	6.2	7.0	-----	7.6	31	7.0	5.5	5.5	6.5	5.8
31	7.6	-----	6.2	7.0	-----	8.2	-----	7.0	-----	5.5	6.5	-----
Total	205.8	199.0	199.2	201.4	178.0	210.9	740.5	2,513.6	191.2	188.4	194.1	201.5
Mean	6.64	6.63	6.43	6.50	6.36	6.80	24.7	81.1	6.37	6.08	6.26	6.72
Ac-ft	408	395	395	399	353	418	1,470	4,990	379	374	385	400

Calendar year 1962: Max 117 Min 5.5 Mean 21.6 Ac-ft 15,620

Water year 1962-63: Max 109 Min 5.5 Mean 14.3 Ac-ft 10,370

a No gage-height record.

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 1963. 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.--17 years, 41.4 cfs (29,970 acre-ft per year).

Extremes.--Maximum discharge during year, 248 cfs May 21 (gage height, 2.99 ft); minimum not determined.

1946-63: 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 Nov. 1 to May 3, which are poor. No diversion 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	1.3	39
.7	7.5	2.0	110
1.0	21	3.0	250

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7.5							40	153	49	18	24
2	7.5							46	165	49	26	20
3	7.2							65	*167	46	24	18
4	7.0							80	153	50	24	17
5	7.0							88	147	48	30	17
6	6.8							117	138	45	30	*27
7	6.8							132	138	46	29	36
8	6.8							143	134	46	35	28
9	6.2							188	148	*52	28	23
10	6.2							182	121	47	26	20
11	*6.2							198	104	43	35	20
12	6.2							200	92	38	*27	20
13	6.2							175	98	35	24	18
14	6.2							178	98	32	21	17
15	6.2							174	99	31	18	16
16	7.0	4	3.5	3	4.5	4	15	*204	147	30	19	17
17	8.7							200	132	29	20	17
18	9.5							211	135	28	25	16
19	9.1							218	139	26	18	16
20	10							217	*123	25	16	16
21	11							216	110	24	16	16
22	11							205	102	24	*16	15
23	8.7							210	97	24	19	15
24	7.9							*206	90	*27	20	14
25	*7.2							194	69	23	18	13
26	6.5							175	60	22	20	*13
27	6.6							168	56	20	45	11
28	6.6							168	55	20	39	10
29	6.5							167	52	17	27	10
30	6.8							176	51	14	24	9.9
31	7.0							172		17	24	
Total	230.1	120	108.5	93	126.0	124	450	5,113	3,373	1,027	761	529.9
Mean	7.42	4	3.5	3	4.5	4	15	165	112	33.1	24.5	17.7
Ac-ft	456	238	215	184	250	246	893	10,140	6,690	2,040	1,510	1,050

Calendar year 1962: Max 398 Min - Mean 54.3 Ac-ft 39,330  
 Water year 1962-63: Max 218 Min - Mean 33.0 Ac-ft 23,910

\* Discharge measurement made on this day.

Note.--No gage-height record Nov. 3 to May 3 (stage-discharge relation affected by ice during most of period), July 11, 12, 26, Aug. 16.

## 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 1963.

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.--17 years, 29.2 cfs (21,140 acre-ft per year).

Extremes.--Maximum discharge during year, 123 cfs June 14 (gage height, 3.15 ft); minimum not determined.

1946-63: 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 Apr. 12 to May 8, which are fair, and 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. 11

Apr. 12 to Sept. 30

2.3 7.5  
2.4 13

2.1 2.2  
2.2 6.0  
2.3 12  
2.6 42  
3.0 99

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9.2	6						11	72	55	17	23
2	*9.2	5.5						15	76	55	15	19
3	8.6	5					(*)	15	62	55	24	18
4	8.6	4.5	(*)				3	23	*60	51	26	16
5	8.6	4.5			(*)	(*)		29	59	51	41	16
6	8.6	4						38	58	48	43	19
7	8.6	*4						45	62	48	*43	24
8	8.6	4.5		(*)				*47	68	42	56	20
9	8.6	5					4	52	67	*45	45	18
10	8.6	6						42	51	47	42	*18
11	8.6	6						50	51	46	50	18
12	9.2	5					4.9	47	65	47	43	16
13	8.6	4.5					6.0	46	83	39	35	16
14	9.2	4					7.8	48	91	34	34	16
15	9.2	3.5					7.8	48	24	32	31	16
16	*10	3.5	4	3	4.5	4	6.6	64	93	31	30	15
17	12	3.5					6.6	77	78	30	31	14
18	12	3.5					6.6	74	78	27	32	13
19	12	3.5					7.2	74	*77	25	27	12
20	12	3.5					7.2	74	76	24	25	16
21	12	4					7.2	*72	82	24	24	16
22	11						7.2	62	80	24	25	14
23	11						7.2	59	78	24	24	12
24	11						7.2	64	74	*25	27	11
25	10	5					7.2	71	70	24	22	11
26	9						9.6	71	68	23	22	11
27	8						14	68	65	21	28	11
28	7						11	*74	64	19	25	10
29	6						11	76	62	18	27	10
30	6						11	80	55	17	21	10
31	6							76		16	24	
Total	287.0	138.5	124	93	126	124	191.3	1,692	2,119	1,067	961	459
Mean	9.26	4.62	4	3	4.5	4	6.38	54.6	70.6	34.4	31.0	15.3
Ac-ft	569	275	246	184	250	246	379	3,360	4,200	2,120	1,910	910

Calendar year 1962: Max 213 Min - Mean 32.8 Ac-ft 23,760  
Water year 1962-63: Max 94 Min - Mean 20.2 Ac-ft 14,650

Peak discharge (base, 150 cfs).--No peak above base.

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 26 to Nov. 19, Nov. 22 to Dec. 3. No gage-height record Nov. 20, 21, Dec. 4 to Apr. 11 (stage-discharge relation affected by ice during most of periods).

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

Note.--Records for the 1963 water year not available in time for inclusion in this report. They will be published in a subsequent annual report.



## 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 1963. 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.--53 years (1910-63), 352 cfs (254,800 acre-ft per year).

Extremes.--Maximum discharge during year, 1,380 cfs May 21 (gage height, 4.06 ft); minimum not determined.

1895, 1897-99, 1910-63: Maximum discharge, 5,360 cfs June 28, 1957 (gage height, 7.20 ft); minimum not determined.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Discharge measurements generally made twice a month. Diversions 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)

1.9	96	3.0	480
2.1	142	3.5	840
2.5	262	4.1	1,420

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	177	128					115	183	614	656	285	304
2	177	128					132	189	614	678	177	281
3	171	125					186	207	634	694	204	277
4	168	128					216	255	654	742	248	273
5	201	125					219	270	670	813	316	277
6	189	125					245	385	570	822	332	289
7	165	118					300	492	504	840	390	324
8	158	105					262	546	522	813	405	344
9	140	107					195	649	635	726	372	292
10	235	132					183	1,100	558	498	368	222
11	168	123					174	1,060	510	395	415	219
12	150	105					186	1,060	475	380	364	238
13	145	105					198	1,040	486	352	356	204
14	123	105					216	1,020	564	320	328	198
15	128	105					222	993	656	285	289	195
16	135	105	125	82	88	98	213	1,050	930	252	273	192
17	158	107					216	1,160	885	262	281	189
18	158	100					225	1,260	777	235	289	189
19	152	b1110					177	1,340	726	219	277	186
20	165	b130					171	1,300	686	210	340	201
21	163						165	1,320	642	207	795	213
22	158						155	1,260	582	480	742	207
23	150						150	957	534	734	750	201
24	147						168	831	450	777	750	198
25	145						189	768	405	750	718	192
26	140						259	726	390	726	686	177
27	142						262	642	376	726	777	160
28	140						210	570	804	702	768	155
29	137						192	642	726	678	718	150
30	132						195	656	686	663	600	147
31	128							649		656	304	
Total	4,845	3,616	3,875	2,542	2,464	3,038	5,996	24,580	18,265	17,291	13,917	6,694
Mean	156	121	125	82	88	98	200	793	609	558	449	223
Ac-ft	9,610	7,170	7,690	5,040	4,890	6,030	11,890	48,750	36,230	34,300	27,600	13,280

Calendar year 1962: Max 2,090 Min - Mean 528 Ac-ft 381,900  
 Water year 1962-63: Max 1,340 Min - Mean 293 Ac-ft 212,500

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 21 to Apr. 1 (stage-discharge relation affected by ice during most of period), June 3, 4.

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 1963. 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.--17 years, 71.0 cfs (51,400 acre-ft per year).

Extremes.--Maximum discharge during year, 327 cfs May 20 (gage height, 2.32 ft); minimum not determined.

1946-63: 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 ice effect or 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)

0.5	15	1.4	102
.6	20	1.8	184
.9	44	2.2	290

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	31	20						30	174	101	33	62
2	31	18						32	189	101	34	58
3	30	18						36	145	98	40	54
4	24	18						44	134	101	56	51
5	23	18						51	*149	118	65	*50
6	24	*18						63	151	102	60	55
7	24	b16						83	160	102	53	65
8	24	b12					15	104	165	91	49	61
9	24	b14						130	158	*89	55	57
10	24	16						113	120	95	64	54
11	*24							134	110	85	108	52
12	24							128	132	76	*91	50
13	21							126	186	70	75	49
14	21							136	216	65	66	47
15	22							*115	213	62	62	46
16	24		12	10	11	12		17	174	208	60	59
17	27						15	201	165	61	61	40
18	26						16	251	177	59	65	40
19	26						17	256	165	56	60	38
20	26						18	270	*158	53	56	43
21	24	15					18	254	177	54	53	52
22	24						18	189	174	57	*51	47
23	24						19	186	172	51	52	43
24	23						20	*182	160	*53	55	40
25	*21						22	165	153	47	51	39
26	21						26	172	145	44	52	*37
27	20						29	186	136	42	72	34
28	20						26	198	128	40	67	33
29	20						24	203	113	38	60	33
30	20						*26	211	105	35	56	32
31	20							206		34	56	
Total	737	468	372	310	308	372	536	4,629	4,738	2,140	1,837	1,404
Mean	23.8	15.6	12	10	11	12	17.9	149	158	69.0	59.3	46.8
Ac-ft	1,460	928	738	615	611	738	1,060	9,180	9,400	4,240	3,640	2,780

Calendar year 1962: Max 453 Min - Mean 86.2 Ac-ft 62,410

Water year 1962-63: Max 270 Min - Mean 48.9 Ac-ft 35,390

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

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 10 to Apr. 19 (stage-discharge relation affected by ice during most of period).

## ARKANSAS RIVER BASIN

7-S90. Cottonwood Creek below Hot Springs, near Buena Vista, Colo.

Location.--Lat 38°48'46", long 106°13'18", in SE¼SE¼ 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 5½ miles southwest of Buena Vista.

Drainage area.--65 sq mi.

Records available.--October 1910 to September 1923, August 1949 to September 1963. 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.--27 years, 58.9 cfs (42,640 acre-ft per year).

Extremes.--Maximum discharge during year, 138 cfs May 12, 19 (gage height, 2.20 ft); minimum, 19 cfs Mar. 14 (gage height, 1.38 ft). 1910-23, 1949-63: 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.

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

1.3	16
1.5	29
1.7	49
1.9	81
2.2	138

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	16	37	31	28	28	23	24	33	a 94	54	33	42
2	*36	37	30	28	27	23	23	34	a 98	54	34	40
3	37	37	30	27	26	23	*23	36	a 92	52	36	39
4	37	36	*31	26	26	22	23	41	*90	52	42	39
5	37	34	30	26	*26	*22	23	47	89	52	42	38
6	38	34	31	26	26	23	23	61	83	48	39	42
7	38	*33	31	25	26	22	24	74	83	46	*38	54
8	39	33	31	*24	26	22	27	*85	83	50	38	49
9	39	34	30	25	26	22	26	98	89	*60	41	46
10	39	34	29	26	26	22	26	89	85	56	54	*45
11	39	34	29	25	25	22	26	113	76	49	60	47
12	39	32	30	25	25	22	28	117	74	48	56	45
13	39	32	29	26	24	22	29	96	78	45	55	44
14	39	32	29	26	24	21	32	100	83	44	48	42
15	40	33	29	26	24	21	34	83	85	42	44	41
16	*41	33	29	26	24	21	29	110	96	42	44	40
17	45	32	29	26	24	21	28	119	100	42	45	40
18	45	31	29	26	24	21	27	121	83	41	52	40
19	44	31	30	26	24	21	26	123	*74	40	45	39
20	40	32	30	26	24	21	26	121	72	40	44	41
21	39	32	29	26	24	21	25	119	71	42	45	45
22	38	32	29	25	24	21	24	*115	71	42	46	40
23	38	31	29	25	24	22	24	115	71	40	47	37
24	38	32	29	26	24	23	26	110	67	*39	45	36
25	38	32	28	26	24	22	28	100	64	38	42	35
26	37	32	28	26	24	22	30	94	a 64	37	42	34
27	36	32	29	26	24	22	35	89	a 62	36	45	34
28	36	31	29	26	23	24	31	*87	61	34	44	34
29	36	30	28	26	24	24	28	89	58	34	41	34
30	37	31	28	26	-----	24	29	a 100	56	34	41	33
31	37	-----	28	26	-----	23	-----	a 98	-----	33	41	-----
Total	1,197	986	911	803	696	685	807	2,817	2,352	1,366	1,369	1,215
Mean	38.6	32.9	29.4	25.9	24.9	22.1	26.9	90.9	78.4	44.1	44.2	40.5
Ac-ft	2,370	1,960	1,810	1,590	1,380	1,360	1,600	5,590	4,670	2,710	2,720	2,410

Calendar year 1962: Max 358 Min 19 Mean 73.3 Ac-ft 53,070  
 Water year 1962-63: Max 123 Min 21 Mean 41.7 Ac-ft 30,170

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

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

## 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 1963. 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.--57 years (1898-99, 1901-3, 1909-63), 622 cfs (450,300 acre-ft per year).

Extremes.--Maximum discharge during year, 1,950 cfs May 20 (gage height, 2.85 ft); minimum daily, 150 cfs Jan. 13.

1895-1903, 1909-63: 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 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 (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 Sept. 21-30)

0.5	265
1.0	530
2.0	1,240
3.0	2,120

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	431	404	398	300	365	310	326	365	1,050	884	870	653
2	426	414	409	300	338	296	316	365	1,000	919	519	618
3	426	420	382	310	316	306	301	376	1,050	961	548	590
4	414	414	382	320	321	301	426	409	1,010	1,010	578	560
5	442	414	370	320	326	288	436	464	954	1,100	639	618
6	448	414	404	310	326	292	464	519	919	1,140	653	618
7	409	409	398	300	321	301	524	695	856	1,170	653	660
8	404	414	426	300	348	301	590	821	905	1,180	702	674
9	392	431	420	300	354	316	464	926	1,010	1,060	660	681
10	420	436	376	290	370	326	387	1,320	968	968	793	584
11	426	464	360	200	365	306	343	1,380	800	716	772	542
12	376	398	360	160	321	278	354	1,440	751	674	828	554
13	376	398	365	150	301	288	348	1,410	744	639	821	542
14	382	398	370	170	306	278	370	1,370	863	604	765	524
15	365	404	365	210	321	278	387	1,240	1,090	566	681	519
16	382	404	382	235	321	283	387	1,300	1,330	524	534	508
17	436	387	387	230	301	274	376	1,430	1,400	497	566	486
18	458	387	354	210	316	283	382	1,660	1,240	475	578	470
19	458	392	376	180	310	274	360	1,810	1,020	453	578	458
20	458	376	360	210	310	278	338	1,880	947	536	597	453
21	458	392	360	250	310	288	338	1,840	940	674	933	404
22	453	376	376	240	301	292	332	1,670	863	723	989	365
23	448	376	376	270	296	306	306	1,400	849	961	989	365
24	448	376	360	240	306	332	326	1,140	814	996	1,000	360
25	442	392	354	230	316	343	354	1,050	772	1,020	982	343
26	442	398	250	240	306	332	365	975	758	968	954	338
27	436	376	270	250	316	332	475	961	856	954	1,010	316
28	431	376	310	260	326	338	436	891	1,130	940	1,060	301
29	414	370	320	316	360	392	954	1,060	926	926	1,040	283
30	404	382	330	321	360	382	1,010	989	912	1,020	1,020	274
31	392	-----	320	332	-----	360	-----	1,050	-----	926	765	-----
Total	13,097	11,992	11,270	7,954	9,034	9,500	11,585	34,121	28,938	26,076	24,077	14,661
Mean	422	400	364	257	323	306	386	1,101	965	841	777	489
Ac-ft	25,980	23,790	22,350	15,780	17,920	18,840	22,980	67,680	57,400	51,720	47,760	29,080

Calendar year 1962: Max 3,400 Min 250 Mean 849 Ac-ft 614,400  
Water year 1962-63: Max 1,880 Min 150 Mean 554 Ac-ft 401,300

Note.--Stage-discharge relation affected by ice Dec. 26 to Jan. 28 (no gage-height record Dec. 28 to Jan. 2, Jan. 11-20).

## 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 1963.

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, 1,910 cfs May 20 (gage height, 5.57 ft); minimum daily, 110 cfs Jan. 12.  
1961-63: Maximum discharge, 3,620 cfs June 14, 1962 (gage height, 6.71 ft); minimum daily, that of Jan. 12, 1963.

Remarks.--Records good except those for period 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 24,000 acres, and return flow from irrigated areas.

Rating table, except periods of ice affect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used May 6-11)

2.3	102	4.0	630
2.6	150	5.0	1,340
3.0	250	6.0	2,450
3.5	420		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	373	334	359	295	362	253	274	328	975	776	734	540
2	366	331	359	295	334	259	253	324	926	807	408	508
3	362	331	359	307	301	268	232	334	961	842	432	476
4	356	324	362	320	298	268	338	370	912	891	468	444
5	380	328	356	314	298	238	362	412	856	905	532	448
6	388	324	373	295	295	250	400	432	835	1,020	544	516
7	356	328	373	295	289	253	448	558	758	1,060	540	544
8	338	331	373	301	289	250	516	675	794	1,120	598	544
9	328	342	380	310	295	250	412	752	884	975	549	544
10	345	345	352	286	298	238	320	1,100	863	870	670	476
11	370	352	338	114	289	232	265	1,220	686	635	626	420
12	320	314	328	110	215	235	259	1,300	650	603	686	424
13	320	307	328	120	259	241	274	1,250	650	572	670	416
14	324	307	320	142	268	235	307	1,220	746	540	630	396
15	314	338	320	170	283	250	324	1,150	1,000	508	554	396
16	328	348	328	180	289	250	328	1,190	1,220	464	472	376
17	396	338	331	190	271	250	310	1,350	1,340	440	452	352
18	432	334	328	180	280	256	304	1,580	1,190	416	460	334
19	428	345	345	160	274	250	298	1,740	968	384	464	328
20	440	352	328	190	274	253	268	1,840	877	370	484	331
21	424	384	320	250	277	256	253	1,800	849	370	740	388
22	408	370	324	280	268	259	247	1,630	782	396	863	373
23	396	362	320	220	268	274	238	1,380	752	776	856	366
24	392	359	317	230	268	292	259	1,120	728	821	870	359
25	384	352	268	245	268	298	292	1,040	675	863	849	370
26	380	352	178	235	262	286	320	961	665	821	828	362
27	370	352	292	230	262	283	428	947	728	800	863	342
28	362	345	304	240	253	286	408	877	1,060	794	940	317
29	348	345	304	260	-	304	356	933	968	776	898	295
30	345	356	310	280	-----	289	331	961	912	764	912	289
31	338	-----	295	320	-----	280	-----	989	-----	770	645	-----
Total	11,411	10,230	10,172	7,364	7,887	8,086	9,624	31,763	26,210	22,149	20,237	12,274
Mean	368	341	328	238	282	261	321	1,025	874	714	653	409
Ac-ft	22,630	20,290	20,180	14,610	15,640	16,040	19,090	63,000	51,990	43,930	40,140	24,350

Calendar year 1962: Max 3,520 Min 178 Mean 857 Ac-ft 620,600  
Water year 1962-63: Max 1,840 Min 110 Mean 486 Ac-ft 351,900

Note.--No gage-height record Jan. 13-31 (stage-discharge relation affected by ice during part of period).

7-950. Grape Creek near Westcliffe, Colo.

Location (revised).--Lat 38°11'10", long 105°28'59", in NW¼ sec. 31, T.21 S., R.72 W., on left bank 0.5 mile upstream from water line of De Weese Reservoir at elevation 7,665 ft, 0.5 mile downstream from Swift Creek, and 3.6 miles northwest of Westcliffe.

Drainage area.--320 sq mi.

Records available.--October 1924 to September 1961, October 1962 to September 1963. Monthly discharge only for some periods, published in WSP 1311.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 7,690 ft, revised (from topographic map). Prior to Mar. 17, 1939, at site 30 ft upstream at same datum.

Average discharge.--38 years, 31.7 cfs (22,950 acre-ft per year).

Extremes.--Maximum discharge during year, 114 cfs Sept. 8 (gage height, 1.32 ft); minimum daily, 1.5 cfs June 11-15, July 19, Aug. 1, 2, 1924-61, 1962-63: Maximum discharge, 1,960 cfs Apr. 23, 1942 (gage height, 5.26 ft), from rating curve extended above 830 cfs; minimum daily, 0.1 cfs June 19-22, 1936.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Diversions above station for irrigation of about 15,000 acres.

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

0.3	0	0.6	17
.4	2.5	.7	28
.5	8.0		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	11	8.9					19	5.8	2.0	1.8	1.5	4.7
2	9.8	8.9					20	4.2	2.2	2.2	1.5	4.2
3	9.8	8.9					19	*4.2	2.2	*2.0	1.8	3.6
4	9.8	8.9					19	4.2	2.0	2.2	1.8	*4.2
5	8.9	8.0					18	4.2	*1.8	2.5	2.2	2.5
6	7.4	8.0					18	4.2	1.8	2.5	4.2	3.6
7	8.0	8.0					16	4.2	1.8	2.2	6.4	5.8
8	8.0	8.8					*13	4.2	1.8	2.5	*3.6	20
9	7.4	*9.4					7.4	3.0	1.8	2.5	6.9	3.6
10	7.4	9.4					7.4	3.0	1.8	*2.2	4.7	5.8
11	*6.9						7.4	3.0	1.5	2.2	5.2	2.2
12	7.4						6.4	2.5	1.5	2.2	6.9	1.8
13	6.9						6.4	2.2	1.5	2.2	8.0	3.6
14	6.9						6.4	2.2	1.5	2.0	8.0	3.6
15	6.9						4.2	*2.2	1.5	2.0	4.2	3.0
16	6.9		6.5	5.5	9	22	*4.7	2.2	2.5	1.8	3.6	3.0
17	8.9						5.4	2.2	4.2	1.8	5.2	3.0
18	8.9						6.0	2.2	4.2	1.8	4.2	2.5
19	9.8						6.5	2.2	3.6	1.5	4.2	2.5
20	14						7.0	2.2	*2.2	1.8	4.2	3.0
21	9.8	8.2										
22	*8.0					(*)	7.4	2.0	2.0	2.0	3.6	3.6
23	8.0						6.9	2.2	1.8	2.0	3.6	3.6
24	8.0						7.4	2.2	1.8	2.0	*4.7	3.0
25	8.0						*7.4	*2.0	1.8	*1.8	5.8	3.0
							7.4	2.0	1.8	1.8	6.9	3.0
26	8.0						7.4	2.0	1.8	2.0	5.2	3.0
27	8.9						5.8	2.0	1.8	2.2	6.4	3.0
28	8.0						5.8	2.0	1.8	3.6	4.7	3.0
29	8.9						5.8	2.2	1.8	2.2	4.7	3.0
30	8.9						5.8	2.2	1.8	1.8	4.7	*4.2
31	8.9							2.0		1.8	5.2	
Total	264.4	251.2	201.5	170.5	252	682	284.3	87.1	61.6	65.1	143.8	118.6
Mean	8.53	8.37	6.5	5.5	9	22	9.48	2.81	2.05	2.10	4.64	3.95
Ac-ft	524	498	400	338	500	1,350	564	173	122	129	285	235

Calendar year 1962: Max - Min - Mean - Ac-ft -  
Water year 1962-63: Max - Min 1.5 Mean 7.07 Ac-ft 5,120

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

\* Discharge measurement made on this day.

Note.--No gage-height record Nov. 7 to Apr. 5 (stage-discharge relation affected by ice during most of period), Apr. 11, 17-20.

## ARKANSAS RIVER BASIN

7-960. Arkansas River at Canon City, Colo.

Location.--Lat 38°26'02", long 105°15'24", in SE¼SE¼ sec.31, 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 1963. Monthly discharge only for some periods, published in WSP 1311. Published as "near Canyon" 1900-1906.

Gage.--Water-stage recorder. Datum of gage is 5,342.13 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 2.49 ft higher. Oct. 1, 1957, to Nov. 15, 1962, water-stage recorder at present site at datum 1.49 ft higher.

Average discharge.--75 years, 719 cfs (520,500 acre-ft per year).

Extremes.--Maximum discharge during year, 7,070 cfs Aug. 25 (gage height, 7.73 ft), from rating curve extended above 1,700 cfs; maximum gage height, 8.63 ft Dec. 29 (backwater from ice); minimum daily discharge, 114 cfs Apr. 24. 1888-1963: 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 ice effect or no gage-height record, which are poor. Discharge measurements made two or more times 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 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. 28, Apr. 7, 8, 24, 25, May 10, 11, June 5, 6)

Nov. 16 to Sept. 30

1.9	100
2.4	220
3.0	460
4.0	1,150
5.0	1,950

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	324		337			241	282	214	934	738	787	504
2	303		353			238	250	185	913	724	521	450
3	288		345			247	217	217	941	745	301	383
4	285		337		380	254	194	238	899	801	374	353
5	288		325			238	264	321	745	920	383	321
6	303		305			250	282	305	703	955	455	420
7	294		333		370	250	329	396	647	1,050	450	482
8	279	320	317		321	250	406	575	640	1,220	440	581
9	276		321		289	247	365	634	703	1,020	504	466
10	270		325		293	247	250	875	843	920	535	440
11	282		325		285	247	211	1,230	682	682	626	341
12	276		337		295	238	149	1,290	551	515	696	313
13	288		333		305	241	154	1,290	498	482	755	325
14	285		321		297	235	185	1,250	563	435	738	297
15	279		333		285	247	208	1,180	843	401	551	293
16	285	321	337	290	289	247	208	1,110	1,110	357	435	282
17	294	317	337		268	250	196	1,270	1,410	309	357	264
18	309	297	333		257	254	175	1,530	1,300	285	357	223
19	327	293	321		260	257	180	1,690	1,110	244	365	208
20	364	309	337		264	254	168	1,810	913	241	341	226
21	345	370	313		247	260	163	1,780	801	232	445	238
22	330	378	309		226	260	151	1,720	745	226	885	278
23	324	357	313		235	264	133	1,590	654	505	871	250
24	321	345	333		254	285	114	1,250	640	808	878	244
25	318	361			257	309	144	1,090	588	892	1,080	238
26	318	378			250	305	172	969	545	864	871	229
27	315	349	260		254	274	199	906	539	829	864	220
28	306	341			244	278	301	843	894	801	934	199
29	306	329			-	293	250	801	983	773	913	188
30	294	329				321	226	864	885	752	1,010	172
31	291					293		906		752	841	
Total	9,367	9,874	9,700	8,990	8,325	8,074	6,526	30,329	24,222	20,478	19,571	9,428
Mean	302	329	313	290	297	260	218	978	807	661	631	314
Ac-ft	18,580	19,580	19,240	17,830	16,510	16,010	12,940	60,160	48,040	40,620	38,820	18,700

Calendar year 1962: Max 3,890 Min - Mean 883 Ac-ft 639,200  
 Water year 1962-63: Max 1,810 Min 114 Mean 452 Ac-ft 327,000

Note.--Stage-discharge relation affected by ice Dec. 25 to Jan. 11, Feb. 7, 12. No gage-height record Nov. 1-15, Jan. 12 to Feb. 6 (stage-discharge relation affected by ice during most of period).

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 1963. 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.--70 years (1886-87, 1894-1963), 712 cfs (515,500 acre-ft per year).

Extremes.--Maximum discharge during year, 8,360 cfs Aug. 14; minimum daily, 29 cfs Apr. 22. 1885-87, 1889, 1894-1963: 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 or no gage-height record, which are fair. Discharge measurements made at least 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 south-side 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 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	242	280	361	344	430	200	154	118	869	646	580	721
2	215	273	400	335	430	201	126	102	858	533	554	430
3	203	259	408	306	429	206	106	110	813	570	290	364
4	190	245	392	313	445	226	96	124	803	616	229	305
5	160	244	384	343	479	220	148	143	737	689	326	298
6	168	237	368	326	431	200	182	199	652	809	340	264
7	212	231	392	262	345	219	181	186	602	853	614	515
8	176	231	400	237	281	206	202	295	512	274	333	978
9	128	225	392	241	267	212	260	411	522	930	1,150	927
10	113	225	407	230	274	193	194	493	605	786	543	271
11	122	231	384	290	295	170	121	916	625	667	410	250
12	156	244	352		268	158	72	1,060	487	442	881	313
13	115	211	351		240	157	33	1,180	406	392	948	277
14	109	170	351		240	150	36	1,060	398	277	1,870	271
15	125	192	344		254	140	63	1,020	513	225	457	264
16	125	244	343	290	267	145	71	891	819	258	440	238
17	129	279	343		267	134	70	924	1,150	213	330	182
18	212	271	351		246	167	72	1,120	1,300	179	315	145
19	258	264	335		226	162	68	1,400	976	154	300	137
20	338	272	343		212	150	53	1,680	870	126	281	342
21	361	285	351	290	253	159	34	1,750	750	194	302	1,030
22	354	320	320		240	150	29	1,690	677	126	590	356
23	317	323	335		240	151	40	1,560	569	110	765	244
24	303	302	344		239	156	42	1,280	506	440	734	204
25	295	322	290		252	184	36	985	480	542	778	187
26	281	307	265	290	246	190	43	930	445	630	1,040	203
27	288	306			233	156	52	877	440	581	848	153
28	281	328			227	136	146	844	496	563	826	143
29	281	344			-	140	199	778	772	571	1,200	123
30	253	352			-----	173	138	814	696	562	975	119
31	260	-----	351		-----	155	-----	869	-----	553	750	-----
Total	6,770	8,017	10,717	9,027	8,256	5,366	3,067	25,816	20,348	15,211	19,999	10,254
Mean	218	267	346	291	295	173	102	833	678	491	645	342
Ac-ft	13,430	15,900	21,260	17,900	16,380	10,640	6,080	51,210	40,360	30,170	39,670	20,340

Calendar year 1962: Max 3,220 Min 109 Mean 788 Ac-ft 570,600  
 Water year 1962-63: Max 1,870 Min 29 Mean 391 Ac-ft 283,300

Note.--Stage-discharge relation affected by ice Dec. 25-30, Jan. 10 to Feb. 3 (no gage-height record Jan. 10-30).



## 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 1963.

Gage.--Water-stage recorder and Parshall flume with overflow weirs. Altitude of gage is 6,110 ft (from topographic map).

Average discharge.--5 years, 10.9 cfs (7,890 acre-ft per year).

Extremes.--Maximum discharge during year, 428 cfs Aug. 3, 6 (gage height, 3.92 ft), from rating curve extended above 50 cfs as explained below; minimum daily, 2.4 cfs July 15.

1958-63: 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, that of July 15, 1963.

Remarks.--Records fair except those for Jan. 11-31, 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 (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 12-18, Nov. 22 to Jan. 8,  
Apr. 25 to May 8, June 18, Aug. 7-9)

0.3	1.8	0.8	8.5
.4	2.9	1.0	12
.6	5.4	2.0	35

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*7.2	5.4	7.8	7.3	5.0	6.0	*5.8	5.5	6.4	8.6	8.0	6.9
2	7.2	5.4	8.1	7.2	5.5	5.7	5.7	5.5	7.8	9.6	8.0	5.8
3	7.3	5.5	7.6	7.0	5.2	6.0	5.4	5.5	7.6	9.6	3.4	5.5
4	7.3	5.5	7.5	7.0	*5.2	*5.5	5.2	6.1	*7.0	9.6	10	6.7
5	6.9	5.5	*7.2	6.9	5.2	5.7	5.4	4.4	6.4	9.6	7.0	6.1
6	6.9	5.4	7.0	6.7	5.4	6.1	5.4	5.7	7.3	9.8	23	7.0
7	6.6	*5.4	7.3	*6.6	5.2	6.1	5.2	*5.2	6.3	8.5	18	2.4
8	7.6	5.4	7.5	6.1	5.0	6.4	5.1	11	5.7	*7.0	*14	1.6
9	7.8	5.4	7.5	5.4	4.7	6.0	5.0	10	9.8	11	12	*11
10	6.3	5.4	7.8	4.6	4.7	6.0	4.8	9.5	7.8	9.6	8.8	1.6
11	5.8	5.4	7.8	3.2	4.0	6.1	4.8	10	7.5	9.0	9.3	1.4
12	6.0	5.2	7.6	2.9	4.0	6.1	5.0	9.1	7.3	9.5	14	1.1
13	5.8	5.2	8.0	2.9	3.9	6.0	5.0	9.1	7.3	9.3	28	1.1
14	5.7	5.7	8.1	4.6	4.0	6.0	5.1	8.8	9.3	5.1	9.6	7.8
15	*5.5	6.9	8.3	4.6	5.0	6.4	6.0	8.6	5.7	2.4	8.5	8.3
16	5.7	6.4	8.3	5.0	5.2	6.1	6.4	9.1	8.8	4.7	9.2	8.8
17	6.1	6.1	7.8	5.2	5.1	6.0	6.7	9.6	7.0	8.0	6.8	6.7
18	6.7	6.0	7.5	5.1	5.2	6.3	7.2	9.5	*9.4	8.5	9.8	6.4
19	6.6	6.0	7.6	5.0	5.4	6.3	7.3	9.6	5.8	8.0	7.0	6.3
20	6.3	6.3	7.6	5.0	5.4	6.3	7.2	10	4.4	17	8.0	1.9
21	7.8	6.9	7.5	4.8	5.7	6.4	7.3	*10	3.3	9.0	10	1.5
22	6.7	7.2	7.8	5.5	5.8	6.6	7.2	10	5.4	5.1	11	1.1
23	6.3	7.0	7.6	4.4	6.3	6.9	7.0	8.8	5.7	*7.6	9.6	8.3
24	6.3	6.9	7.5	5.1	6.1	6.7	6.4	5.1	6.3	9.6	8.5	*7.5
25	6.1	6.9	7.8	5.0	6.0	6.7	6.3	4.3	7.2	9.3	6.9	7.3
26	5.7	7.0	8.3	4.4	6.0	6.6	6.1	6.4	8.3	9.3	7.2	7.2
27	5.5	7.3	7.8	4.3	6.0	6.6	6.3	6.9	6.6	12	8.1	7.2
28	5.4	7.5	8.5	4.6	5.4	6.6	5.8	6.7	7.3	12	9.1	6.6
29	5.5	7.3	8.5	4.7	-	6.7	5.4	6.9	7.6	6.7	8.8	6.4
30	5.8	7.5	8.1	5.5	-----	6.7	5.5	6.9	8.1	8.5	7.6	6.0
31	5.5	-----	7.6	5.0	-----	6.4	-----	6.3	-----	8.5	6.9	-----
Total	199.9	185.0	240.9	161.6	145.6	194.0	177.0	240.1	210.4	272.0	346.7	286.8
Mean	6.45	6.17	7.77	5.21	5.20	6.26	5.90	7.75	7.01	8.77	11.2	9.56
Ac-ft	396	367	478	321	289	385	351	476	417	540	683	569

Calendar year 1962: Max 73 Min 4.6 Mean 9.33 Ac-ft 6,760

Water year 1962-63: Max 34 Min 2.4 Mean 7.29 Ac-ft 5,280

Peak discharge (base, 150 cfs)

\* Discharge measurement made on this day.

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
7-20	1400	3.50	280	8-17	1815	3.18	190
8-3	1800	3.92	428	9-7	2130	3.65	328
8-6	2330	3.92	428	9-20	1145	3.10	170
8-13	1545	3.60	310				

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 1963.

Gage.--Water-stage recorder and Parshall flume. Datum of gage is 7,080.78 ft (City of Colorado Springs bench mark).

Average discharge.--6 years, 0.61 cfs (442 acre-ft per year).

Extremes.--Maximum discharge during year, 11 cfs Oct. 28 (gage height, 0.93 ft); no flow for many days.  
1957-63: 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 for periods of no gage-height record and 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 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*g 0	0.1				0	*0.7	0.2	a 0	a 0	0	0.2
2	g .1	0				0	.6	*g .1	.1	a 0	a 0	.1
3	g .2	0				0	.7	0	a 0	a 0	a 0	.4
4	g .1	0			(*)	*0	.6	.1	*a 0	a 0	0	.7
5	.2	0	(*)			0	.6	g 0	a 0	a 0	1.4	.7
6	g .1	0				0	.5	.3	a 0	a 0	1.1	.5
7	g .1	*0		(*)		0	.4	.3	0	a 0	.6	.7
8	.5	0				0	.3	.3	0	*a 0	*.6	.7
9	g .1	0				0	.2	g 0	a 0	0	.2	*.5
10	g .1	0				0	.2	.9	.1	a 0	.4	.5
11	g .1	0				0	g 0	.9	1.8	a 0	.2	.4
12	g 0	0				0	.1	.9	1.9	a 0	.6	a 0
13	g 0	0				0	0	2.4	.7	a 0	.6	a 0
14	.1	0				0	g 0	.7	.6	a 0	.5	a 0
15	*g 0	0				0	g 0	.7	.5	a 0	.1	0
16	g 0	0				0	.1	1.1	.6	a 0	0	0
17	.1	0				0	g 0	1.2	.7	a 0	.3	a 0
18	.2	0				0	g 0	.8	*.5	a 0	.1	a 0
19	.3	0				0	g 0	.7	.5	a 0	.2	a 0
20	.2	0				0	g 0	.7	.4	a 0	.1	.2
21	g .1	0				0	g 0	*.6	a 0	.3	.4	.1
22	g .1	0				0	g 0	.4	a 0	.1	0	a 0
23	g .1	0				0	g 0	.5	a 0	*.1	.1	a 0
24	g .1	0				0	g 0	.8	a 0	.3	.2	*a 0
25	g .1	0				0	.3	.2	a 0	.2	0	a 0
26	g .1	0				0	.3	a 0	a 0	a 0	.1	a 0
27	g .1	0				0	1.3	a 0	a 0	.6	.1	a 0
28	1.8	0				0	.6	a 0	a 0	.6	.1	0
29	3.2	0			-	g 2.9	.8	a 0	a 0	.1	.3	0
30	1.4	0			-----	g 2.3	.4	a 0	a 0	a 0	.3	a 0
31	.5	-----			-----	g .3	-----	a 0	-----	.1	.1	-----
Total	10.1	0.1	0	0	0	5.5	8.7	14.8	8.4	2.4	8.7	5.7
Mean	0.33	0.003	0	0	0	0.18	0.29	0.48	0.28	0.08	0.28	0.19
Ac-ft	20	0.2	0	0	0	11	17	29	17	4.8	17	11

Calendar year 1962: Max 3.7 Min 0 Mean 0.37 Ac-ft 268

Water year 1962-63: Max 3.2 Min 0 Mean 0.18 Ac-ft 127

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

a No gage-height record.

g Computed from once-daily staff-gage readings.

## 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.--S.46 sq mi.

Records available.--July 1951 to September 1963.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 6,200 ft (from topographic map).

Average discharge.--12 years, 0.10 cfs (72 acre-ft per year).

Extremes.--Maximum discharge during year, 27 cfs June 14 (gage height, 1.53 ft), from rating curve based on computation as explained below; no flow for most of year.

1951-63: Maximum discharge, 45S 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.--Records good. 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.

Discharge, in cubic feet per second, water year October 1962 to September 1963

June 14..... 5.6

Sept. 20..... 0.2

Month	Cfs-days	Maximum	Minimum	Mean	Runoff in acre-feet
June.....	5.6	5.6	0	0.19	11
September.....	.2	.2	0	.007	.4
Calendar year 1962....	0	0	0	0	0
Water year 1962-63....	5.8	5.6	0	.02	11

Note.--Flow occurred only on days listed above.

7-1065. Fountain Creek at Pueblo, Colo.

Location.--Lat 38°16'28", long 104°36'00", 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 1963. 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.--26 years, 50.8 cfs (36,780 acre-ft per year).

Extremes.--Maximum discharge during year, 8,880 cfs Aug. 12 (gage height, 7.17 ft, from floodmark), from rating curve extended above 2,300 cfs on basis of float-area measurements at gage heights 8.00 and 9.00 ft; minimum daily, 0.3 cfs July 20.  
1922-25, 1941-63: 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 poor. Discharge measurements generally made twice a month. Diversions above station for irrigation of about 22,500 acres.

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.4	1.0	3.4	b 38	59	20	5.5	3.6	0.4	0.4	a 0.5	36
2	.5	1.0	3.6	b 36	81	20	5.0	3.6	.4	.4	a .4	33
3	.6	1.1	3.8	b 35	54	a 21	4.8	3.4	.5	.4	a .4	20
4	.6	1.2	3.4	b 43	45	a 22	4.5	3.4	.7	.4	153	17
5	.5	1.4	3.2	b 48	39	a 24	4.5	3.4	.8	.4	1.8	14
6	.5	1.4	3.2	56	35	24	4.0	3.4	.6	.4	148	11
7	.6	1.4	3.2	46	31	24	4.0	3.0	.6	.5	154	11
8	.8	1.4	3.4	41	29	24	4.0	3.0	.6	.5	2.0	457
9	.6	1.4	3.8	42	27	22	3.6	2.8	.5	.6	500	110
10	.5	1.7	4.0	41	26	22	3.6	2.8	.5	.6	2.8	739
11	.5	1.9	4.5	40	24	21	3.6	2.6	.5	.6	1.8	159
12	.6	2.2	4.8	33	20	20	3.6	2.2	.5	.6	857	101
13	.6	2.6	5.2	33	25	19	3.4	2.2	.5	.6	688	69
14	.5	3.2	5.8	33	27	17	3.6	2.2	.6	.5	489	50
15	.5	4.5	6.2	31	27	17	3.8	2.0	.9	.5	a 10	41
16	.5	4.0	6.5	30	25	17	4.2	2.0	2.0	.5	a 6	40
17	.6	6.0	7.4	29	22	17	4.2	2.2	1.0	.4	a 4	33
18	.6	6.0	8.8	29	20	17	4.2	2.0	2.6	.4	a 3.5	27
19	.6	5.8	8.8	29	19	17	4.2	2.2	1.1	.4	a 3	25
20	.6	6.0	8.3	29	19	17	4.0	1.9	.9	.3	2.8	39
21	.6	6.2	8.3	27	19	16	3.8	1.5	.8	51	2.6	110
22	.6	6.0	8.3	34	19	16	3.8	1.2	.7	1.0	2.4	85
23	.6	6.0	8.3	33	18	15	3.6	.6	.6	.8	2.2	68
24	.6	5.8	8.3	33	18	14	3.6	.5	.5	.6	2.0	53
25	.6	5.2	b 7.0	33	18	14	3.6	.5	.5	5.9	1.9	42
26	.7	5.0	b 5.8	33	18	13	3.6	a 1.2	.4	49	1.8	36
27	.8	4.5	b 7.0	33	18	11	3.6	.4	.4	1.9	1.8	30
28	.8	4.2	b 9.0	33	18	9.6	3.4	.4	.4	2.7	1.8	26
29	.8	3.6	b 25	33	-	8.3	3.4	1.3	.4	a 10	285	21
30	.8	3.6	b 45	33	-----	7.4	3.6	.6	.4	a 5	405	21
31	.9	-----	b 41	34	-----	6.2	-----	.4	-----	a 5	41	-----
Total	19.0	105.3	274.3	1,101	800	532.5	118.3	66.1	21.3	148.6	3,775.5	2,524
Mean	0.61	3.51	8.85	35.5	28.6	17.2	3.94	2.13	0.71	4.79	122	84.1
Ac-ft	38	209	544	2,180	1,590	1,060	235	131	42	295	7,490	5,010

Calendar year 1962: Max 326 Min 0.3 Mean 16.0 Ac-ft 11,600  
Water year 1962-63: Max 857 Min 0.3 Mean 26.0 Ac-ft 18,820

Peak discharge (base, 1,700 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
8- 4	1815	5.30	2,950	8-14	0745	4.57	2,500
8- 6	2300	5.38	3,150	8-29	2215	5.57	3,710
8- 9	1715	5.65	3,950	9-10	0700	4.88	1,940
8-12	2400	7.17	8,880				

a No gage-height record.

b Stage-discharge relation affected by ice.

## ARKANSAS RIVER BASIN

7-1110. Huerfano River at Manzanaras 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 Manzanaras Crossing, a quarter of a mile downstream from Manzanaras Creek and 3½ miles southwest of Redwing.

**Drainage area.**--73 sq mi.

**Records available.**--July 1923 to September 1963. 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.**--40 years, 32.9 cfs (23,820 acre-ft per year).

**Extremes.**--Maximum discharge during year, 116 cfs Aug. 13 (gage height, 1.36 ft); minimum not determined.

1923-63: 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.

**Remarks.**--Records good except those for period of no gage-height record, 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)

0.2 4.0  
.5 21  
.8 45

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	22	16					24	20	24	15	8.5	24
2	22	16					20	20	27	15	9.6	22
3	22	17					20	20	27	15	15	20
4	22	16					19	20	24	17	16	20
5	21	16					20	20	22	21	16	20
6	20	16					18	20	21	27	16	23
7	20	14					20	22	21	27	18	36
8	19	16					22	24	22	26	26	30
9	19	16					22	30	23	24	25	27
10	19	16					21	33	22	32	25	26
11	18	16				6.6	20	33	19	30	27	24
12	18	16					20	32	19	30	30	24
13	17	16					20	30	17	27	33	22
14	17	17					20	30	19	24	36	22
15	17	18					19	30	20	22	33	22
16	17	17	6.3	4.4	6.6		17	30	26	20	31	21
17	19	16					19	31	30	18	31	20
18	19	16					20	31	29	17	30	20
19	19	14					20	33	30	17	29	19
20	17	16					19	33	30	18	30	19
21	19	17				9.5	19	33	26	17	42	20
22	19	17				13	20	34	24	18	38	19
23	18	16				17	20	33	22	16	34	19
24	17	16				19	20	30	20	16	34	19
25	18	16				18	20	29	19	15	33	19
26	17	14				21	21	28	19	14	30	19
27	17	14				21	22	28	18	14	28	18
28	17	12				24	22	26	16	13	26	19
29	17	10				25	20	25	16	13	29	19
30	16	10				22	20	25	15	11	27	19
31	16					23		25		10	26	
Total	575	463	195.3	136.4	184.8	344.5	604	858	667	599	832.1	651
Mean	18.5	15.4	6.3	4.4	6.6	11.1	20.1	27.7	22.2	19.3	26.8	21.7
Ac-ft	1,140	918	387	271	367	683	1,200	1,700	1,320	1,190	1,650	1,290

Calendar year 1962: Max 96 Min - Mean 30.4 Ac-ft 21,990

Water year 1962-63: Max 42 Min - Mean 16.7 Ac-ft 12,120

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

**Note.**--No gage-height record Nov. 29 to Mar. 25 (stage-discharge relation affected by ice during most of period).

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 1963.Gage.--Water-stage recorder. Altitude of gage is 7,800 ft (from base map).Average discharge.--29 years, 25.0 cfs (18,100 acre-ft per year).Extremes.--Maximum discharge during year, 20 cfs Mar. 28 (gage height, 1.40 ft); minimum not determined.

1934-63: 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 except those for periods of ice effect or no gage-height record, which are poor. Discharge measurements generally made two or more times a month. Diversions for irrigation of about 500 acres above station.Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)

0.9	2.5
1.0	4.0
1.2	11
1.4	20

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8.8	9.8	9.4				14	7.7	9.8	4.0	3.1	4.6
2	9.1	9.8	9.8				12	7.4	9.8	4.9	3.2	4.3
3	9.1	9.8	9.4				9.8	7.0	9.1	4.3	3.2	4.3
4	8.8	9.8	9.1				10	7.4	8.4	5.2	3.4	3.8
5	8.4	9.4	8.6				10	7.7	8.0	5.5	3.4	5.2
6	8.8	9.4					9.4	8.0	7.7	4.9	3.6	5.8
7	8.8	8.8					10	8.0	7.4	4.9	5.2	7.4
8	8.4	9.4				8	11	7.7	7.4	4.6	5.5	5.5
9	8.8	9.4					11	8.0	8.0	4.6	4.9	4.9
10	8.4	9.1					10	8.4	7.7	4.0	6.4	5.2
11	8.8	9.1					9.4	8.4	7.0	3.7	5.8	6.1
12	8.8	9.1					9.1	8.4	7.0	3.8	7.4	5.5
13	8.8	9.1					9.4	8.4	7.0	3.7	6.4	4.6
14	8.8	9.4					9.8	8.4	6.7	3.4	6.1	5.2
15	8.8	9.8					9.4	8.4	6.4	3.1	5.2	5.5
16	9.1	9.8		6.5			8.2	9.4	8.4	9.1	3.0	4.6
17	10	9.4					8.5	9.1	8.4	10	3.0	4.3
18	9.8	9.4	8				8.8	8.8	8.8	8.4	2.8	4.6
19	10	9.8					8.8	8.0	9.4	8.0	2.6	4.3
20	11	10					9.1	8.8	9.4	8.4	3.6	3.7
21	10	11					11	8.4	10	7.0	4.3	3.8
22	9.4	10					12	8.0	11	6.4	3.2	7.0
23	9.1	9.8					14	8.0	10	5.8	2.8	4.0
24	9.1	9.4					15	8.4	9.1	5.5	2.6	3.8
25	9.1	9.8					14	8.0	9.1	5.5	2.6	4.3
26	9.1	9.4					14	8.0	9.4	5.8	2.6	7.0
27	9.4	9.4					13	8.0	9.8	5.5	2.6	6.1
28	9.4	9.1					14	8.0	9.8	5.2	3.0	4.9
29	9.4	9.8					16	8.0	9.8	4.6	3.0	5.5
30	9.4	9.4					15	8.0	9.8	4.0	3.1	5.2
31	9.8						15		9.8		3.1	4.9
Total	284.5	286.7	254.3	201.5	196	316.4	279.2	271.3	216.6	112.5	147.5	160.2
Mean	9.18	9.56	8.20	6.5	7	10.2	9.31	8.75	7.22	3.63	4.76	5.34
Ac-ft	564	569	504	400	389	628	554	538	430	223	293	318

Calendar year 1962: Max 160 Min - Mean 27.5 Ac-ft 19,880

Water year 1962-63: Max 16 Min - Mean 7.47 Ac-ft 5,410

Peak discharge (base, 150 cfs).--No peak above base.

Note.--Stage-discharge relation affected by ice Feb. 8-10, Feb. 19 to Mar. 5. No gage-height record Nov. 18-20, Dec. 5 to Feb. 7, Feb. 11-18, Mar. 6-18 (stage-discharge relation affected by ice during most of periods), July 26 to Aug. 5.

## 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 1963.

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.--24 years, 38.9 cfs (28,160 acre-ft per year).

Extremes.--Maximum discharge during year, 4,670 cfs Sept. 7 (gage height, 6.41 ft), from rating curve extended above 380 cfs as explained below; no flow for many days.

1939-63: 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 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0		0.9	5.1	6		0.1			0	2.7	8
2	0		1.3	4.9	7		.1			0	2.7	5
3	0	3	2.5	4.5	8		0			0	2.7	1
4	0		2.2	3.2	9		0			0	8.7	0
5	0		1.9	14	10		.1			0	4.8	0
6	0	3.2	1.3	15		10	.1			0	4.7	
7	0	1.7	1.1	12			1.8			.2	7.6	
8	0	1.0	1.9	8.1			.9			2.8	31.8	104
9	0	.6		12			.2			5.4	20	
10	0	.3		6.0			0			.5	42	
11	0	.2					0			6	11	8
12	0	.2					0			2	14	6
13	0	.2	4				0			162	13	7
14	0	.2					0			28	5	3
15	0	1.4				8	0			8.1	8	0
16	0	2.8		2			0			1.9	10	1.2
17	0	3.6			11		0			.5	11	0
18	0	4.2					0			.2	8.3	0
19	0	7.4	2.1			4.6	0			0	3.5	0
20	0	12	1.6			1.2	0			0	.8	64
21	1.2	15	3.3			6.2	0			.2	4.9	7.3
22	10	5.1	4.3			10	0			0	3.3	5
23	5	3.2	3.6			13	0			0	10	4.8
24		2.0	3.3			12	0			.2	116	3
25		1.7	4.5	1		12	0			0	10	0
26		1.4	5.7			13	0			0	11	0
27	3	1.2	5.7			9.3	0			4.9	8	0
28		1.3	5.2			4.4	0			5.2	3	0
29		1.2	4.3			1.0	0			3.1	24	0
30		1.0	4.5			.4	0			3.0	29	0
31			5.1	5		.1				2.8	10	
Total	40.2	87.1	106.3	148.6	293	251.2	3.3	0	0	281.1	727.7	630.7
Mean	1.30	2.90	3.43	4.79	10.5	8.10	0.11	0	0	9.07	23.5	21.0
Ac-ft	80	173	211	295	581	498	6.5	0	0	558	1,440	1,250

Calendar year 1962: Max 1,240 Min 0 Mean 30.6 Ac-ft 22,170  
 Water year 1962-63: Max - Min 0 Mean 7.04 Ac-ft 5,090

Peak discharge (base, 3,000 cfs).--Aug. 8 (2015) 4,540 cfs (6.30 ft); Sept. 7 (2300) 4,670 cfs (6.41 ft).

Note.--Discharge estimated except for Nov. 6 to Dec. 8, Dec. 19 to Jan. 10, Mar. 19-26, Apr. 2 to July 6, July 15-23, 25, 26, July 29 to Aug. 7, Aug. 20-23, Sept. 11, 12, 23.

## ARKANSAS RIVER BASIN

87

7-1170. Arkansas River near Nepesta, Colo.

Location.--Lat 38°10'54", long 104°09'40", in NW¼ sec.31, T.21 S., R.60 W., on right bank 100 ft downstream from diversion dam of Oxford Farmers Co. canal, 1.3 miles northwest of Nepesta, and 7.3 miles (revised) 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 1963. 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.--50 years (1913-63), 693 cfs (501,700 acre-ft per year).

Extremes.--Maximum discharge during year, 9,220 cfs Sept. 8; minimum daily, 43 cfs Apr. 23-25.

1897-1904, 1906-12, 1913-63: 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 except those for periods of no gage-height record on river, which are poor. 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 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	296	309	418	248	300	325	226	155	751	352	79	571
2	281	374	450	212	340	331	224	138	678	221	80	598
3	271	335	468	211	360	295	199	131	732	164	71	418
4	263	292	444	235	318	292	174	127	753	188	100	377
5	240	298	450	273	269	349	139	130	696	308	163	293
6	207	313	452	390	235	369	202	137	644	441	277	262
7	238	307	425	358	439	354	274	178	563	540	1,090	298
8	257	320	440	323	407	350	273	175	488	590	523	1,900
9	254	325	431	316	331	321	286	251	464	730	701	1,270
10	198	284	443	230	334	311	302	352	516	595	1,320	1,480
11	225	239	441	275	320	295	205	437	627	493	527	706
12	219	265	404		293	310	126	501	530	473	829	458
13	233	302	397		290	306	91	644	421	430	1,510	411
14	180	271	394		351	313	82	643	366	473	1,750	306
15	182	255	403		335	295	76	540	399	181	602	320
16	215	339	377	275	339	290	77	480	687	201	494	340
17	212	378	383		332	276	80	466	916	211	380	311
18	223	402	376		325	276	74	669	1,320	151	321	285
19	268	334	364		352	293	62	852	941	133	327	224
20	320	347	356		329	244	62	1,010	840	124	280	231
21	338	338	397	275	342	232	49	1,100	700	106	267	1,100
22	318	373	369		363	247	44	1,080	636	144	289	1,360
23	311	405	331		371	274	43	985	576	81	274	333
24	311	419	293		353	263	43	784	469	76	267	334
25	268	400	219		351	271	43	552	501	76	379	258
26	270	387	210	275	333	292	44	600	433	118	524	252
27	247	399	192		317	310	48	563	397	233	252	230
28	231	351	177		326	289	49	552	389	521	396	216
29	245	408	182		-	266	96	525	323	125	365	203
30	253	430	204		-----	259	186	480	295	89	1,320	192
31	245	-----	231		-----	270	-----	641	-----	48	513	-----
Total	7,819	10,199	11,121	8,571	9,355	9,168	3,879	15,878	18,051	8,616	16,270	15,537
Mean	252	340	359	276	334	296	129	512	602	278	525	518
Ac-ft	15,510	20,230	22,060	17,000	18,560	18,180	7,690	31,490	35,800	17,090	32,270	30,820

Calendar year 1962: Max 3,740 Min 101 Mean 700 Ac-ft 506,600  
 Water year 1962-63: Max 1,900 Min 43 Mean 368 Ac-ft 266,700

Note.--No gage-height record on river Dec. 25-27, Jan. 11 to Feb. 3 (stage-discharge relation affected by ice during most of periods), Feb. 12, 13, Apr. 13-29, Aug. 5, and on canal Dec. 26, 27, Jan. 11 to Feb. 3 (stage-discharge relation affected by ice during most of period). Stage-discharge relation affected by ice on river Dec. 24, Jan. 10.



## ARKANSAS RIVER BASIN

7-1195. Apishapa River near Fowler, Colo.

Location.--Lat 38°05'28", long 103°58'52", in SE 1/4 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 1963. 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.--27 years, 35.5 cfs (25,700 acre-ft per year).

Extremes.--Maximum discharge during year, 2,730 cfs Aug. 13 (gage height, 8.48 ft), from rating curve extended above 270 cfs on basis of slope-area measurement of peak flow; minimum daily, 0.9 cfs July 7, 12.

1922-25, 1939-63: 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 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.3	9.3	9.7	12	10	9.7	2.1	2.0	1.2	1.2	1.5	9.7
2	2.9	8.5	12	13	19	11	2.1	2.0	1.3	1.0	2.0	5.0
3	2.6	6.0	12	6.8	20	12	1.6	1.8	1.6	1.0	5.0	2.4
4	2.4	8.9	15	8.1	18	4.3	1.8	1.8	2.0	1.3	2.0	1.3
5	2.4	8.5	14	9.3	7.6	10	1.6	2.1	1.8	1.6	1.6	1.5
6	2.4	7.2	15	9.3	4.7	12	1.8	2.1	1.6	1.0	1.6	1.5
7	2.6	9.7	14	8.9	4.7	9.3	1.6	2.3	2.1	1.8	1.8	2.1
8	2.3	12	14	8.5	4.7	12	2.0	2.3	2.3	1.0	2.3	3.8
9	2.3	14	13	7.6	8.5	11	2.3	2.1	1.8	1.3	5.0	18
10	2.3	15	8.1	4	18	20	2.0	2.0	2.0	1.0	134	39
11	2.3	15	14	2	18	13	1.8	1.8	2.0	1.0	108	33
12	2.3	17	14	2	20	16	2.0	1.8	2.4	.9	19	21
13	2.6	17	13	2.5	18	15	2.3	2.0	2.1	1.0	603	9.7
14	4.7	16	14	3.5	18	13	2.6	1.8	1.8	356	134	6.8
15	8.1	16	21	4	19	14	2.1	1.6	2.1	21	78	7.6
16	11	16	21	4	21	16	2.0	1.6	61	5.0	48	7.6
17	8.9	16	18	3.5	26	17	3.2	1.8	41	2.1	39	7.6
18	8.1	16	14	4	15	13	2.1	1.6	5.3	2.0	33	11
19	5.0	13	5.3	3.5	7.2	13	2.1	2.1	5.6	1.8	26	13
20	7.2	14	5.3	3.5	7.6	5.6	2.1	2.6	2.6	2.0	25	18
21	6.8	15	6.0	3.5	12	4.1	2.0	2.1	2.3	1.6	26	202
22	5.0	15	6.0	3.8	10	3.5	2.1	3.8	1.5	1.6	25	94
23	8.9	18	5.6	4.1	7.6	1.3	2.1	4.4	1.5	1.5	22	63
24	9.3	19	5.6	4.5	7.6	1.2	2.3	2.9	1.5	1.5	25	44
25	9.3	14	5	4	6.0	1.2	3.2	2.1	1.6	1.6	22	31
26	9.7	15	7	5	6.0	1.2	2.9	1.2	2.0	1.5	22	18
27	6.8	18	10	6	12	1.3	2.4	1.5	1.8	1.8	24	15
28	8.9	17	11	5	12	1.3	2.0	2.0	1.3	106	25	13
29	8.1	15	12	6	-	1.3	2.0	2.3	1.2	24	25	10
30	7.6	12	13	8	-----	1.3	2.0	1.5	1.2	4.7	505	8.1
31	10	-----	12	12	-----	1.6	-----	1.2	-----	1.8	20	-----
Total	175.1	413.1	359.6	181.9	358.2	304.9	64.2	64.2	159.5	551.7	2,010.8	717.7
Mean	5.65	13.8	11.6	5.87	12.8	9.84	2.14	2.07	5.32	17.8	64.9	23.9
Ac-ft	347	819	713	361	710	605	127	127	316	1,090	3,990	1,420

Calendar year 1962: Max 1,670 Min 1.2 Mean 17.7 Ac-ft 12,810  
 Water year 1962-63: Max 603 Min 0.9 Mean 14.7 Ac-ft 10,620

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

Note.--No gage-height record Dec. 25-30, Jan. 10-20, Jan. 24 to Feb. 4 (stage-discharge relation affected by ice during parts of periods), Mar. 10-13, Aug. 12, 16-18.

## 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 1963. 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.--51 years (1912-63), 257 cfs (186,100 acre-ft per year).

Extremes.--Maximum discharge during year, 5,600 cfs Aug. 30 (gage height, 7.00 ft); minimum daily, 1.9 cfs Apr. 7. 1889, 1893-95, 1903, 1908, 1912-63: 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 ice effect or 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, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 7 to Dec. 2, Dec. 18, Jan. 2, 3, Feb. 5, Apr. 8-13, May 11-20, July 14-18, Sept. 15-30)

3.4	1.0	4.3	200
3.5	10	4.7	420
3.7	35	5.1	760
4.0	90	5.4	1,240

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	68	63	86	b 30		28	46	34	180	47	55	35
2	66	38	44	50	8	27	16	34	275	57	50	34
3	75	44	35	34		23	17	34	290	83	52	132
4	66	79	34	32		41	22	34	230	102	32	64
5	57	70	30	32	8.2	38	15	36	200	90	26	30
6	36	64	36	40	5.5	30	10	38	180	72	41	30
7	34	130	36	36	5.5	47	1.9	44	140	88	55	55
8	23	83	35	42	7.3	41	6.4	50	96	114	198	212
9	46	66	34	18	8.2	41	8.2	59	93	117	96	528
10	57	68	41	28	8.2	44	15	64	72	111	327	598
11	52	72	40		32	41	30	64	46	114	596	572
12	42	72	41		59	36	21	86	48	144	260	444
13	44	57	35		59	42	23	79	63	57	518	156
14	47	59	32		59	48	26	79	64	448	452	52
15	54	66	34		61	38	18	88	55	348	357	52
16	31	83	34		52	48	18	83	110	93	196	57
17	34	90	35		28	52	23	120	346	75	105	72
18	57	96	24		27	47	26	142	96	93	63	75
19	63	77	42		31	46	28	81	111	111	55	44
20	86	70	38		44	30	32	264	249	99	48	18
21	120	68	36	8	55	23	28	476	324	81	38	112
22	164	79	36		15	12	27	524	250	70	23	142
23	172	72	47		22	9.1	28	572	240	59	20	50
24	140	66			25	8.2	28	556	164	59	22	70
25	144	79			27	7.3	25	492	66	50	64	88
26	148	81			26	6.4	25	436	57	47	63	54
27	140	68	23		27	7.3	30	452	83	47	57	46
28	140	63			32	21	28	330	70	79	34	86
29	120	59			-	30	28	265	54	83	30	75
30	102	57			-----	21	31	270	48	63	1,170	81
31	86	-----			-----	36	-----	210	-----	61	48	-----
Total	2,514	2,139	1,139	510	755.9	969.3	680.5	6,096	4,300	3,162	5,151	4,064
Mean	81.1	71.3	36.7	16.5	27.0	31.3	22.7	197	143	102	166	135
Ac-ft	4,990	4,240	2,260	1,010	1,500	1,920	1,350	12,090	8,530	6,270	10,220	8,060

Calendar year 1962: Max 2,520 Min - Mean 161 Ac-ft 116,700  
Water year 1962-63: Max 1,170 Min 1.9 Mean 86.2 Ac-ft 62,440

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 24-31, Jan. 10 to Feb. 4 (stage-discharge relation affected by ice during most 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 1963.

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.--24 years, 231 cfs (167,200 acre-ft per year).

Extremes.--Maximum discharge during year, 1,830 cfs Aug. 3 (gage height, 10.07 ft); minimum daily, 3.0 cfs June 13, Sept. 6. 1939-63: Maximum discharge, 44,000 cfs May 20, 1955 (gage height, 15.03 ft), from rating curve extended above 24,001 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 or no gage height record, 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. 6-8, June 30 to July 4, July 14-16)

Oct. 1 to May 20

May 21 to Sept. 30

6.8	1.5	6.9	3.0	7.8	280
6.9	8.0	7.0	13	8.3	540
7.0	22	7.1	28		
7.2	62	7.2	52		
7.4	115	7.4	111		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8.0	51	65	b 90	a 60	62	24	8.0	111	5.0	6.0	26
2	14	26	85	b 86	a 50	55	62	9.4	a 92	5.0	5.0	16
3	14	12	58	b 81	a 53	b 50	47	9.4	a 174	5.0	512	19
4	14	12	40	96	55	b 45	38	11	a 170	9.0	30	38
5	14	19	31	93	55	b 50	33	11	115	25	12	12
6	14	24	29	85	70	b 55	40	11	111	33	7.0	3.0
7	14	18	29	83	72	62	38	9.4	89	26	5.0	4.0
8	12	70	31	78	58	72	35	9.4	58	35	12	11
9	12	75	62	78	58	70	26	9.4	24	50	80	222
10	12	115	40	62	36	70	16	9.4	26	72	18	540
11	11	80	29	b 50	26	70	15	9.4	13	47	162	340
12	11	60	29	b 13	36	62	14	9.4	7.0	96	244	340
13	9.4	55	35	16	47	44	11	9.4	3.0	55	99	190
14	9.4	35	38	29	53	33	12	9.4	4.0	11	420	86
15	9.4	33	42	29	60	35	11	9.4	4.0	226	262	45
16	12	38	70	31	55	26	11	9.4	9.0	80	134	42
17	12	49	40	26	55	55	12	11	182	26	105	26
18	12	58	35	27	62	80	15	16	119	10	66	18
19	16	62	55	18	62	72	14	65	80	16	11	14
20	21	70	36	19	67	70	12	22	86	20	7.0	14
21	35	60	31	29	70	62	9.4	190	194	24	9.0	13
22	75	58	31	27	85	67	8.0	385	186	20	9.0	52
23	88	58	31	19	55	53	7.4	410	138	16	9.0	38
24	92	55	b 30	33	51	49	8.0	415	123	16	6.0	26
25	88	55	b 27	36	51	44	16	390	60	20	7.0	18
26	85	58	b 25	19	51	42	8.0	310	24	25	7.0	16
27	80	60	b 30	16	38	47	8.0	340	14	121	8.0	13
28	80	62	b 50	35	44	38	8.0	310	11	220	8.0	9.0
29	83	55	b 70	31	26	26	8.0	222	9.0	19	115	8.0
30	75	53	b 90	35	-----	35	11	204	8.0	10	421	7.0
31	62	-----	22	36	-----	19	-----	166	-----	7.0	396	-----
Total	1,101.2	1,536	1,386	1,406	1,535	1,620	577.8	3,609.8	2,244.0	1,350.0	3,192.0	2,206.0
Mean	35.5	51.2	44.7	45.4	54.8	52.3	19.3	116	74.8	43.5	103	73.5
Ac-ft	2,180	3,050	2,750	2,790	3,040	3,210	1,150	7,160	4,450	2,680	6,330	4,380

Calendar year 1962: Max 1,360 Min 6.8 Mean 126 Ac-ft 91,050  
 Water year 1962-63: Max 540 Min 3.0 Mean 59.6 Ac-ft 43,170

a No gage-height record.

b Stage-discharge relation affected by ice.

## 7-1245. Purgatoire River at Trinidad, Colo.

Location.--Lat 37°10'15", long 104°30'31", in SW¼SE¼ sec.13, T.33 S., R.64 W., on left bank 90 ft downstream from railroad bridge, 680 ft downstream from Animas Street Bridge in Trinidad.

Drainage area.--795 sq mi.

Records available.--October 1895 to September 1899, August to December 1905, November 1906 to March 1907, October 1907 to November 1908, May to August 1909 (gage heights and discharge measurements only), September 1909 to November 1912, October 1915 to September 1960, October 1962 to September 1963. Monthly discharge only for some periods, published in WSP 1311. Prior to October 1915, published as "Purgatory River."

Gage.--Water-stage recorder. Datum of gage is 5,979.76 ft above mean sea level, datum of 1929. May 1, 1896, to July 31, 1899, staff gage on downstream side of Animas Street Bridge 680 ft upstream at datum 1.7 ft higher. Aug. 25, 1905, to Nov. 30, 1912, chain gage on upstream side of Animas Street Bridge at present datum. Apr. 1, 1916, to Nov. 10, 1921, inclined gage painted on concrete bank protection wall at site 410 ft downstream at right bank and 200 ft upstream from Commercial Street Bridge at datum 0.99 ft lower. Nov. 11, 1921, to Nov. 30, 1922, water-stage recorder at site about three-quarters of a mile upstream and 150 ft downstream from former Main Street Bridge at different datum. Dec. 1, 1922, to Mar. 19, 1934, water-stage recorder at site about half a mile upstream at different datum. Mar. 20, 1934, to Dec. 10, 1950, water-stage recorder at site 1,490 ft upstream at foot of State Street at datum 7.00 ft higher. Dec. 11, 1950 to Sept. 30, 1955, water-stage recorder at site 180 ft upstream at datum 2.00 ft higher. Since May 30, 1955, supplemental chain gage at site 90 ft upstream on downstream side of railroad bridge; at datum 3.00 ft lower prior to Oct. 1, 1962, and at present datum thereafter.

Average discharge.--54 years (1895-99, 1907-8, 1909-12, 1915-60, 1962-63), 89.4 cfs (64,720 acre-ft per year).

Extremes.--Maximum discharge during year, 5,020 cfs Aug. 11, 24 (gage height, 5.28 ft), from rating curve extended above 1,900 cfs; minimum daily, 1.9 cfs July 1.

1895-99, 1905-12, 1915-60, 1962-63: Maximum discharge, 28,000 cfs May 19, 1955 (gage height, 14.35 ft, site and datum then in use), from rating curve extended above 2,800 cfs on basis of indirect measurements of peak flow above and below station; no flow for several days during summer of 1896, June 11, 1950, Sept. 20, 25, 28, 29, Oct. 3-5, 7, 8, 1956.

Maximum discharge known since at least 1859, 45,400 cfs Sept. 30, 1904 (gage height, 16.6 ft, at site 680 ft upstream), by slope-area measurement of peak flow.

Remarks.--Records poor. Discharge measurements made two or more times a month. Diversions above station for irrigation of about 6,500 acres.

Discharge, in cubic feet per second, water year October 1962 to September 1963												
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	21	18	20		53	13	11	10	15	19	25	a150
2	20	17	16		33	12	12	11	31	24	26	49
3	14	17	14		20	12	12	12	12	26	76	44
4	11	17	13		23	20	11	14	58	29	12	111
5	6.9	16	12		21	24	13	14	8.6	26	5.0	58
6	9.0	16	13		20	21	14	14	11	2.6	3.9	74
7	9.6	16	16		16	23	12	11	9.0	3.4	3.9	40
8	12	14	15		15	23	13	11	7.2	3.2	3.4	38
9	8.6	14	13		15	19	6.9	9.0	9.0	4.2	3.4	60
10	10	15	14		18	20	8.3	14	12	15	3.4	a63
11	14	16	13		17	16	8.3	17	11	67	326	a66
12	11	16	9.6		16	13	8.6	15	8.3	9.6	120	77
13	12	16	5.8		19	27	6.9	16	33	5.0	27	79
14	12	14	6.2		19	12	10	14	43	4.1	24	77
15	11	15	7.2		20	12	8.6	14	16	3.7	a26	a62
16	12	20	15	15	20	16	8.3	16	120	3.2	a27	49
17	15	20	16		a22	14	11	20	183	3.2	a28	46
18	20	14	16		a35	15	11	21	35	3.2	a30	46
19	21	16	16		a19	17	11	26	16	93	33	44
20	23	16	15		20	16	10	26	20	20	35	309
21	55	24	13		20	17	8.0	31	9.6	3.4	33	1230
22	42	20	13		15	18	6.6	38	5.3	3.4	36	44
23	38	17	13		14	20	5.5	23	7.2	3.4	35	82
24	31	16	9.0		14	20	5.5	15	3.7	46	600	63
25	24	18	6.0		15	19	5.5	11	5.0	24	a34	46
26	21	22	4.5		15	18	5.5	13	14	3.4	a36	49
27	20	21	7.0		14	16	5.5	23	9.0	3.4	a33	42
28	20	22	14		14	15	5.3	21	4.8	3.1	a33	40
29	20	21	17		-	15	6.2	11	3.1	2.9	42	36
30	18	22	17		-----	14	7.2	7.6	2.5	2.8	330	35
31	18	-----	15		-----	12	-----	14	-----	2.6	a800	-----
Total	650.1	526	394.3	465	562	529	267.7	512.6	670.1	351.2	2,735.7	3,209
Mean	21.0	17.5	12.7	15	20.1	17.1	8.92	16.5	22.3	11.3	88.2	107
Ac-ft	1,290	1,040	782	922	1,110	1,050	531	1,020	1,330	697	5,430	6,360

Calendar year 1962: Max - Min - Mean - Ac-ft -  
 Water year 1962-63: Max 1,230 Min 1.9 Mean 29.8 Ac-ft 21,560

Peak discharge (base, 2,000 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
8-11	1600	5.28	5,020	9-21	0100	4.84	4,080
8-24	1500	5.28	5,020				

a No gage-height record.

Note.--Stage-discharge relation affected by ice Dec. 12, Dec. 24 to Jan. 31, Mar. 5.

## 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 1963.

**Gage.**--Water-stage recorder. Datum of gage is 5,740.99 ft above mean sea level, datum of 1929.

**Average discharge.**--9 years, 28.1 cfs (20,340 acre-ft per year).

**Extremes.**--Maximum discharge during year, 2,870 cfs Aug. 24 (gage height, 4.67 ft); no flow for many days.

1954-63: 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.

**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.

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0	0	0	0.2	0.5	0.1	0	0	0	0	0	0.1
2	0	0	0	.2	0	0	0	0	0	0	0	.1
3	0	0	0	.3	.3	0	0	0	0	0	0	.1
4	0	0	0	0	0	1.1	0	0	0	0	0	.1
5	0	0	0	.1	0	1.3	0	0	0	0	0	5.2
6	0	0	.2	.3	0	1.5	0	0	0	0	0	.1
7	0	0	0	.3	.1	1.1	0	0	0	0	0	1.3
8	0	0	0	.4	0	.8	0	0	0	0	0	.2
9	0	0	0	.3	.3	0	0	0	0	0	0	.2
10	0	0	.1	.2	.4	0	0	0	0	1.8	0	.8
11	0	0	0	0	0	0	0	0	0	.4	210	.3
12	0	0	.1	0	0	0	0	0	0	0	70	.5
13	0	0	.1	0	0	0	0	0	0	0	38	.4
14	0	0	.1	0	0	.4	0	0	0	0	20	.8
15	0	0	.1	0	0	.5	0	0	0	0	.4	.6
16	0	0	0	0	0	.1	0	0	0	0	.1	.2
17	.1	.8	0	0	.5	0	.2	0	4.7	0	.1	.1
18	.1	0	0	0	.9	0	0	0	0	0	.1	.1
19	.1	.1	0	0	.7	0	0	0	0	0	.1	.1
20	5.7	.2	0	0	.1	.2	0	0	0	.1	.1	234
21	1.4	.1	0	0	.2	.1	0	0	0	0	.1	1.590
22	.1	0	.1	0	2.4	.1	0	0	0	0	79	32
23	0	0	.1	0	.5	.1	0	.1	0	0	.1	.2
24	0	0	.2	0	0	0	0	0	0	0	24.7	.2
25	0	0	0	.2	1.4	0	0	0	0	0	59	.4
26	0	0	0	.7	.6	0	0	0	0	0	4.8	.2
27	0	0	0	.4	0	0	0	0	0	0	2.2	.1
28	0	0	0	.1	.2	0	0	0	0	0	.8	.5
29	0	0	0	0	-	0	0	0	0	0	.3	.1
30	0	0	.2	.4	-	0	0	0	0	0	1.0	.1
31	0	-	.3	.6	-	0	-	0	-	0	.2	-
Total	7.5	1.2	1.6	4.7	9.1	7.4	0.4	0.2	4.7	2.3	618.2	1.869.1
Mean	0.24	0.04	0.05	0.15	0.32	0.24	0.01	0.006	0.16	0.07	19.9	62.3
Ac-ft	15	2.4	3.2	9.3	18	15	0.8	0.4	9.3	4.6	1,230	3,710

Calendar year 1962: Max 1,420 Min 0 Mean 5.86 Ac-ft 4,250

Water year 1962-63: Max 1,590 Min 0 Mean 6.92 Ac-ft 5,020

Peak discharge (base, 2,000 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
8-11	1830	4.60	2,740	8-24	1715	4.67	2,870
8-22	1345	4.24	2,060	9-21	0300	4.60	2,740

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 1963.

Gage.--Water-stage recorder. Altitude of gage is 5,400 ft (from topographic map).

Average discharge.--6 years, 2.15 cfs (1,560 acre-ft per year).

Extremes.--Maximum discharge during year, 4,370 cfs Sept. 20 (gage height, 11.05 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.

1957-63: Maximum discharge, that of Sept. 20, 1963; 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 fair above 400 cfs and poor below. 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 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0	0			1.5				0	0	0	2.9
2	0	0			1.0				0	0	.1	2.2
3	0	0			.8				0	0	54	2.1
4	0	0			.5				0	0	9.6	1.9
5	0	0			.3				0	0	4.0	1.9
6	0	0			.2				0	0	2.2	1.6
7	0	0			.1				0	0	.9	1.5
8	0	0			.1				0	.1	.7	1.4
9	0	0			0				0	.1	85	1.3
10	0	0			0				0	.5	17	1.2
11	0	0			0				0	.7	8.9	1.1
12	0	0			0				0	.2	270	1.2
13	0	0			0				0	.1	12	1.2
14	0	0			0				0	0		1.3
15	0	0			0				0	0		1.2
16	0	.1			0				28	0	1.0	1.2
17	0	1.0			0				3.1	0		1.0
18	0	.8			.1				0	0		.9
19	0	.6			.3				0	0		.7
20	29	.5			.6				0	10	33	481
21	5	.4			.5				0	2	4.2	440
22	2	.2			.3				0	0	2.9	12
23	0	0			.1				0	0	2.8	2.8
24	0	0			0				0	0	4.7	1.4
25	0	0			0				0	0	6.9	.5
26	0	0			0				0	0	2.3	.1
27	0	0			0				0	0	2.5	0
28	0	0			0				0	0	2.7	0
29	0	0			-				0	0	2.7	0
30	0	0			-----				0	0	3.6	0
31	0	-----			-----				-----	0	5.5	-----
Total	36	3.6	0	0	6.4	0	0	0	31.1	13.7	544.2	965.6
Mean	1.16	0.12	0	0	0.23	0	0	0	1.04	0.44	17.6	32.2
Ac-ft	71	7.1	0	0	13	0	0	0	62	27	1,080	1,920

Calendar year 1962: Max 71 Min 0 Mean 0.65 Ac-ft 473

Water year 1962-63: Max 481 Min 0 Mean 4.39 Ac-ft 3,180

Peak discharge (base, 200 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
10-20	0630	5.18	254	8-12	1400	7.28	1,220
6-16	2230	5.67	420	9-20	1700	11.05	4,370
8-3	1900	5.77	458	9-21	1730	9.59	2,970
8-9	2130	6.70	890				

Note.--No gage-height record Oct. 1-19, Oct. 21 to June 15 (stage-discharge relation affected by ice during part of period), June 17 to July 9, July 13 to Aug. 2, Aug. 4-6, 13-19, Sept. 22-24.

## 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 1963.

Gage.--Water-stage recorder. Altitude of gage is 5,320 ft (from topographic map).

Average discharge.--9 years, 9.02 cfs (6,530 acre-ft per year).

Extremes.--Maximum discharge during year, 4,820 cfs Sept. 20 (gage height, 7.80 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.

1954-63: 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 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0				1	.1			0	0	0	0.5
2	0				1	.1			0	0	0	.2
3	0				1	.1			0	0	86	.1
4	0				.2	.1			0	0	.7	3.8
5	0					.1			0	0	.5	61
6	0					.1			0	0	.5	30
7	0					.1			0	0	.1	8.6
8	0					0			0	77	0	.7
9	0					0			0	.2	6.7	.1
10	0					0			0	.1	102	0
11	0					0			0	0	.2	0
12	0					0			0	0	56	0
13	0					0			0	0	19	0
14	0					0			0	0	5	.1
15	0					0			1.6	0	1.5	.1
16	0				.1	0			76	0	.7	.1
17	0					0			87	0	.5	0
18	0					0			2.9	0	.5	0
19	.1					0			.4	0	.1	0
20	11					0			.2	.1	4.5	795
21	.2					0			.2	.1	1.4	184
22	.1					0			.1	0	.4	.2
23	0					.1			.1	0	.1	.1
24	0					.1			.1	0	107	.1
25	0					.1			0	0	226	.1
26	0					.1			0	0	26	.1
27	0					.1			0	0	78	.1
28	0					.1			0	0	9.2	.1
29	0					.1			0	0	32	.1
30	0					.1			0	0	32	.1
31	0					0				0	10	
Total	11.4	0	0	0	5.6	1.5	0	0	168.6	77.5	806.2	1,085.3
Mean	0.37	0	0	0	0.20	0.05	0	0	5.62	2.50	26.0	36.2
Ac-ft	23	0	0	0	11	3.0	0	0	334	154	1,600	2,150

Calendar year 1962: Max 292 Min 0 Mean 2.54 Ac-ft 1,840  
 Water year 1962-63: Max 795 Min 0 Mean 5.91 Ac-ft 4,280

Peak discharge (base, 1,000 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
7- 8	1500	4.05	1,110	8-25	2015	6.00	2,600
8-24	1815	3.98	1,070	9-20	1715	7.80	4,820

Note.--No gage-height record Oct. 21 to May 8 (stage-discharge relation affected by ice during part of period), June 18 to July 7, July 9 to Aug. 2, Aug. 4-8, 11, 14-19, 23, Aug. 28 to Sept. 19, Sept. 22-24.

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 1963. 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.--18 years, 55.8 cfs (40,400 acre-ft per year).

Extremes.--Maximum discharge during year, 8,430 cfs Sept. 20 (gage height, 15.43 ft), from rating curve extended above 2,700 cfs as explained below; no flow July 24 to Aug. 1.

1905-7, 1924-28, 1951-63: 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 no gage-height record, which are poor. Discharge measurements or observations of no flow generally made twice a month. Diversions above station for irrigation of about 29,000 acres.

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8.9		18				8.6	1.5	0.6	1.0	0	15
2	8.9	14	18				7.0	1.4	.5	1.1	.1	10
3	8.6		19				7.2	1.2	.4	1.1	172	9
4	8.6		19			17	7.2	1.1	.4	1.1	9.2	8
5	8.6	14	19				7.2	1.0	.4	1.1	5.0	70
6	8.0	14	19				7.0	.9	.2	1.1	3.7	40
7	8.0	14	19			17	6.5	.8	.2	1.1	2.8	20
8	8.0	14	18			17	6.0	.7	.2	5.7	2.2	17
9	7.5	14	18			17	5.3	.6	.2	25	171	14
10	7.5	15	18			16	5.1	.6	.2	25	171	13
11	7.2	15	18			15	4.8	.7	.2	21	23	9
12	7.0	15	19			15	4.4	.6	.2	21	501	8.9
13	7.2	15	18			14	4.1	.8	.2	22	50	8.9
14	7.2	15	18			14	3.7	.8	.3	21	20	8.9
15	7.5	16	18			13	3.2	.9	2.2	20	12	8.9
16	7.5	16	18	12	18	13	2.8	.9	43	19	9	8.9
17	7.5	17	18			13	2.5	1.1	121	19	8	8.6
18	7.8	18	19			13	2.5	1.0	4.8	19	8	8.6
19	8.0	18	18			13	2.5	1.2	2.8	18	8	8.3
20	135	19	19			13	2.5	1.1	1.5	36	80	1,430
21		19	20			13	2.5	1.2	1.2	30	14	1,940
22		19	20			13	2.6	1.2	1.2	.9	36	407
23		19	19			12	2.5	1.4	1.1	.4	14	66
24	17	19	19			12	2.2	1.1	1.1	0	208	24
25		19				12	2.2	1.0	1.1	0	337	21
26		19				12	2.1	.9	1.1	0	23	19
27		19	15			11	1.8	.9	1.1	0	63	18
28		19				11	1.7	.9	1.1	0	16	18
29	14	18				10	1.7	.8	1.0	0	60	18
30		18				9.8	1.6	.7	1.0	0	175	15
31						9.2		.6		0	52	
Total	456.5	493	551	372	504	430.0	121.0	29.6	190.5	334.9	2,254.0	4,271.0
Mean	14.7	16.4	17.8	12	18	13.9	4.03	0.95	6.35	10.8	72.7	142
Ac-ft	905	978	1,090	738	1,000	853	240	59	378	664	4,470	8,470

Calendar year 1962: Max 706 Min 4.2 Mean 27.5 Ac-ft 19,880

Water year 1962-63: Max 1,940 Min 0 Mean 27.4 Ac-ft 19,840

Peak discharge (base, 2,000 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
8-9	2215	7.72	2,130	9-20	1830	15.43	8,430
8-25	2015	9.03	2,950				

Note.--No gage-height record Oct. 21 to Nov. 4, Dec. 25 to Mar. 6 (stage-discharge relation affected by ice during most of period), Aug. 13-19, 23, 26, Sept. 1-11.



## 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 1963. 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.--39 years, 102 cfs (73,840 acre-ft per year).

Extremes.--Maximum discharge during year, 11,000 cfs Sept. 21 (gage height, 7.13 ft), from rating curve extended above 200 cfs; no flow for many days.

1924-63: 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 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0	3.6	13		49	13	6.4	0	0.3	0	3.8	79
2	*0	3.0	13	(*)	36	15	6.0	0	0	0	3.1	67
3	0	3.0	13		34	12	5.4	0	0	0	1.7	21
4	0	3.3	14		113	14	5.4	0	0	0	700	8.5
5	0	3.6	14		*68	b13	4.8	0	0	0	*165	135
6	0	3.9	14		54	16	5.1	0	0	0	14	21
7	0	4.8	14		34	15	4.5	*0	0	0	6.7	29
8	0	5.7	14		28	*13	4.2	0	0	0	8.0	176
9	0	6.0	12		25	14	3.3	0	0	1.1	6.7	38
10	0	6.4	14		31	15	3.3	0	0	4.0	1.3	500
11	0	6.8	14		b13	28	3.0	0	0	1.2	216	*45
12	0	6.8	b13		b10	17	2.8	0	0	1.1	382	26
13	0	7.2	15		b11	15	2.2	0	0	.9	679	*40
14	0	*7.2	17		b11	15	1.8	0	0	.8	745	60
15	*0	8.0	15	(*)	b12	14	*1.2	0	20	.6	195	29
16	0	9.2	16	b11	14	11	.7	.0	1,040	.3	*79	149
17	0	12	15		15	9.6	.5	15	*58	0	25	29
18	*0	13	*17		17	12	0	27	47	*0	83	8.0
19	0	b8.0	19		19	*15	0	2.4	274	0	93	6.4
20	0	9.6	19		20	13	0	0	110	0	19	5.1
21	0	13	19		*24	12	0	0	24	0	7.0	5,740
22	60	14	17		20	10	0	0	7.5	4.2	36	3,400
23	29	14	14		20	9.2	0	*0	3.8	5.7	224	546
24	14	14	b9.0		19	9.6	0	0	*.8	1.8	58	*215
25	8.4	14	b8.0		16	8.4	0	0	0	1.4	*777	120
26	6.4	14	8.0		15	7.6	0	0	0	1.3	533	73
27	4.8	13	9.6		14	7.2	0	0	0	1.2	280	64
28	3.9	12	12		13	6.8	0	0	0	1,020	*82	61
29	3.3	11	14		-	6.4	0	4.9	0	*77	85	61
30	3.3	12	11		-----	6.8	0	9.5	0	5.7	912	58
31	3.9	-----	12		-----	6.4	-----	1.6	-----	4.8	443	-----
Total	137.0	262.1	428.6	341	755	380.0	60.6	60.4	1,585.4	1,133.1	6,863.3	11,810.0
Mean	4.42	8.74	13.8	11	27.0	12.3	2.02	1.95	52.8	36.6	221	394
Ac-ft	272	520	850	676	1,500	754	120	120	3,140	2,250	13,610	23,420

Calendar year 1962: Max 1,180 Min 0 Mean 50.8 Ac-ft 36,810

Water year 1962-63: Max 5,740 Min 0 Mean 65.3 Ac-ft 47,230

Peak discharge (base, 3,000 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-16	1530	5.46	4,330	9-21	2100	7.13	11,000
7-28	0300	5.81	5,990				

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

b Stage-discharge relation affected by ice.

## ARKANSAS RIVER BASIN

97

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 1963. 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.--24 years (1922-31, 1948-63), 134 cfs (97,010 acre-ft per year).

Extremes.--Maximum discharge during year, 6,930 cfs July 27 (gage height, 6.97 ft); minimum daily, 0.1 cfs July 19, 21-23. 1889, 1922-31, 1948-63: 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 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.5	9.2	17	8.0	10	7.2	2.0	2.6	2.9	0.7	4.0	182
2	2.4	5.9	2.7	9.2	b 9	11	2.0	2.6	2.9	.6	8.0	82
3	2.5	2.6	3.2	8.0	b 10	8.0	2.9	2.6	2.6	.5	1.140	54
4	2.3	2.6	18	13	b 40	8.0	2.6	2.4	2.0	.5	2.27	45
5	2.5	6.2	10	18	b 110	b 10	5.5	2.6	1.1	.6	147	164
6	2.6	15	12	15	82	11	2.6	2.4	1.1	.5	100	100
7	2.3	9.2	24	22	50	5.9	2.0	2.0	.8	.5	24	46
8	2.8	1.6	36	27	37	5.9	1.7	2.0	.7	.4	13	33
9	2.3	4.6	7.2	b 20	15	4.6	2.0	2.0	.8	.6	9.0	77
10	3.2	3.2	20	10	8.6	5.5	1.7	2.2	1.1	.7	10	325
11	2.9	3.2	42	2	b 5	5.9	2.0	1.7	1.4	.9	10	173
12	2.4	3.2	38	3	b 6	5.9	2.2	1.5	.9	.9	123	34
13	2.4	5.9	35	5	b 7	6.3	2.0	1.5	.9	.6	227	11
14	2.8	3.8	29	8	b 9	7.2	1.7	1.5	.8	.4	868	6.5
15	3.6	4.2	29	9.5	b 11	5.1	1.5	1.5	24	.4	168	22
16	2.9	4.2	10	9	b 15	3.1	2.4	2.4	23	.8	77	45
17	2.9	6.3	26	9	b 18	3.6	2.4	3.6	549	.2	40	37
18	3.0	6.3	36	8	20	3.6	2.2	1.5	30	.2	250	20
19	3.3	3.2	44	4	21	4.6	2.6	2.2	31	.1	75	8.6
20	4.1	3.8	34	7.5	20	4.6	2.2	2.0	11	.2	29	74
21	39	3.8	30	8.5	7.6	4.2	2.4	2.0	11	.1	16	254
22	3.9	3.5	b 23	7.5	7.2	3.8	2.2	3.3	6.7	.1	8.6	4,370
23	9.2	3.5	b 20	7	8.6	3.8	2.2	2.6	3.3	.1	178	618
24	7.6	3.5	17	7.5	8.0	3.6	2.2	2.0	1.4	.2	122	140
25	3.9	3.8	8	6.5	7.2	3.8	2.4	2.0	1.2	.3	118	86
26	5.2	3.8	7.5	4	7.6	3.8	2.2	1.7	1.2	.4	606	57
27	12	4.2	8.5	3.5	8.6	3.8	1.7	2.9	1.1	861	396	54
28	25	4.6	9.5	4	7.2	3.6	2.0	2.0	1.0	728	219	37
29	24	6.7	11	3.5	3.3	3.3	2.0	1.5	1.0	145	159	26
30	6.5	15	12	3.5	-----	3.3	2.2	6.7	.9	54	249	16
31	3.2	-----	11	4	-----	3.6	-----	3.1	-----	7.1	813	-----
Total	232.1	171.0	630.6	274.7	565.6	167.6	67.7	72.6	716.8	1806.6	6433.6	7130.5
Mean	7.49	5.70	20.3	8.86	20.2	5.41	2.26	2.34	23.9	58.3	208	238
Ac-ft	460	339	1,250	545	1,120	332	134	144	1,420	3,580	12,760	14,140

Calendar year 1962: Max 1,310 Min 2.1 Mean 40.9 Ac-ft 29,600  
 Water year 1962-63: Max 4,370 Min 0.1 Mean 50.1 Ac-ft 36,220

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 24-30, Jan. 10 to Feb. 1 (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. S, 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 1963.

Gage.--Water-stage recorder for elevations above 3,784.17 ft and reference point and tape gage read once daily for those below. 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, 23,190 acre-ft Mar. 30, 31 (elevation, 3,797.25 ft); no contents for several months. 1943-63: Maximum contents, 360,300 acre-ft July 27, 1958 (elevation, 3,850.44 ft); no contents at times in 1943, 1945-47, 1952-57, 1959-63.

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 (from revised table), 642,400 acre-ft at elevation 3,870.00 ft (top of spillway gates), of which 366,600 acre-ft (between elevations 3,766.8 ft, elevation of no contents, and 3,851.18 ft) is for conservation and 275,800 acre-ft (between elevations 3,851.18 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 1962 to September 1963

Date	Elevation (feet)†	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	-	0	-
Oct. 31.....	-	0	0
Nov. 30.....	3,785.15	2,640	+2,640
Dec. 31.....	3,790.00	8,650	+6,010
Calendar year 1962.....	-	-	-7,240
Jan. 31.....	3,792.44	12,900	+4,250
Feb. 28.....	3,795.33	18,830	+5,930
Mar. 31.....	3,797.25	23,190	+4,360
Apr. 30.....	-	0	-23,190
May 31.....	-	0	0
June 30.....	-	0	0
July 31.....	-	0	0
Aug. 31.....	-	0	0
Sept. 30.....	-	0	0
Water year 1962-63.....	-	-	0

† Elevation at 2400.

7-1305. Arkansas River below John Martin Reservoir, Colo.

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.

Drainage area--18,917 sq mi, of which 785 sq mi is probably noncontributing.

Records available--March 1938 to September 1963. 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 707 ft upstream at datum 3.64 ft higher than present datum.

Average discharge--25 years, 346 cfs (250,500 acre-ft per year), adjusted for storage in John Martin Reservoir.

Extremes--Maximum discharge during year, 1,390 cfs Sept. 26 (gage height, 3.32 ft); minimum daily, 2.8 cfs Dec. 7-16, Feb. 19, 22. 1938-63: 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).

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

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		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	36	83	7.1	3.3	3.8	3.8	619	35	175	23	33	622
2	39	105	6.2	3.3	3.8	4.3	998	35	141	18	23	182
3	42	79	5.2	3.3	3.8	4.3	982	35	165	16	459	92
4	42	69	3.3	3.3	3.8	4.3	966	35	192	15	661	102
5	43	69	3.3	3.3	3.8	3.8	990	35	178	20	300	122
6	46	79	3.3	3.3	3.8	3.8	982	35	138	36	165	178
7	45	85	2.8	3.3	3.8	3.8	982	31	120	34	79	71
8	38	83	2.8	3.6	3.8	3.8	990	29	94	28	46	56
9	39	110	2.8	3.6	3.8	3.8	990	29	65	36	65	120
10	43	102	2.8	3.8	3.8	4.0	958	28	48	51	90	580
11	43	105	2.8	3.8	3.3	3.8	1,010	28	46	51	163	702
12	40	92	2.8	3.3	3.0	4.0	958	26	36	43	358	520
13	39	83	2.8	3.6	3.0	3.8	101	26	29	87	345	322
14	39	59	2.8	3.6	3.3	3.8	48	28	26	67	630	185
15	46	53	2.8	3.6	3.3	3.8	48	25	26	90	808	110
16	46	49	2.8	3.8	3.0	3.0	46	25	141	168	358	110
17	46	28	3.0	3.8	3.0	4.0	45	33	327	87	213	81
18	46	8.1	3.0	3.8	3.0	4.0	36	36	372	56	297	63
19	46	7.6	3.0	3.6	2.8	4.3	36	40	202	43	216	39
20	51	7.6	3.0	3.6	3.0	4.3	38	59	147	51	83	31
21	75	7.1	3.0	3.6	3.0	4.8	40	67	159	35	56	43
22	98	7.1	3.0	3.8	2.8	4.8	42	260	466	30	53	634
23	112	7.1	3.0	3.6	3.0	4.8	40	405	268	26	54	1,030
24	128	7.6	3.0	3.8	3.0	5.2	42	415	178	22	236	1,100
25	125	7.6	3.0	3.8	3.0	8.1	46	400	138	19	90	1,090
26	120	7.6	3.0	3.6	3.3	3.0	48	358	75	26	428	827
27	122	8.1	3.0	3.6	3.6	3.4	38	327	43	24	420	178
28	136	8.1	3.0	3.8	3.6	3.8	35	336	35	512	185	128
29	136	8.1	3.3	3.8	3.9	3.3	276	33	715	341	98	
30	133	8.1	3.3	3.8	-----	3.9	33	213	33	175	420	77
31	125	-----	3.3	3.8	-----	3.9	-----	210	-----	65	905	-----
Total	2,165	1,432.8	102.3	111.6	94.0	325.2	12,220	3,920	4,096	2,669	3,580	9,493
Mean	69.8	47.8	3.30	3.60	3.36	10.5	407	126	86.1	277	316	
Ac-ft	4,290	2,840	203	221	186	645	24,240	7,780	8,120	5,290	17,020	18,830

Calendar year 1962: Max 1,240 Min 2.8 Mean 210 Ac-ft 151,700  
 Water year 1962-63: Max 1,100 Min 2.8 Mean 124 Ac-ft 89,660

## 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 1963. 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.--46 years, 233 cfs (168,700 acre-ft per year).

Extremes.--Maximum discharge during year, 2,930 cfs July 28 (gage height, 8.93 ft); minimum daily, 1.8 cfs Sept. 29. 1913-55, 1959-63: 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. 1-5, May 28 to June 8, July 29)

2.9	0.7	3.6	52
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		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.5	6.5	9.0	15	52	26	26	4.5	9.0	3.9	2.8	212
2	4.7	6.0	9.0	26	60	28	470	4.5	5.0	3.6	2.1	10
3	4.7	6.0	9.5	27	45	24	502	4.5	7.0	3.6	2.1	11
4	4.7	6.0	9.5	30	46	26	455	4.5	9.0	3.6	89	3.4
5	4.7	6.0	9.5	27	49	28	448	4.5	10	3.6	19	3.1
6	4.7	6.0	8.5	26	51	30	452	4.2	20	2.8	11	21
7	4.7	6.0	9.0	27	52	39	439	3.9	24	2.6	49	8.5
8	4.2	6.0	9.0	26	52	41	430	3.6	24	2.6	36	2.8
9	3.9	6.0	9.0	27	51	41	427	3.1	22	3.1	20	3.1
10	3.9	6.0	9.0	20	49	34	406	2.8	14	3.4	49	2.6
11	3.9	6.0	9.0	15	42	36	458	2.3	8.0	4.2	32	42
12	3.9	6.0	a 9.0	12	45	36	421	2.1	5.5	4.2	38	17
13	3.9	6.0	a 9.0	13	48	38	195	2.1	5.0	3.6	42	3.9
14	3.9	6.0	a 9.0	14	50	32	13	2.0	5.5	10	18	2.6
15	4.2	6.5	a 9.0	15	54	28	8.5	2.1	6.5	6.0	74	2.3
16	4.2	6.5	a 9.0	16	54	28	7.5	2.1	163	4.7	25	2.3
17	4.5	6.5	9.0	17	54	25	7.0	2.3	88	7.5	20	2.3
18	4.5	7.0	9.5	17	52	25	6.0	2.3	33	13	142	7.5
19	4.5	6.5	9.5	15	46	25	7.0	3.4	5.5	7.5	14	11
20	4.7	6.5	9.5	20	44	25	6.5	3.1	4.5	4.5	5.0	10
21	4.5	7.0	9.5	25	46	25	6.0	3.4	4.7	4.2	4.5	3.4
22	4.5	6.5	9.0	25	45	25	6.5	4.5	83	3.4	3.9	14
23	5.0	6.5	8.5	21	32	26	6.0	13	34	3.4	3.6	197
24	6.0	11	8	22	28	26	5.5	14	6.0	3.1	3.4	406
25	6.5	37	6	20	28	24	5.0	14	6.0	2.8	3.1	373
26	5.5	30	7	17	31	24	5.5	14	5.5	2.6	6.5	359
27	5.0	10	8	18	30	15	4.7	15	4.7	2.8	60	113
28	6.0	9.5	9	21	27	7.0	4.5	11	4.5	1.100	51	4.5
29	6.5	9.0	9	25	60	6.0	3.9	22	4.2	248	45	1.8
30	6.5	9.0	10	45	-----	5.5	3.9	14	4.2	6.5	41	2.6
31	6.5	-----	11	-----	-----	5.5	-----	10	-----	3.9	39	-----
Total	149.4	259.5	277.5	663	1,263	804.0	5,236.0	198.8	625.3	1,478.7	951.0	1,852.7
Mean	4.82	8.65	8.95	21.4	45.1	25.9	175	6.41	20.8	47.7	30.7	61.8
Ac-ft	296.2	515	550	1,320	2,510	1,590	10,390	394	1,240	2,930	1,897	3,670

Calendar year 1962: Max 1,400 Min 3.9 Mean 66.0 Ac-ft 47,750  
Water year 1962-63: Max 1,100 Min 1.8 Mean 37.7 Ac-ft 27,300

a No gage-height record.

Note.--Stage-discharge relation affected by ice Dec. 24 to Jan. 1, Jan. 10-31 (no gage-height record Jan. 14-29), Feb. 12-14, Mar. 5.

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 1963.

Gage.--Water-stage recorders and Parshall flume. Datum of gage is 3,353.14 ft above mean sea level, datum of 1929.

Extremes.--1950-63: Maximum daily discharge, 70 cfs May 7, 1959; no flow for many days.

Remarks.--Records good. 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 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	20	31				0	29	23	34	0	5.6	30
2	20	30				0	45	*34	22	0	10	44
3	30	31				0	32	32	18	0	20	33
4	32	32				0	25	36	17	0	19	29
5	36	*19				0	13	30	14	4.1	18	26
6	34	27				0	15	*28	10	18	19	21
7	33	27				0	19	31	7.4	18	17	26
8	34	28				0	*16	27	6.3	*18	18	38
9	28	28				0	18	26	16	19	28	19
10	28	29				0	20	23	26	20	26	11
11	27	32				0	21	26	22	13	27	23
12	23	33				0	17	26	21	11	24	40
13	23	33				0	14	23	19	16	22	33
14	22	34				0	20	23	21	17	21	30
15	22	33				0	26	21	24	16	22	27
16	22	31				0	25	20	0	16	26	27
17	25	37				0	21	25	0	15	31	22
18	26	38				0	19	23	20	17	29	19
19	25	28				0	19	24	19	15	41	20
20	25	0				0	17	25	12	15	17	26
21	26	0				0	15	24	13	15	32	36
22	*25	0				0	14	27	22	*17	22	47
23	26	0				0	14	30	0	16	14	31
24	29	0				0	14	31	0	14	28	46
25	29	0				0	11	29	0	18	24	33
26	28	0				0	10	26	0	15	24	17
27	22	0				0	10	26	0	17	23	12
28	28	0				3.8	2.8	28	0	40	33	2.1
29	*26	0				14	*10	39	0	*44	41	0
30	29	0				16	12	33	0	31	34	0
31	31	-----				23	-----	31	-----	14	31	-----
Total	834	581	0	0	0	56.8	550.8	850	363.7	489.1	746.6	768.1
Mean	26.9	19.4	0	0	0	1.83	18.4	27.4	12.1	15.8	24.1	25.6
Ac-ft	1,650	1,150	0	0	0	113	1,090	1,690	721	970	1,480	1,520

Calendar year 1962: Max 60 Min 0 Mean 16.7 Ac-ft 12,080

Water year 1962-63: Max 47 Min 0 Mean 14.4 Ac-ft 10,380

\* 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 1963. 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.--13 years, 179 cfs (129,600 acre-ft per year).

Extremes.--Maximum discharge during year, 3,920 cfs July 28 (gage height, 6.28 ft); minimum daily, 0.5 cfs July 22, 23.

1903, 1921, 1950-63: 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 good except those for periods of ice effect, which are poor. Discharge measurements generally made once a week during 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 Mar. 21, Apr. 15, June 17, July 1-28)

Oct. 1 to July 27

July 28 to Sept. 30

1.9	0	2.4	32	1.9	1.0	2.7	87
2.0	1.7	2.5	53	2.0	2.0	3.0	220
2.1	5.0	2.8	163	2.1	4.5	3.5	515
2.2	10	3.2	333	2.2	8.5	4.0	880
2.3	19	3.6	580	2.3	15	4.5	1,370
				2.5	38		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	16	28	91	115	165	144	60	27	95	32	34	13
2	14	26	102	125	160	140	32	10	42	31	24	55
3	8.3	24	106	132	150	136	178	8.8	34	29	6.1	21
4	9.4	28	129	140	193	144	360	6.6	26	31	4.0	5.3
5	10	27	114	148	186	159	360	6.1	22	24	3.0	3.2
6	10	26	110	144	174	167	355	8.8	19	9.4	3.2	3.2
7	9.4	24	110	144	178	167	377	10	18	6.6	2.5	3.8
8	8.3	23	121	163	174	144	394	8.3	18	5.0	1.8	6.7
9	6.6	26	121	159	171	125	382	8.3	17	4.7	4.2	3.2
10	6.1	27	117	110	163	133	372	6.1	16	4.3	4.0	2.5
11	9.4	42	125	62	155	133	355	6.1	10	4.0	3.5	14
12	14	45	125	68	140	136	350	5.6	4.0	5.0	3.8	14
13	12	45	125	71	145	133	366	6.1	2.7	3.7	4.2	30
14	13	45	133	74	150	125	285	6.6	3.0	3.4	3.2	38
15	14	40	136	77	160	121	163	5.6	5.0	3.0	2.0	32
16	14	31	133	79	163	129	110	5.0	290	2.0	2.0	28
17	19	36	140	80	163	129	91	5.6	400	1.7	3.5	14
18	24	40	140	68	163	136	70	4.3	236	3.0	3.3	5.7
19	22	70	129	62	152	133	63	5.6	133	1.7	7.3	3.0
20	17	102	133	66	152	125	67	4.7	63	1.4	30	2.8
21	23	98	129	70	155	110	60	4.0	53	1.0	46	8.1
22	27	87	114	67	163	106	53	5.6	548	.5	46	16
23	27	91	102	64	155	102	53	5.6	280	.5	21	12
24	34	77	64	70	155	95	53	4.0	193	1.5	6.1	84
25	36	84	60	66	155	91	51	3.7	148	5.6	4.5	236
26	31	84	64	68	148	84	42	3.0	98	2.0	3.5	365
27	22	84	76	70	144	87	36	5.0	63	4.0	4.2	359
28	26	98	86	72	144	73	38	4.0	49	986	12	220
29	26	102	98	66	60	34	6.1	4.2	413	413	22	107
30	26	95	104	71	53	32	4.7	38	168	168	21	79
31	28	-----	110	84	-----	70	-----	4.0	-----	57	16	-----
Total	562.5	1,655	3,447	2,855	4,476	3,690	5,242	204.9	2,965.7	1,845.0	447.3	1,896.1
Mean	18.1	55.2	111	92.1	160	119	175	6.61	98.9	59.5	14.4	63.2
Ac-ft	1,120	3,280	6,840	5,660	8,880	7,320	10,400	406	5,880	3,660	887	3,760

Calendar year 1962: Max 2,650 Min 2.4 Mean 146 Ac-ft 106,000  
 Water year 1962-63: Max 986 Min 0.5 Mean 80.2 Ac-ft 58,090

Note.--Stage-discharge relation affected by ice Dec. 24 to Jan. 4, Jan. 10 to Feb. 3, Feb. 12-15.

## 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 1963. 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.--50 years (1910-23, 1926-63), 218 cfs (157,800 acre-ft per year).

Extremes.--Maximum discharge during year, 1,650 cfs May 18 (gage height, 4.16 ft); minimum not determined.

1909-23, 1925-63: 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 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)  
(Shifting-control method used Apr. 1-15)

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 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	74	50					16	178	745	123	62	117
2	60	50					54	178	480	126	62	100
3	53	42					89	175	358	123	75	90
4	53	29					97	240	354	125	97	84
5	*53	29					64	420	372	128	86	84
6	53	29					64	648	344	119	80	107
7	53	29					64	745	332	119	76	126
8	53	29					84	912	349	154	67	105
9	53	30					138	936	316	144	70	94
10	53	33					*154	681	264	138	94	95
11	53	33					154	582	257	130	97	110
12	53	33	(*)				146	552	293	125	109	95
13	54	*33					126	490	358	136	*92	90
14	54	33					132	624	380	123	74	117
15	54	41					165	790	344	110	66	100
16	43	19	3.2	3.4	3.6	3.7	212	*896	296	100	67	90
17	38	3.2					247	1,220	*257	*92	67	*86
18	41	2.9					221	1,540	275	86	70	102
19	54	2.9					142	1,560	271	82	67	97
20	67	2.9					98	1,260	264	79	68	100
21	76	2.9					75	1,030	250	86	70	134
22	*76	2.9					74	1,100	227	105	72	109
23	76	2.9					74	850	212	89	75	98
24	90	2.9					74	738	186	84	84	92
25	97	2.9					109	952	172	79	74	88
26	97	3.0					159	842	150	77	92	83
27	80	3.0					178	1,050	154	70	138	83
28	68	3.0					178	1,180	138	67	119	80
29	68	3.0					178	1,100	130	66	105	79
30	56	3.0					178	888	132	65	107	77
31	50							968		64	112	
Total	1,903	583.4	99.2	105.4	100.8	114.7	3,744	25,325	3,660	3,214	2,594	2,912
Mean	61.4	19.4	3.2	3.4	3.6	3.7	125	817	289	104	83.7	97.1
Ac-ft	3,770	1,160	197	209	200	228	7,430	50,230	17,180	6,370	5,150	5,780

Calendar year 1962: Max 1,670 Min - Mean 235 Ac-ft 170,400  
Water year 1962-63: Max 1,560 Min - Mean 135 Ac-ft 97,900

\* Discharge measurement made on this day.

Note.--No gage-height record Nov. 22 to Apr. 1.



## 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 1963. 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.--34 years, 31.1 cfs (22,520 acre-ft per year).

Extremes.--Maximum discharge during year, 117 cfs May 30 (gage height, 2.23 ft); minimum daily, 0.1 cfs Nov. 19.

1929-63: 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 periods of no gage-height record, which are poor. 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	1.5	26
.8	1.0	1.8	52
.9	2.0	2.1	93
1.0	3.5	2.3	130
1.2	9.5		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	15	14					21	49	93	11	9	18
2	15	14					38	*48	85	12	10	16
3	15	14					38	50	82	*12	10	16
4	14	14					36	53	85	13	11	15
5	*16	14					35	54	*82	12	12	14
6	16	15					34	69	70	12	*12	19
7	14	15					32	80	59	12	11	19
8	14	15					35	72	58	14	9.2	18
9	14	16					39	65	53	18	8.9	14
10	14	17					39	65	49	17	11	17
11	14	18					39	62	44	14	12	20
12	14	20					47	48	39	15	12	17
13	14	*22					82	47	26	16	*12	14
14	14	14					77	47	21	14	9.5	18
15	14	14					90	54	20	12	8.6	16
16	17	1.9		0.5	0.5	0.5	*107	*58	19	12	8.6	14
17	17	.4					107	67	*19	*12	10	*14
18	17	.2					68	69	20	10	12	14
19	18	.1					49	67	24	10	12	12
20	18	.4					29	73	21	9.5	14	14
21	18	.4					18	79	19	10	16	19
22	*19	.2					15	88	17	10	14	15
23	19	.2					14	97	16	9.5	14	*14
24	19	.2					14	98	16	9.5	14	14
25	17	.2					14	98	14	9.5	14	14
26	17	.3					24	88	14	9.5	19	13
27	16	.3					33	98	13	9.5	35	12
28	16	.3					33	109	12	9	25	12
29	15	.3					41	113	12	9	20	11
30	14	.3					48	113	11	9	19	12
31	16	-----			-----		-----	*104	-----	9	19	-----
Total	490	241.7	15.0	15.5	14.0	15.5	1,296	2,282	1,113	361.0	423.8	455
Mean	15.8	8.06	0.48	0.5	0.5	0.5	43.2	73.6	37.1	11.6	13.7	15.2
Ac-ft	972	479	30	31	28	31	2,570	4,530	2,210	716	841	902

Calendar year 1962: Max 198 Min 0.1 Mean 41.1 Ac-ft 29,730  
 Water year 1962-63: Max 113 Min 0.1 Mean 18.4 Ac-ft 13,340

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 17-21, Nov. 2-13, Nov. 23 to Apr. 1, July 22 to Aug. 5.

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 1963.

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.--12 years, 21.3 cfs (15,420 acre-ft per year).

Extremes.--Maximum discharge during year, 115 cfs May 5 (gage height, 2.64 ft); minimum not determined.

1951-63: 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	1.8	27
1.4	6.5	2.0	42
1.6	16	2.5	95

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9.6	7.4	5.9				* 14	24	17	7.0	5.9	14
2	9.6	7.4	5.3				b 8.5	33	20	* 7.4	* 10	12
3	* 9.2	7.4	5.0				b 8.5	46	21	9.2	12	12
4	8.8	6.5	* 5.0				8.8	46	* 18	10	11	* 11
5	9.6	6.5	4.1		(*)	(*)	9.2	49	16	9.2	9.6	11
6	8.8	6.2	5.0				9.6	49	16	8.3	11	11
7	8.3	5.0	5.0				16	* 49	14	8.3	9.2	12
8	7.8	* 5.3	5.0	(*)			20	44	14	11	9.2	11
9	7.8	6.2	4.4				18	36	15	14	9.6	10
10	7.4	5.9	4.4				14	33	14	16	9.6	10
11	7.4	5.3				2.8	14	33	14	13	12	10
12	7.0	5.0					20	29	14	14	12	9.2
13	7.0	5.3					25	28	14	12	11	9.2
14	7.0	6.5					34	27	14	11	9.2	10
15	7.0	6.5					31	26	14	9.6	8.8	10
16	9.2	6.2		3.4	3.2		22	28	13	9.2	9.2	9.2
17	12	5.9					17	28	14	8.8	9.6	8.8
18	10	5.9					14	26	14	7.8	11	8.8
19	12	5.3					14	25	14	7.4	9.2	8.3
20	11	6.5					14	23	13	7.0	9.6	18
21	9.6	6.2	3.6			* 5	13	* 24	12	7.4	9.6	19
22	9.6	5.3				5.3	12	25	11	8.3	10	16
23	9.2	5.6				6.2	16	23	11	7.4	10	14
24	9.2	5.9				6.2	23	23	9.2	7.4	9.6	14
25	8.8	5.9				6.5	25	22	8.8	11	9.2	13
26	8.3	5.6				9.6	26	20	8.8	9.2	13	12
27	7.8	5.0				16	26	21	7.8	7.4	18	12
28	7.8	4.7				14	18	20	7.8	6.5	16	12
29	7.4	5.3			-	14	16	20	7.8	6.2	16	12
30	7.8	5.6				16	23	20	7.4	5.9	15	12
31	7.8					18		18		5.6	15	
Total	269.8	177.3	124.7	105.4	89.6	172.8	529.6	918	394.6	282.5	340.1	351.5
Mean	8.70	5.91	4.02	3.4	3.2	5.57	17.7	29.6	13.2	9.11	11.0	11.7
Ac-ft	535	352	247	209	178	343	1,050	1,820	783	560	675	697

Calendar year 1962: Max 272 Min - Mean 29.1 Ac-ft 21,060

Water year 1962-63: Max 49 Min - Mean 10.3 Ac-ft 7,450

Peak discharge (base, 120 cfs).--No peak above base.

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 11 to Mar. 21 (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 1963.

Gage.--Water-stage recorder. Datum of gage is 8,431.26 ft above mean sea level, datum of 1929.

Average discharge.--12 years, 491 cfs (355,500 acre-ft per year).

Extremes.--Maximum discharge during year, 2,400 cfs May 19 (gage height, 4.15 ft); minimum daily, 55 cfs Dec. 26.  
1951-63: 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 periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

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 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	232	* 192	130	85	85	65	* 306	476	1,200	249	149	306
2	229	186	120	90	90	70	275	476	1,060	* 241	* 151	275
3	* 208	186	110	95	90	70	271	532	815	275	163	245
4	201	177	* 110	95	80	70	334	640	* 752	293	186	* 225
5	218	166	100	85	* 85	* 65	342	850	766	316	212	218
6	232	168	100	80	95	65	293	1,180	724	284	208	275
7	208	161	100	90	100	65	342	* 1,540	668	266	198	324
8	198	149	110	* 90	100	65	420	1,680	668	293	193	284
9	195	158	100	90	100	65	450	1,720	661	338	177	254
10	189	161	95	90	90	70	415	1,420	616	356	201	241
11	189	158	90	80	80	65	405	1,290	604	352	229	262
12	186	151	95	70	75	65	460	1,120	592	352	249	254
13	183	154	100	80	70	70	550	1,060	654	347	271	229
14	186	177	110	80	75	65	640	1,110	724	311	218	249
15	186	174	100	80	75	75	647	1,190	724	266	195	280
16	192	174	110	80	70	70	562	1,420	610	249	186	241
17	245	149	120	80	70	70	580	1,720	538	236	186	225
18	241	123	120	80	70	70	532	2,110	538	222	195	218
19	245	110	110	80	75	70	420	2,240	532	208	189	245
20	271	120	100	85	70	90	352	2,010	492	195	198	266
21	266	120	90	90	70	120	280	* 1,710	470	195	195	455
22	258	130	80	90	70	120	254	1,720	435	232	205	380
23	245	130	90	90	70	161	271	1,570	415	225	222	329
24	241	132	95	85	70	215	329	1,300	385	205	229	293
25	249	136	80	80	70	232	356	1,410	347	192	215	271
26	249	130	55	80	70	293	385	1,380	320	195	222	254
27	249	120	70	80	65	316	445	1,420	311	180	400	241
28	222	116	75	80	70	316	400	1,560	288	171	410	229
29	208	114	80	80	-	356	390	1,680	271	166	320	222
30	208	120	80	80	-----	306	435	1,320	266	161	284	215
31	198	-----	85	80	-----	288	-----	1,480	-----	151	275	-----
Total	6,827	4,442	3,010	2,600	2,200	4,103	12,141	42,334	17,446	7,722	6,921	8,005
Mean	220	148	97.1	83.9	78.6	132	405	1,366	582	249	223	267
Ac-ft	13,540	8,810	5,970	5,160	4,360	8,140	24,080	83,970	34,600	15,320	13,730	15,880

Calendar year 1962: Max 2,780 Min 55 Mean 652 Ac-ft 471,700  
Water year 1962-63: Max 2,240 Min 55 Mean 323 Ac-ft 233,600

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 19-21, Nov. 30 to Mar. 22.

S-2185. Goose Creek at Wagonwheel Gap, Colo.

Location.--Lat 37°45'07", long 106°49'46", in SW $\frac{1}{4}$ SE $\frac{1}{4}$  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 1963.

Gage.--Water-stage recorder. Altitude of gage is 8,460 ft (from topographic map).

Average discharge.--9 years, 56.1 cfs (40,610 acre-ft per year).

Extremes.--Maximum discharge during year, 167 cfs May 17 (gage height, 3.29 ft); minimum daily, 11 cfs Dec. 26, 27, Jan. 12-20, 27-29.

1954-63: 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)

2.3	8.0	2.8	46
2.5	17	2.9	64
2.6	23	3.2	*134
2.7	33		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	24	21	17	12	18	17	53	38	82	23	19	29
2	25	21	17	12	20	17	37	41	79	23	21	25
3	*24	20	14	12	18	17	32	48	71	24	20	24
4	24	20	15	12	20	17	33	64	*68	28	21	23
5	*27	20	14	12	21	17	37	71	68	27	22	23
6	26	19	14	12	22	16	36	82	64	24	25	28
7	23	16	14	12	22	16	50	103	59	23	25	36
8	23	16	15	12	22	16	60	108	57	23	22	27
9	22	16	13	12	21	16	60	105	55	30	22	23
10	22	19	13	12	20	16	*45	96	46	30	24	24
11	22	16	*13	12	19	15	42	110	45	31	29	25
12	22	15	13	11	19	14	48	88	43	41	28	24
13	22	*16	13	11	19	15	57	96	46	34	*29	23
14	22	19	13	11	19	15	66	100	50	27	24	23
15	22	19	14	11	18	15	68	103	50	25	23	23
16	23	17	15	11	18	15	46	120	45	23	22	22
17	32	18	15	11	18	14	42	*129	42	22	23	*21
18	30	18	15	11	18	*14	34	134	43	21	22	22
19	32	14	16	11	18	15	32	124	43	22	22	24
20	32	18	12	11	18	19	31	120	41	22	24	38
21	28	18	12	12	18	26	32	127	37	24	24	55
22	28	16	12	12	18	33	29	129	32	27	26	38
23	*27	16	12	12	18	43	30	129	32	*27	34	33
24	26	16	14	*12	18	45	38	117	30	24	31	29
25	25	16	b12	12	18	45	45	120	27	25	28	28
26	25	16	b11	12	18	50	40	108	25	25	28	28
27	22	15	11	11	*18	60	42	98	26	21	38	26
28	22	14	12	11	18	64	34	86	*26	21	33	25
29	21	16	12	11	-	64	33	91	26	20	33	25
30	22	16	12	12	-----	53	34	91	24	20	30	24
31	22	-----	12	13	-----	57	-----	88	-----	19	29	-----
Total	768	517	417	361	532	856	1,266	3,064	1,382	776	801	818
Mean	24.8	17.2	13.5	11.6	19.0	27.6	42.2	98.8	46.1	25.0	25.8	27.3
Ac-ft	1,520	1,030	827	716	1,060	1,700	2,510	6,080	2,740	1,540	1,590	1,620

Calendar year 1962: Max 390 Min - Mean 75.6 Ac-ft 54,750  
 Water year 1962-63: Max 134 Min 11 Mean 31.7 Ac-ft 22,930

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

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 10-13, Dec. 27 to Mar. 17 (stage-discharge relation affected by ice during most of period), June 27.

## RIO GRANDE BASIN

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 1963. 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.--39 years, 212 cfs (153,500 acre-ft per year).

Extremes.--Maximum discharge during year, 686 cfs May 16 (gage height, 3.67 ft); minimum not determined.

1910-22, 1936-63: 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 poor. 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)  
(Shifting-control method used Mar. 27-29)

1.1	30	2.0	142
1.2	39	2.5	258
1.4	57	3.0	415
1.6	80	3.5	610

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	49	59					175	182	314	59	47	57
2	48	91					142	195	300	57	52	44
3	62	86					117	220	292	56	56	41
4	64	64					117	306	278	62	61	40
5	*76	59					122	352	266	66	58	39
6	79	58					119	412	244	58	67	46
7	70	49					147	470	227	54	65	79
8	67	44					193	502	220	60	53	52
9	65	50					202	482	227	70	58	46
10	60	52					171	470	258	81	68	45
11	60	43	(*)			31	167	498	236	76	69	52
12	49	35					191	482	222	98	60	47
13	43	*35					227	486	217	108	60	45
14	42	49					280	490	222	78	*49	44
15	42	42					326	478	220	69	44	45
16	46	45	22	23	35		*266	526	204	64	46	40
17	79	44					217	*558	200	64	44	39
18	80	40					173	558	191	57	42	41
19	90	35					155	546	189	55	42	*44
20	83	34					128	530	197	55	47	75
21	70						120	530	186	62	48	119
22	68						119	538	158	65	57	78
23	*66					55	134	550	153	*58	54	59
24	65			(*)			178	518	147	54	49	53
25	64						195	482	144	56	46	48
26	57						110	436	137	61	52	45
27	55					(*)	*119	387	137	53	74	42
28	52						128	167	352	*139	51	40
29	51						162	171	359	144	51	39
30	52						182	173	356	135	50	38
31	54						162		339	46	51	
Total	1,908	1,314	682	713	980	1,765	5,265	13,590	6,204	1,954	1,690	1,522
Mean	61.5	43.8	22	23	35	56.9	176	438	207	63.0	54.5	50.7
Ac-ft	3,780	2,610	1,350	1,410	1,940	3,500	10,440	26,960	12,310	3,880	3,350	3,020

Calendar year 1962: Max 1,530 Min - Mean 249 Ac-ft 180,500  
Water year 1962-63: Max 558 Min - Mean 103 Ac-ft 74,550

Peak discharge (base, 900 cfs).--No peak above base.

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 18 to Dec. 22. No gage-height record Dec. 23 to Mar. 26 (stage-discharge relation affected by ice during most of period).

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 1963. 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.--74 years, 916 cfs (663,200 acre-ft per year).

Extremes.--Maximum discharge during year, 3,170 cfs May 19 (gage height, 3.43 ft); minimum daily, 110 cfs Dec. 26.

1889-1963: 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 made two or more times 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 Fiver basin (see elsewhere in this report).

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

0.5	98	2.0	1,010
.8	180	2.5	1,570
1.1	335	3.0	2,320
1.5	588	4.0	4,240

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	324	286	217	160	150	165	634	745	1,600	335	162	401
2	313	313	212	160	155	160	527	770	1,440	302	168	389
3	313	313	177	158	155	170	449	830	1,180	308	189	330
4	296	291	180	b 160	155	155	527	1,000	1,090	335	221	296
5	308	269	174	b 150	160	140	568	1,240	1,080	377	221	263
6	353	258	168	b 145	160	145	507	1,570	1,030	347	261	302
7	330	237	174	b 140	165	150	574	2,030	946	318	280	431
8	308	212	194	b 135	175	155	745	2,240	937	318	231	389
9	296	231	177	140	175	155	813	2,340	928	401	221	330
10	291	248	156	145	170	165	721	2,050	919	449	248	302
11	280	242	142	140	165	160	680	1,950	892	449	291	308
12	269	221	162	130	145	160	737	1,760	857	468	291	324
13	253	221	180	120	130	155	874	1,690	883	488	330	291
14	253	264	171	130	135	150	1,040	1,710	974	419	286	266
15	253	286	171	138	145	170	1,160	1,760	1,000	347	237	335
16	264	269	174	145	160	150	928	2,060	883	324	226	296
17	353	264	189	150	150	145	901	2,360	813	302	221	263
18	383	217	194	150	145	160	804	2,810	779	263	226	258
19	389	177	221	160	158	142	680	3,020	779	258	231	280
20	425	177	168	145	160	156	554	2,810	754	242	237	308
21	401	258	142	150	170	189	474	2,460	704	242	242	602
22	389	217	140	150	155	242	395	2,410	634	263	248	534
23	377	212	140	165	160	318	407	2,340	596	302	286	431
24	365	203	140	155	165	383	520	1,980	561	258	302	371
25	365	203	130	160	165	395	611	1,980	520	248	296	341
26	365	203	110	160	160	468	618	2,000	481	248	286	324
27	365	177	130	140	170	554	696	1,830	449	226	413	313
28	347	168	140	130	160	618	641	1,920	449	203	574	291
29	313	152	150	135	-	704	626	2,080	431	189	455	280
30	308	185	150	140	-----	596	680	1,740	413	180	395	280
31	302	-----	155	144	-----	581	-----	1,800	-----	171	377	-----
Total	10,151	6,981	5,128	4,530	4,418	3,156	20,091	59,285	25,002	9,580	8,652	10,129
Mean	327	233	165	146	158	263	670	1,912	833	309	279	338
Ac-ft	20,130	13,850	10,170	8,990	8,760	16,180	39,850	117,600	49,590	19,000	17,160	20,090

Calendar year 1962: Max 4,390 Min 110 Mean 1,047 Ac-ft 758,300

Water year 1962-63: Max 3,020 Min 110 Mean 472 Ac-ft 341,400

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 22 to Jan. 3, Jan. 9 to Mar. 18 (stage-discharge relation affected by ice during most of periods).

## RIO GRANDE BASIN

S-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 1963. 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.--19 years (1940-41, 1943-47, 1949-63), 23.0 cfs (16,650 acre-ft per year).

Extremes.--Maximum discharge during year, 49 cfs Sept. 7 (gage height, 0.94 ft); minimum not determined.

1919-24, 1936-63: 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 ice effect or no gage-height record, which are poor. One small diversion above station.

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

0.2	3.0
.3	5.5
.5	13
.7	26
.9	45

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8.0	8.0					15	18	16	4.5	3.8	9.0
2	7.6	1.4					12	18	15	4.5	4.0	8.0
3	7.6	1.3					11	25	15	4.2	4.8	9.0
4	7.2	1.3					10	27	14	5.0	5.8	9.0
5	7.2	1.3					11	30	12	4.8	5.0	8.3
6	7.6	1.3					11	30	12	4.8	7.6	1.1
7	7.2	8.6					15	31	11	4.8	8.0	2.4
8	6.9	5.2					23	33	11	8.3	8.0	1.2
9	7.2	4.5					26	27	11	9.0	1.1	9.0
10	8.6	4.0					22	31	11	10	1.1	9.4
11	*7.2		(*)			3.7	20	36	10	9.8	8.3	1.1
12	7.2						24	25	9.4	1.1	8.0	8.6
13	7.2						30	23	9.4	8.0	6.9	8.6
14	7.2						34	26	9.4	6.2	*5.8	8.3
15	7.2						31	30	9.4	5.2	4.8	9.0
16	9.8		3.5				*19	32	8.6	4.8	4.8	8.3
17	1.3						16	*31	9.0	4.5	5.8	8.0
18	9.8						12	32	9.8	4.5	6.9	7.2
19	9.4						13	30	11	4.2	6.9	7.2
20	9.8						14	30	14	5.0	9.8	1.1
21	8.0	4.5					14	29	9.4	7.2	6.9	1.1
22	7.2						15	29	8.0	8.6	1.1	8.3
23	6.9					8.0	17	27	7.2	*5.5	7.2	7.6
24	6.9						19	24	6.6	5.2	6.6	*7.2
25	6.9						18	23	5.8	5.0	5.8	6.9
26	6.6						*12	20	5.2	6.6	10	6.9
27	6.2				(*)		13	20	5.2	6.2	12	6.6
28	5.8						16	14	17	*5.2	6.2	6.6
29	5.8						20	13	17	4.8	5.8	10
30	5.8						14	16	17	4.8	4.5	6.2
31	6.6						15			3.8	10	
Total	235.6	186.3	108.5	99.2	112.0	204.0	535	802	290.2	187.7	240.5	269.4
Mean	7.60	6.21	3.5	3.2	4.0	6.58	17.8	25.9	9.67	6.05	7.76	8.98
Ac-ft	467	370	215	197	222	405	1,060	1,590	576	372	477	534

Calendar year 1962: Max 216 Min - Mean 33.8 Ac-ft 24,460  
Water year 1962-63: Max 36 Min - Mean 8.96 Ac-ft 6,480

Peak discharge (base, 120 cfs).--No peak above base.

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 9-19. No gage-height record Nov. 20 to Mar. 25 (stage-discharge relation affected by ice during most of period).

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 1963. 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.--37 years, 326 cfs (236,000 acre-ft per year).

Extremes.--Maximum discharge during year, 1,210 cfs May 9 (gage height, 4.22 ft); minimum daily, 12 cfs Apr. 4. 1926-63: 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, 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 tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 18)

Oct. 1-17		Oct. 18 to Sept. 30	
2.1	11	1.5	6.0
2.2	23	1.6	13
2.4	59	1.7	24
2.7	133	1.9	58
		2.2	134
		2.6	285
		3.2	590
		4.0	1,060

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	35	*111	125				15	179	546	159	37	111
2	32	82	128				17	134	445	131	44	120
3	30	108	108				15	137	340	122	54	78
4	30	114	100				*12	176	262	128	78	73
5	26	90	90				45	350	193	120	88	73
6	28	73	94				54	640	172	114	100	76
7	30	62	105				23	808	114	108	114	114
8	23	49	115				71	784	88	117	100	111
9	25	42	120		(*)		131	*922	125	*122	82	*85
10	16	53	*125				95	1,010	182	120	100	90
11	*15	78	115			100	49	892	*200	125	114	88
12	26	73	105				78	712	200	117	122	90
13	42	71	90				156	778	186	114	122	85
14	37	*47	100				228	736	190	82	125	73
15	33	34	92				*303	724	179	102	105	82
16	50	23	88				232	754	186	120	98	92
17	89	42	98				190	706	212	134	92	78
18	154	131	98				140	844	168	111	100	73
19	111	114	105				78	952	162	100	100	95
20	105	117	82				37	904	162	95	111	120
21	92	156	65				24	790	159	88	114	140
22	71	162	42				*32	778	159	88	*114	134
23	60	153	43				35	802	179	102	108	92
24	54	146	45				58	667	220	108	102	78
25	37	143	40				122	689	208	90	88	100
26	38	140					*122	108	678	190	88	98
27	38	111					117	131	606	186	78	90
28	34	100					111	122	667	208	60	78
29	28	88	48				95	125	700	208	49	95
30	21	90					76	165	618	193	*42	102
31	*20	-----					27	-----	535	-----	37	-----
Total	1,430	2,803	2,606	2,232	5,040	2,819	3,068	20,672	6,222	3,171	2,944	2,814
Mean	46.1	93.4	84.1	72	180	90.9	102	667	207	102	95.0	93.8
Ac-ft	2,840	5,560	5,170	4,430	10,000	5,590	6,090	41,000	12,340	6,290	5,840	5,580

Calendar year 1962: Max 1,690 Min 15 Mean 302 Ac-ft 218,600

Water year 1962-63: Max 1,010 Min 12 Mean 153 Ac-ft 110,700

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 6-12, 21, 23, Dec. 25 to Mar. 20.



## 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 1963. 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.--51 years, 264 cfs (191,100 acre-ft per year).

Extremes.--Maximum discharge determined during year, 351 cfs May 12 (gage height, 2.88 ft), but may have been higher in February; maximum gage height, 4.75 ft Feb. 26 (backwater from ice); minimum daily discharge, 5.1 cfs Aug. 2-6.  
1912-63: 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 poor prior to Apr. 23 and fair thereafter. 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 Dec. 7-22, Mar. 25 to Apr. 22, Sept. 3-19)

0.8	3.0	1.5	55
.9	6.0	2.0	131
1.1	17	2.5	230
1.3	33	3.0	375

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*29	44	150			197	108	21	41	37	10	20
2	29	45				193	91	23	39	41	5.1	21
3	34	58				191	74	29	30	42	5.1	20
4	36	70				187	61	*10	37	35	5.1	20
5	36	91				185	*53	11	38	33	5.1	20
6	36	103	140				49	23	45	33	5.1	18
7	36	103	*156				49	*66	41	33	6.0	17
8	33	98	160				48	140	39	32	12	18
9	31	94	169				44	64	38	*31	12	*19
10	27	88	179				50	165	37	33	18	18
11	26	85	181	(*) 80	235	165	64	324	*33	35	18	18
12	25	84	173				58	248	33	36	16	16
13	23	88	165				48	128	27	40	28	17
14	23	90	162				42	100	30	38	35	18
15	30	90	156				38	78	30	36	35	18
16	32	165	156				38	62	38	34	31	18
17	36		156				38	102	37	33	28	19
18	38		158				35	54	48	33	26	19
19	41		163				31	51	72	31	23	19
20	48		167				28	54	53	27	24	20
21	50	165	165				24	64	49	28	28	20
22	*54		153				100	53	47	28	23	18
23	55		140				*17	103	43	28	24	16
24	54		115				95	171	41	27	23	14
25	53		70				94	84	33	27	21	12
26	50	60					28	64	29	27	19	12
27	45						115	24	31	26	*18	11
28	42						*121	18	45	33	27	18
29	40						125	20	56	37	28	19
30	42						123	20	73	29	*27	20
31	44	-----	-----	-----	-----	-----	118	-----	86	-----	20	-----
Total	1,178	3,706	4,194	2,480	6,506	4,635	1,252	2,656	1,158	986	580.5	515
Mean	38.0	124	135	80	232	150	41.7	85.7	38.6	31.8	18.7	17.2
Ac-ft	2,340	7,350	8,320	4,920	12,900	9,190	2,480	5,270	2,300	1,960	1,150	1,020

Calendar year 1962: Max 1,040 Min 23 Mean 166 Ac-ft 120,100  
Water year 1962-63: Max - Min 5.1 Mean 81.8 Ac-ft 59,200

\* Discharge measurement made on this day.

Note.--No gage-height record Nov. 14 to Dec. 6, Mar. 13 (stage-discharge relation affected by ice during most of periods), Sept. 3, 4, 6, 8, 10, 13, 15-17, 19, 20, 22-24. Stage-discharge relation affected by ice Dec. 23 to Feb. 26, Mar. 6-24. Discharge computed from once- or twice-daily staff-gage readings Apr. 23 to Sept. 2, Sept. 5, 7, 9, 11, 12, 14, 18, 21, 25-30.

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 1963. 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.--30 years, 12.9 cfs (9,340 acre-ft per year).

Extremes.--Maximum discharge during year not determined (probably occurred during period of no gage-height record in March); minimum daily, 0.2 cfs July 30 to Aug. 2.

1923-26, 1936-63: 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, 0.2 cfs Sept. 3, 1950, July 30 to Aug. 2, 1963, but may have been less during periods of no gage-height record.

Maximum discharge known since at least 1872, that of May 14, 1941, from information by local residents.

Remarks.--Records fair 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 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		4.6						8.2	14	1.4	0.2	4.9
2		4.6						8.2	13	1.3	.2	3.7
3		4.6						8.2	11	2.8	.3	3.7
4		4.6						8.2	10	3.1	1.4	3.7
5		4.9						10	8.6	3.7	2.4	3.4
6		6.0						11	8.2	3.4	4.3	6.8
7		4.9						14	7.8	4.3	4.6	8.2
8	3.4	4.3						*18	7.8	11	3.7	5.2
9		4.9						22	8.2	6.8	*2.8	3.7
10		4.9						23	*8.2	8.2	4.0	4.6
11		6.4						19	7.3	4.6	9.1	4.6
12		5.4						19	6.8	4.0	9.1	4.3
13		4.7						17	6.4	3.7	2.6	4.0
14		5.8	(*)					18	6.8	3.4	6.8	3.7
15		5.2						18	6.8	2.4	5.5	3.4
16	5.5		3.6	1.7	3.0	11	13	18	7.3	*2.8	5.5	*3.4
17	*7.8						(*)	19	7.3	3.1	6.0	3.1
18	6.4							19	7.3	2.4	6.8	3.1
19	6.0	(*)						19	7.3	1.9	4.6	3.1
20	5.5							19	6.4	2.0	6.8	4.9
21	4.9				(*)	(*)		21	5.5	1.0	6.4	5.2
22	4.3							21	5.2	1.0	4.6	3.7
23	4.6	4.8						21	4.9	1.9	3.7	3.4
24	4.3							20	4.3	1.2	3.7	3.1
25	4.6							19	4.3	.8	3.4	3.1
26	4.3							18	3.7	1.0	4.3	2.8
27	4.9							17	3.1	.5	5.2	2.8
28	4.6			(*)				16	2.8	.4	4.3	2.8
29	4.6							16	2.4	.3	3.7	2.8
30	4.3							16	2.0	.2	3.7	2.8
31	4.6							15		.2	4.0	
Total	132.2	147.8	111.6	52.7	84.0	341	390	515.8	204.7	84.8	140.7	118.0
Mean	4.26	4.93	3.6	1.7	3.0	11	13	16.6	6.82	2.74	4.54	3.93
Ac-ft	262	293	221	105	167	676	774	1,020	406	168	279	234

Calendar year 1962: Max - Min - Mean 13.4 Ac-ft 9,680

Water year 1962-63: Max - Min 0.2 Mean 6.37 Ac-ft 4,600

Peak discharge (base, 70 cfs).--No peak above base.

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 1-15, Nov. 12 to May 2 (stage-discharge relation affected by ice during most of period), July 28 to Aug. 3.

## 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 1963. 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.--51 years, 71.0 cfs (51,400 acre-ft per year).

Extremes.--Maximum discharge during year, 198 cfs Mar. 29 (gage height, 1.21 ft); maximum gage height, 1.59 ft Mar. 8 (backwater from ice); minimum daily discharge, 12 cfs Dec. 26.

1910-12, 1914-63: 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, 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)

0.1	12
.3	23
.5	44
.7	74
1.0	135

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	36	30	38	17	21	32	71	28	22	14	17	37
2	34	31	33	19	29	31	58	26	22	14	18	30
3	34	32	26	20	35	30	34	24	36	14	24	27
4	33	31	28	20	33	28	43	28	27	15	37	25
5	32	31	21	19	37	27	44	34	22	18	43	24
6	32	31	30	19	41	29	42	44	19	18	31	26
7	32	27	27	19	43	29	50	52	17	17	24	47
8	32	23	30	19	43	30	64	*61	17	21	22	47
9	32	25	29	19	43	28	68	55	18	20	*21	37
10	32	27	*29	18	38	28	55	47	*22	24	21	31
11	31	28	29	17	30	28	47	45	17	30	30	31
12	31	22	30	16	31	28	45	44	16	27	38	33
13	31	22	29	14	29	27	51	36	16	27	37	29
14	31	31	28	14	29	30	58	34	14	24	33	29
15	31	38	25	15	33	34	64	36	15	21	27	32
16	*32	34	23	15	31	32	51	30	17	*22	22	*33
17	47	30	24	15	31	45	*43	34	23	27	22	30
18	47	25	28	15	31	24	37	37	22	25	24	28
19	40	*28	30	15	33	28	32	30	24	22	23	27
20	43	27	24	15	32	28	34	28	24	21	24	30
21	38	28	20	16	31	31	36	33	23	21	31	55
22	33	29	20	17	30	*43	33	39	20	21	34	55
23	32	31	16	18	28	68	31	39	19	22	34	45
24	31	31	15	17	29	86	31	39	17	23	34	39
25	32	33	14	18	28	82	33	37	16	22	32	36
26	30	34	12	17	29	84	33	30	16	22	31	33
27	30	28	13	16	28	86	34	28	14	22	42	31
28	29	22	14	*15	*32	102	33	29	16	20	57	30
29	29	21	15	16	-	132	28	27	16	19	40	29
30	29	38	16	17	-----	88	28	27	14	18	34	28
31	31	-----	16	18	-----	74	-----	22	-----	17	34	-----
Total	1,037	868	732	525	908	1,472	1,311	1,103	581	648	941	1,014
Mean	33.5	28.9	23.6	16.9	32.4	47.5	43.7	35.6	19.4	20.9	30.4	33.8
Ac-ft	2,060	1,720	1,450	1,040	1,800	2,920	2,600	2,190	1,150	1,290	1,870	2,010

Calendar year 1962: Max 260 Min - Mean 63.1 Ac-ft 45,660  
 Water year 1962-63: Max 132 Min 12 Mean 30.5 Ac-ft 22,100

Peak discharge (base, 210 cfs).--No peak above base.

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 20, 21, Dec. 24 to Feb. 22, Mar. 1, 3, 5-9, 12-14.

# RIO GRANDE BASIN

115

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 1963 (no winter records prior to 1948).

Gage.--Water-stage recorder. Altitude of gage is 8,360 ft (from topographic map).

Average discharge.--16 years (1947-63), 10.3 cfs (7,460 acre-ft per year).

Extremes.--Maximum discharge during year, 40 cfs May 8 (gage height, 1.56 ft); minimum not determined.

1936-63: 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 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)

0.8	1.0	1.1	7.1
.9	2.3	1.2	11
1.0	4.2	1.4	24

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.2	2.5					4.0	5.9	10	3.8	1.4	5.9
2	3.1	2.3					3.2	5.6	11	4.0	1.3	5.9
3	3.1	2.3					3.6	7.1	10	3.8	1.6	5.4
4	2.9	2.3					3.6	9.4	9.4	4.8	1.8	5.1
5	3.1	2.3					3.6	13	9.0	5.1	1.9	4.8
6	3.1	2.3					3.6	15	8.7	4.8	2.9	6.2
7	3.1	1.9					4.5	19	8.7	4.5	3.1	6.2
8	2.9	1.8					5.6	*23	8.7	4.0	3.1	5.9
9	2.9	1.9					5.1	20	8.3	5.1	*3.6	5.9
10	2.9	2.0					4.0	20	*7.9	5.4	5.4	5.6
11	2.7	1.9				2.0	4.0	20	7.5	5.1	5.9	5.9
12	2.7	1.6					5.1	16	7.5	4.8	5.9	5.6
13	2.7	1.8					6.2	14	7.9	4.8	9.0	5.4
14	2.7	1.9					6.8	14	8.3	4.0	1.1	4.8
15	2.7	2.2					6.8	15	8.7	3.8	9.4	4.8
16	2.7	2.3		1.8	1.9		5.6	15	9.0	*3.6	8.3	*4.5
17	*3.6	2.3					*4.8	16	8.3	3.6	7.5	4.2
18	3.4	2.9					3.8	16	7.5	3.2	7.1	4.0
19	3.4	*2.9					4.0	16	7.1	2.9	6.5	4.0
20	3.2	3.1					3.8	15	6.8	2.7	6.2	5.4
21	3.1	2.7					3.6	15	6.5	2.7	5.6	6.2
22	3.1	2.5					*2.7	3.4	6.2	3.1	5.6	5.9
23	3.1	2.5					2.5	3.6	5.6	2.9	5.4	5.9
24	2.9	2.5					2.5	4.2	5.4	2.9	5.1	6.8
25	2.7	2.5					2.3	4.5	5.4	2.7	4.5	6.5
26	2.7	2.5					2.7	5.1	5.4	2.3	5.1	6.5
27	2.7	2.5					3.1	5.1	5.1	2.0	7.5	5.9
28	2.5	2.5					3.6	4.0	9.8	4.8	6.5	5.6
29	2.5	2.5					3.4	4.0	10	4.5	1.6	6.2
30	2.5	2.5					3.8	5.4	11	4.2	1.5	6.2
31	2.5	-----					4.5	-----	11	-----	6.2	-----
Total	90.4	69.7	68.2	55.8	53.2	73.7	134.6	427.8	223.4	108.8	166.8	165.0
Mean	2.92	2.32	2.2	1.8	1.9	2.38	4.49	13.8	7.45	3.51	5.38	5.50
Ac-ft	179	138	135	111	106	146	267	849	443	216	331	327

Calendar year 1962: Max 48 Min - Mean 8.27 Ac-ft 5,990

Water year 1962-63: Max 23 Min - Mean 4.49 Ac-ft 3,250

Peak discharge (base, 60 cfs).--No peak above base.

\* Discharge measurement made on this day.

Note.--No gage-height record Nov. 27 to Mar. 21 (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 1963. 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.--21 years (1925-26, 1940-41, 1944-63), 10.6 cfs (7,670 acre-ft per year).

Extremes.--Maximum discharge during year, 102 cfs Mar. 24 (gage height, 1.26 ft); no flow June 27 to July 8, July 29 to Aug. 4. 1919-63: 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, 1963.

Remarks.--Records good below 20 cfs and fair above except those for periods of no gage-height record, which are poor. Diversions above station for irrigation.

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

Oct. 1 to May 31

June 1 to Sept. 30

0.2	1.7	0.0	0
.3	4.1	.1	1.0
.5	13	.2	3.0
.7	27	.3	5.5
1.0	62	.4	9.0

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.9	3.6					14	4.1	3.5	0	0	2.8
2	2.9	3.9					10	6.2	2.8	0	0	2.6
3	2.7	3.6					7.4	5.3	3.2	0	0	2.0
4	2.7	3.1					6.2	5.3	3.5	*0	0	1.8
5	2.9	3.6					8.7	5.7	2.8	0	2.8	1.6
6	3.1	3.6					6.6	4.9	2.2	0	2.4	1.6
7	3.1	3.1					9.2	4.9	2.2	0	1.8	1.8
8	2.9	2.9					13	*4.5	1.6	0	1.8	4.8
9	3.1	3.9					*13	5.7	1.8	2.2	*2.8	4.5
10	2.9	3.9	(*)			2.8	9.6	6.2	*2.0	8.0	3.0	3.2
11	2.9	3.6					8.2	5.7	1.6	5.0	2.6	2.6
12	2.9	3.1					7.4	5.3	1.4	4.0	2.8	2.4
13	3.4	4.9					8.2	4.5	1.4	4.2	3.2	2.0
14	3.4	4.1					9.6	3.6	1.4	3.0	2.2	1.6
15	3.1	3.9					8.7	3.6	1.0	1.8	1.4	1.2
16	3.4	3.6	2.4	1.2	3.5		7.4	2.9	1.2	*1.6	.9	*1.0
17	*6.6	3.0					7.4	2.7	2.8	1.2	.4	1.2
18	7.8	2.6					7.0	2.7	4.2	1.0	.5	1.0
19	6.6	*2.3					6.6	3.1	4.5	.7	1.2	.7
20	6.6	2.7					7.4	3.1	6.6	.5	1.6	1.0
21	6.6					*4.5	6.2	3.1	4.8	1.0	4.2	5.5
22	5.7					9.6	6.6	4.1	3.2	1.2	5.5	4.8
23	4.9					25	6.2	5.7	2.2	.9	6.2	3.0
24	4.5			(*)		5.6	7.0	4.9	1.2	3.2	4.2	2.0
25	4.1					3.2	7.0	3.9	.7	2.2	6.6	1.8
26	4.1	3.5				30	6.2	3.6	.2	1.2	5.8	2.4
27	3.9					28	6.2	3.6	0	.7	2.0	2.4
28	3.9				(*)	2.6	6.6	3.6	0	.2	5.5	2.2
29	3.6					23	5.3	3.6	0	0	4.2	2.0
30	3.6					15	4.9	3.6	0	0	3.2	2.0
31	3.6					14		3.1		0	3.2	
Total	124.4	104.0	74.4	37.2	98.0	319.1	237.8	132.8	64.0	43.8	89.0	69.5
Mean	4.01	3.47	2.4	1.2	3.5	10.3	7.93	4.28	2.13	1.41	2.87	2.32
Ac-ft	241	206	148	74	194	633	472	263	127	87	177	138

Calendar year 1962: Max 139 Min - Mean 11.9 Ac-ft 8,610  
 Water year 1962-63: Max 56 Min 0 Mean 3.82 Ac-ft 2,770

Peak discharge (base, 110 cfs).--No peak above base.

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

Note.--No gage-height record Nov. 17 to Mar. 20 (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 1963. 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.--20 years (1925-26, 1940-41, 1944-46, 1947-63), 12.2 cfs (8,830 acre-ft per year).

Extremes.--Maximum discharge during year, 47 cfs Apr. 7 (gage height, 0.87 ft); minimum not determined.

1919-63: 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)  
(Shifting-control method used July 11-16, Aug. 20 to Sept. 30)

0.1	0	0.5	12
.2	1.5	.6	19
.3	4.0	.8	38
.4	7.5		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.4	3.8					16	6.1	3.5	1.0	1.0	4.0
2	4.0	3.8					11	5.8	3.5	.9	1.2	3.2
3	4.0	4.0					9.0	8.8	4.0	1.0	2.2	3.2
4	4.0	4.0					7.5	9.8	3.8	1.5	3.5	3.0
5	4.0	4.4					8.0	7.5	3.2	2.0	4.7	2.8
6	4.4	1.5					8.0	6.8	3.0	2.2	4.7	3.0
7	4.0	1.0					17	7.2	3.0	2.0	3.0	3.8
8	1.8	2.0					29	*6.8	3.0	2.2	2.5	4.0
9	1.5	3.5					*24	6.4	3.8	3.2	*3.5	4.0
10	3.2	3.8	(*)				16	7.2	*3.2	3.8	7.2	3.8
11	1.4	3.5				7.0	13	6.8	2.2	3.8	5.4	3.4
12	1.4	4.4					15	5.8	3.0	3.8	6.1	3.0
13	1.6	4.4					18	5.4	2.8	3.8	7.0	3.0
14	1.8	4.4					20	5.0	2.5	3.0	5.2	3.8
15	2.0	5.0					16	5.0	2.8	2.5	3.8	3.8
16	2.0	3.0	3	1.5	5		8.0	5.8	2.0	*2.5	3.2	*3.2
17	*4.0	2.8					7.2	5.4	3.8	2.2	2.2	2.8
18	4.7	2.5					5.0	4.4	4.7	2.0	3.8	3.2
19	4.4	*2.3					4.0	4.0	4.0	1.5	3.5	3.2
20	5.0	2.5					3.5	3.8	4.4	1.4	4.0	5.0
21	4.7					*6.8	3.5	4.0	4.4	2.2	2.8	2.3
22	5.0					b 7.2	3.2	5.8	4.0	4.0	4.7	5.4
23	4.7					7.5	3.8	6.1	3.0	2.5	4.4	3.8
24	4.4					8.4	4.4	5.4	2.2	3.8	3.5	3.8
25	4.4			(*)		14	6.4	4.7	2.2	2.8	3.8	3.8
26	4.0	3.5				16	6.4	4.4	2.2	2.0	3.2	3.2
27	3.5					16	5.6	4.4	1.5	2.2	8.8	2.5
28	4.0				(*)	b 18	5.0	4.4	1.0	1.8	4.7	2.5
29	4.0					b 15	4.4	4.4	1.2	1.4	4.7	2.5
30	4.0					12	5.0	4.0	1.0	1.5	4.7	2.5
31	3.8					13		3.8		.9	4.7	
Total	110.1	101.6	93	46.5	140	273.9	302.9	175.2	88.9	71.4	127.7	108.5
Mean	3.55	3.39	3	1.5	5	8.84	10.1	5.65	2.96	2.30	4.12	3.62
Ac-ft	218	202	184	92	278	543	601	348	176	142	253	215

Calendar year 1962: Max 122 Min - Mean 15.2 Ac-ft 10,980  
Water year 1962-63: Max 29 Min - Mean 4.49 Ac-ft 3,250

Peak discharge (base, 80 cfs).--No peak above base.

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Oct. 12, 13, Nov. 8, 9, Nov. 17 to Mar. 20 (stage-discharge relation affected by ice during most of period), Apr. 3, 26-28, Aug. 13, 14, Sept. 11.

## 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 1963. 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.--37 years (1911-12, 1915-18, 1923-27, 1934-63), 115 cfs (83,260 acre-ft per year).

Extremes.--Maximum discharge during year, 536 cfs May 16 (gage height, 2.68 ft); minimum daily, 7 cfs Dec. 26, Jan. 10.

1911-12, 1914-27, 1934-63: 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)

Oct. 1 to Mar. 20

Mar. 21 to Sept. 30

0.7	11	0.9	15	1.7	122
.8	15	1.1	33	2.1	242
1.0	29	1.4	67	2.5	420

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	23	17	18	9.5	13	11	62	86	176	40	17	28
2	22	17	17	9	13	11	53	86	168	36	15	26
3	22	16	16	9	15	12	44	107	148	38	19	24
4	21	16	14	9.5	15	12	44	165	151	41	20	22
5	21	16	13	9	15	12	43	208	151	41	20	20
6	23	16	11	9	15	13	41	246	143	38	22	22
7	21	*14	11	9	17	13	51	280	132	37	20	48
8	20	13	11	8.5	17	12	66	292	127	40	*18	28
9	20	14	10	7.5	16	11	*74	257	115	41	29	*25
10	19	13	9.5	7	16	11	67	246	95	46	30	24
11	19	13	9	7.5	13	13	63	296	93	*46	29	23
12	17	13	9	7.5	13	13	73	232	95	50	34	22
13	17	15	10	7.5	12	12	87	250	98	62	36	21
14	17	14	10	7.5	12	13	113	276	104	44	28	20
15	*17	14	11	7.5	13	13	140	308	104	37	24	22
16	17	14	11	7.5	13	14	104	360	93	33	22	20
17	22	14	10	7.5	13	13	95	365	80	31	22	20
18	23	15	11	8	13	13	76	330	79	29	22	19
19	24	13	13	8.5	13	13	66	340	79	28	22	18
20	24	12	11	9	*13	13	62	308	80	30	31	22
21	23	13	9	*9	13	*17	60	308	74	34	27	38
22	22	14	8	9	13	23	59	316	68	33	38	29
23	20	15	9	9	12	31	67	304	63	28	32	27
24	20	16	9.5	8.5	13	33	93	276	60	26	31	25
25	20	17	10	8	12	34	113	253	*56	26	28	24
26	20	17	7	8	12	42	125	232	53	25	28	22
27	19	15	7.5	8.5	12	45	111	202	51	22	36	21
28	17	14	8	9	12	57	84	*182	47	20	34	20
29	17	13	9	10	-	72	76	186	45	20	32	20
30	18	14	9.5	15	-----	60	*79	189	41	19	31	19
31	18	-----	*10	14	-----	61	-----	189	-----	18	29	-----
Total	623	437	332.0	273.0	379	723	2,291	7,675	2,869	1,059	826	719
Mean	20.1	14.6	10.7	8.81	13.5	23.3	76.4	248	95.6	34.2	26.6	24.0
Ac-ft	1,240	867	659	341	752	1,430	4,540	15,220	5,690	2,100	1,640	1,430

Calendar year 1962: Max 816 Min 7 Mean 124 Ac-ft 90,060  
 Water year 1962-63: Max 365 Min 7 Mean 49.9 Ac-ft 36,110

Peak discharge (base, 670 cfs).--No peak above base.

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 19-24, 27-30, Dec. 3-25. No gage-height record Dec. 26 to Mar. 20 (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 1963. 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.--15 years (1943-44, 1949-63), 15.9 cfs (11,510 acre-ft per year).

Extremes.--Maximum discharge during year, 142 cfs Aug. 19 (gage height, 3.92 ft), from rating curve extended above 23 cfs; maximum gage height, 4.45 ft Mar. 23 (backwater from ice); minimum discharge not determined.  
1916-17, 1919-23, 1936-63: 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 good except those for periods of ice effect or no gage-height record, which are poor. 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 Feb. 28		Mar. 1 to Sept. 30	
2.2	2.0	2.1	3.0
2.3	7.0	2.2	6.0
2.5	19	2.4	17
		2.8	44

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7.0	5.5					21	7.5	5.4	4.8	4.8	7.0
2	7.0	5.5					16	7.5	5.1	4.8	4.8	6.0
3	7.0	5.5					15	7.0	4.8	5.1	5.7	6.0
4	7.0	5.5					15	6.5	5.4	5.7	5.7	5.7
5	7.0	5.5					15	6.5	5.1	6.0	5.1	5.7
6	7.0	5.5					14	7.5	4.8	6.0	5.4	6.0
7	7.0	* 5.5					15	7.5	4.8	6.5	5.4	10
8	7.0	6.0					18	7.0	5.1	6.0	* 5.4	6.0
9	6.5	7.6					* 19	7.5	5.4	6.5	5.4	* 5.7
10	6.5	6.5					16	7.5	5.4	6.0	7.5	6.0
11	6.5	7.0					14	7.5	5.4	* 6.0	6.5	6.5
12	6.5	7.0					15	7.5	5.4	9.0	6.0	7.0
13	6.5	6.5					18	7.5	5.7	11	7.0	6.0
14	6.5	5.5					18	7.0	5.4	6.5	7.5	9.0
15	6.5	5.5					18	7.0	5.4	5.4	6.0	8.0
16	* 6.5	5.0	4.5	5.5	10		12	7.0	5.4	5.4	5.7	6.5
17	8.2	4.5					11	7.0	5.7	6.0	6.0	6.0
18	8.2	4					10	7.2	5.7	5.7	5.7	6.0
19	7.0	4.5					11	7.4	5.7	5.4	22	6.0
20	6.5	5			(*)		10	7.5	7.5	5.4	8.0	6.5
21	6.5			(*)		* 10	8.5	7.5	6.5	7.0	7.5	7.0
22	6.0					11	8.0	8.5	5.7	9.5	8.0	6.5
23	6.0					13	8.0	8.0	5.1	6.5	7.0	6.0
24	6.0					17	8.0	8.0	5.1	5.7	6.0	6.0
25	6.0					16	8.0	6.0	* 5.1	5.7	15	5.7
26	5.5	5.5				20	8.5	7.0	5.1	6.0	8.0	5.4
27	5.5					26	10	7.0	5.1	5.1	8.0	5.1
28	5.5					31	9.5	* 7.0	5.1	5.1	8.0	4.5
29	5.5					38	9.5	6.0	4.8	5.1	9.0	5.1
30	5.5					30	* 8.5	5.1	4.8	5.1	10	4.8
31	5.5		(*)			31		4.5		4.8	8.0	
Total	201.4	168.1	139.5	170.5	280	423	387.5	219.2	161.0	188.8	230.1	187.7
Mean	6.50	5.60	4.5	5.5	10	13.6	12.9	7.07	5.37	6.09	7.42	6.26
Ac-ft	399	333	277	338	555	839	769	435	319	374	456	372

Calendar year 1962: Max 148 Min - Mean 17.5 Ac-ft 12,690  
Water year 1962-63: Max 38 Min - Mean 7.55 Ac-ft 5,470

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 17 to Mar. 26. No gage-height record Oct. 1, 2, Dec. 26 to Mar. 10, May 18-20.



## 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 1963.

Gage.--Water-stage recorder. Altitude of gage is 7,500 ft (estimated from nearby level lines).

Average discharge.--27 years, 243 cfs (175,900 acre-ft per year).

Extremes.--Maximum discharge during year not determined (probably occurred during period of no gage-height record in February); minimum daily, 1.5 cfs July 23, 24.

1936-63: 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 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 table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

(Shifting-control method used Nov. 29 to Dec. 23, Apr. 24-30, July 3-29)

0.4	1.5	1.1	32
.5	4.0	1.5	70
.7	10	2.0	138
.9	18	2.6	264

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	49	63	178		(*)		168	12	8.8	3.0	7.4	26
2	49	62	182				140	12	11	3.0	4.6	26
3	54	78	198				125	10	12	3.0	30	*24
4	55	87	194				122	9.4	11	3.2	42	23
5	53	104	174				117	9.4	10	2.8	14	23
6	51	116	164									
7	48	116	162			(*)	117	9.1	9.8	2.8	11	24
8	*48	*104	166				131	8.8	*9.8	2.8	12	23
9	44	98	184			215	129	7.4	9.4	2.5	16	22
10	40	92	198				112	7.0	8.8	2.8	9.1	20
							127	6.7	8.0	3.5	9.4	20
11	39	89	200				164	6.1	7.4	3.0	7.0	21
12	38	87	*184				127	5.8	6.7	3.0	7.7	19
13	36	94	176				103	5.5	5.8	2.0	8.0	18
14	36	95	168				97	5.5	5.5	2.2	5.8	19
15	44	104	164				94	5.2	5.2	*2.5	6.4	20
16	46	104	158	90	260							
17	48	100	156			192	110	6.1	5.2	2.2	11	18
18	50	97	156	(*)		195	105	6.1	4.9	2.2	7.7	18
19	52	117	164			200	92	6.4	4.9	2.0	6.1	18
20	58	158	166			211	77	6.7	4.3	2.0	4.9	18
						209	69	6.4	4.3	1.8	*4.9	18
21	59	172	162			174	62	7.0	3.8	2.0	24	20
22	61	182	149			162	59	7.0	3.5	2.0	34	20
23	62	225	136			154	34	7.0	3.5	1.5	41	18
24	59	233	115			151	23	7.0	3.0	1.5	38	18
25	60	231	90			152	21	6.7	3.2	1.8	34	16
26	59	222				194	*21	6.7	3.2	1.8	30	12
27	56	218				238	19	7.0	3.0	1.8	29	9.8
28	52	214	80			242	17	6.7	3.0	1.8	30	9.1
29	49	188				200	14	7.4	3.0	5.2	30	9.1
30	52	184				188	13	7.7	3.0	1.6	23	8.8
31	55					188		7.4		14	25	
Total	1,562	4,034	4,624	2,790	7,280	6,275	2,609	229.2	185.0	101.7	563.0	558.8
Mean	50.4	134	149	90	260	202	87.0	7.39	6.17	3.28	18.2	18.6
Ac-ft	3,100	8,000	9,170	5,530	14,440	12,450	5,170	455	367	202	1,120	1,110

Calendar year 1962: Max 1,140 Min 35 Mean 239 Ac-ft 172,700  
 Water year 1962-63: Max - Min 1.5 Mean 84.4 Ac-ft 61,110

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 17, Dec. 24 to Jan. 16. No gage-height record Jan. 17 to Mar. 18 (stage-discharge relation affected by ice during most of period).

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 1963. 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.--30 years (1927-28, 1934-63), 24.4 cfs (17,660 acre-ft per year).

Extremes.--Maximum discharge during year, 62 cfs July 20 (gage height, 2.68 ft); minimum not determined.

1923-63: 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 periods of ice effect or 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  
2.1 11  
2.3 24

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8.6	7.5	7.8				16	10	12	6.3	5.1	6.9
2	8.9	6.9	7.8				13	10	12	7.5	4.5	6.6
3	9.2	6.6	7.8				13	10	12	6.6	5.7	6.3
4	8.9	6.6	8.0				13	11	11	7.5	6.9	6.0
5	9.2	6.6	8.4				12	11	10	8.2	5.7	6.6
6	9.2	6.6	8.6				12	11	9.0	7.2	6.3	7.2
7	9.2	5.7	*8.8				15	12	9.0	6.9	5.4	8.2
8	9.2	5.7	b8.6				15	12	9.0	6.9	6.0	7.2
9	*9.2	6.6	b8.2				15	13	9.0	7.8	6.0	6.6
10	9.2	6.9	b7.8				13	13	9.0	*7.5	8.2	6.3
11	9.2	6.6	b7.8			7.3	12	14	9.0	6.3	6.3	7.5
12	9.2	6.8	b7.8				12	14	*8.9	6.9	7.2	7.5
13	9.2	7.0	b7.8				13	14	8.6	6.6	6.9	6.9
14	8.9	7.2	b7.8				14	14	9.2	5.7	6.9	6.6
15	8.9	8.2	b8.0				14	*13	8.6	5.7	*6.3	6.9
16	8.9	7.5	8.2	5.5	7.0		12	13	9.6	5.7	6.0	6.6
17	10	6.3	b7.6				12	13	13	5.4	6.6	6.9
18	10	6.3	7.2				*11	13	10	5.4	8.2	*6.3
19	11	6.3	6.9				10	12	10	5.1	6.9	6.0
20	11	*7.2	6.6			(*)	11	13	10	12	6.6	6.9
21	9.6	7.5	b6.2		(*)	11	10	14	8.9	11	7.2	10
22	9.2	7.8	b5.8			12	10	16	7.8	6.9	7.5	7.8
23	9.2	7.8	b6.0			13	9.6	15	7.5	6.9	7.5	7.5
24	9.2	7.8	b6.2			13	10	14	7.2	5.7	6.9	6.9
25	8.9	7.8	b6.2	(*)		13	10	14	6.9	5.1	6.9	6.9
26	8.9	7.8	5.8			13	10	13	6.9	5.4	7.5	6.6
27	8.9	7.8	5.4			14	12	12	6.6	5.1	8.2	6.3
28	8.6	6.9	5.2			17	11	11	6.6	4.8	7.5	6.6
29	8.6	6.9	5.2			18	10	11	6.0	5.1	6.6	6.9
30	8.6	7.8	5.4			15	10	11	6.0	4.8	7.2	6.6
31	8.6	-----	5.4		-----	16	-----	11	-----	5.4	7.2	-----
Total	285.4	211.0	220.3	170.5	196.0	301.0	360.6	388	269.3	203.4	207.9	208.1
Mean	9.21	7.03	7.11	5.5	7.0	9.71	12.0	12.5	8.98	6.56	6.71	6.94
Ac-ft	566	419	437	338	389	597	715	770	534	403	412	413

Calendar year 1962: Max 115 Min - Mean 21.9 Ac-ft 15,870

Water year 1962-63: Max 18 Min - Mean 8.28 Ac-ft 5,990

Peak discharge (base, 50 cfs).--July 20 (1800) 62 cfs (2.68 ft).

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 12, 13, Dec. 4-7, Dec. 26 to Mar. 20 (stage-discharge relation affected by ice during parts of periods), May 24 to June 11.

## RIO GRANDE BASIN

8-2415. Sangre de Cristo Creek near Fort Garland, Colo.

**Location.**--Lat 37°26', long 105°23', in N½ sec. 24, T.30 S., R.72 W., on right bank 15 ft downstream from bridge on county road, 2 miles east of Fort Garland, and 7 miles upstream from Ute Creek.

**Drainage area.**--187 sq. mi.

**Records available.**--March to October 1916, April 1923 to September 1930, October 1931 to September 1963. No winter records prior to 1946 except water year 1941. Monthly discharge only for some periods, published in WSP 1312.

**Gage.**--Water-stage recorder. Altitude of gage is 7,940 ft (estimated from nearby U. S. Coast and Geodetic Survey level line). Mar. 15 to Oct. 9, 1916, staff gage and Cippoletti weir 1 mile downstream at site 600 ft upstream from Garland Canal at different datum.

**Average discharge.**--19 years (1940-41, 1945-63), 21.6 cfs (15,640 acre-ft per year).

**Extremes.**--1961-62: Maximum discharge during water year, 216 cfs Apr. 21 (gage height, 6.84 ft); no flow Aug. 27 to Sept. 6. 1962-63: Maximum discharge during water year, 155 cfs Mar. 21 (gage height, 6.57 ft), from rating curve extended above 36 cfs; no flow June 14-17, June 21 to Sept. 30.

1916, 1923-63: Maximum discharge, 1,520 cfs Aug. 31, 1936, from rating curve extended above 280 cfs on basis of slope-area measurement at gage height, 6.10 ft; maximum gage height, 7.82 ft June 4, 1957; no flow at times in many years.

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 periods of ice effect or no gage-height record, which are poor. A few diversions above station for irrigation.

Rating tables, except periods of ice effect, Oct. 1, 1961, to Sept. 30, 1963  
(gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Apr. 10 to May 24, 1962)

Oct. 1, 1961, to May 24, 1962

May 25, 1962, to Sept. 30, 1963

4.6	7.0	5.6	60	4.8	0	5.3	5.4
4.7	8.8	6.0	106	4.9	.4	5.4	8.0
5.0	17	6.6	210	5.0	1.0	5.5	13
5.3	35			5.1	2.0	5.7	31
				5.2	3.4	6.1	79

Discharge, in cubic 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	12					b22	108	36	14	10	0
2	8.3	*12					23	102	39	12	6.7	0
3	8.8	11					27	90	35	10	5.2	0
4	8.8	b9					36	84	30	12	4.2	0
5	8.6	b8					27	81	27	14	3.4	0
6	8.4	b8.5					26	87	25	15	2.6	0
7	8.1	b9			(*)		23	93	25	12	2.0	.3
8	7.7	b9.5					18	100	24	10	1.7	.7
9	*8.8	b9				(*)	21	102	21	9.5	1.4	.9
10	12	b8.5					25	102	21	8.5	1.4	.7
11	11	b7.5					22	95	19	7.0	1.3	.5
12	9.7	b7					26	90	19	6.7	1.4	.3
13	9.2	b7.5				18	37	86	21	6.4	1.4	.2
14	9.0	8.5					41	79	23	6.4	1.3	.2
15	8.8		8.5	9.5	11		106	71	21	7.0	1.0	.3
16	8.8						109	63	20	7.0	1.5	.3
17	8.4						102	58	20	*7.5	1.4	.5
18	8.4						118	53	20	7.0	.9	.4
19	8.3						144	49	20	7.0	.6	.2
20	8.4		(*)				178	47	17	7.2	.6	*1.4
21	8.1	8.5					196	43	*15	6.7	.8	4.4
22	7.9						174	41	15	5.9	.8	4.2
23	7.9						136	40	14	6.7	.7	2.6
24	7.7						127	39	12	9.0	.4	3.0
25	7.9						134	*32	13	12	.2	3.6
26	8.4					28	142	38	15	14	.1	3.8
27	8.3					27	144	37	19	8.5	0	3.6
28	8.3					*39	136	37	16	6.7	0	3.6
29	8.6					49	134	39	14	5.9	0	3.8
30	8.8					b30	128	32	15	5.9	0	3.0
31	11					b21		32		9.0	0	
Total	270.1	263.0	263.5	294.5	308	64.4	2,582	2,050	631	276.5	53.0	42.5
Mean	8.71	8.77	8.5	9.5	11	20.8	86.1	66.1	21.0	8.92	1.71	1.42
Ac-ft	536	522	523	584	611	1,280	5,120	4,070	1,250	548	105	84

Calendar year 1961: Max 221 Min - Mean 26.0 Ac-ft 18,820  
Water year 1961-62: Max 196 Min 0 Mean 21.0 Ac-ft 15,230

Peak discharge (base, 75 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-15	0200	6.47	156	4-27	0400	6.62	149
4-21	0300	6.84	216	5-9	0600	6.42	106

\* 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).

8-2415. Sangre de Cristo Creek near Fort Garland, Colo.

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.6	5.2					3.2	7.7	2.6			
2	2.6	5.2					21	7.5	2.7			
3	3.1	5.0					17	7.2	3.1			
4	3.3	5.0					19	6.7	2.3			
5	3.4	5.0					20	6.4	1.7			
6	3.4	5.0					16	6.7	1.3			
7	3.1	4.4	(*)				17	6.4	.8			
8	3.1	4.0				13	17	5.9	.7			
9	*3.3	4.2					15	5.4	.8			
10	3.4	4.2					13	5.2	.6	(*)		
11	3.4						12	5.0	.5			
12	3.6						12	5.0	*.4			
13	3.6						13	4.6	.2			
14	3.6						13	4.2	0			
15	3.6						12	*3.8	0		(*)	
16	3.6		5.5	3.5	12		10	3.8	0			
17	4.8					13	15	3.6	.0			
18	5.4						19	*10	.9			(*)
19	5.9					34	9.5	3.3	.5			
20	6.2	(*) 5.2				*66	9.0	3.6	.3			
21	6.2				(*)	71	8.0	4.6	0			
22	5.7					74	7.5	5.4	0			
23	5.2					69	7.2	5.2	0			
24	5.0					61	7.5	4.6	0			
25	5.2			(*)		41	7.5	3.8	0			(*)
26	5.2					35	7.5	3.4	0			
27	5.0					37	7.7	3.3	0			
28	5.0					.42	7.7	3.4	0			
29	5.0				-	61	7.7	3.3	0			
30	5.0					41	7.5	3.0	0			
31	5.0					41		2.8				
Total	132.5	151.2	170.5	108.5	336	915	373.3	148.4	19.4	0	0	0
Mean	4.27	5.04	5.5	3.5	12	29.5	12.4	4.79	0.65	0	0	0
Ac-ft	263	300	338	215	666	1,810	740	294	38	0	0	0

Calendar year 1962: Max 196 Min 0 Mean 20.1 Ac-ft 14,550

Water year 1962-63: Max 74 Min 0 Mean 6.45 Ac-ft 4,660

Peak discharge (base, 75 cfs).--Mar. 21 (2130) 155 cfs (6.57 ft); Mar. 29 (0500) 80 cfs (6.08 ft).

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

Note.--Stage-discharge relation affected by ice Nov. 9-19. No gage-height record Nov. 20 to Mar. 20 (stage-discharge relation affected by ice during most of period).

## 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 1963. Monthly discharge only for some periods, published in WSP 1312.

**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.**--40 years, 21.0 cfs (15,200 acre-ft per year).

**Extremes.**--Maximum discharge during year, 154 cfs Aug. 13 (gage height, 2.51 ft), from rating curve extended above 13 cfs; minimum daily, 1.3 cfs Aug. 2, 3.

1916, 1923-63: 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 fair 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)  
(Shifting-control method used June 25, 26, July 13 to Aug. 13)

0.5	1.0	0.8	8.0
.6	2.5	1.0	17
.7	5.0	1.2	30

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8.8	6.2					17	8.4	7.7	3.2	1.8	8.4
2	8.4	6.2					14	8.0	8.4	4.2	1.3	6.8
3	8.4	5.9					12	8.0	8.8	4.2	1.3	6.2
4	7.7	5.6					12	9.2	7.4	3.8	2.4	6.5
5	7.4	5.0					12	11	6.2	16	3.0	5.9
6	7.4	4.8					11	11	5.6	15	4.2	5.6
7	7.1	4.2	(*)				12	11	5.6	12	6.2	8.0
8	6.8	4.5					14	12	5.9	9.6	4.8	7.1
9	* 6.8	5.3					15	14	5.9	10	4.8	5.6
10	6.8	5.3					14	12	5.9	* 22	7.7	5.3
11	6.5	5.3				6.2	12	12	5.3	14	8.8	6.8
12	6.5	5.3					12	10	* 5.3	12	11	6.8
13	6.2	4.2					13	8.8	5.3	10	19	6.5
14	6.2	4.2					13	8.8	5.6	7.7	16	5.9
15	5.9	5.6					14	* 8.8	5.9	6.5	* 11	5.6
16	6.2	5.0	5.0	4.8	6.4		13	9.2	6.5	5.6	8.8	5.0
17	7.7	5.0					12	9.6	9.6	5.0	10	4.8
18	8.0	b 5.0					* 10	10	7.7	* 4.8	8.8	* 4.2
19	7.7	b 4.8					9.6	10	7.1	4.0	8.0	3.8
20	7.7	* 4.8				(*)	10	10	7.1	3.8	14	3.5
21	7.4				(*)	b 10	14	10	5.9	4.0	28	5.3
22	7.1					b 11	8.8	9.6	5.0	5.0	17	5.0
23	6.8					b 13	8.4	9.2	4.2	4.2	16	4.0
24	6.8					b 14	8.8	8.4	3.5	4.0	12	3.8
25	6.8				(*)	15	8.8	8.4	3.2	3.8	11	3.5
26	6.5	5.2				16	8.8	8.0	4.8	4.2	11	3.5
27	6.5					17	8.8	7.7	4.8	3.8	11	2.8
28	6.2					21	8.4	7.4	4.2	3.5	11	2.5
29	6.2					22	8.4	7.4	4.0	2.8	10	2.4
30	6.2					19	8.8	6.8	3.8	2.5	9.6	2.2
31	6.2					19		7.1		2.0	8.8	
Total	215.9	154.2	155.0	148.8	179.2	301.0	343.6	291.8	176.2	213.2	298.3	153.3
Mean	7.00	5.14	5.0	4.8	6.4	9.71	11.5	9.41	5.87	6.88	9.62	5.11
As-ft	430	306	307	295	355	597	682	579	349	423	592	304

Calendar year 1962: Max 85 Min - Mean 18.1 Ac-ft 13,060  
Water year 1962-63: Max 28 Min 1.3 Mean 7.21 Ac-ft 5,220

Peak discharge (base, 100 cfs)--Aug. 13 (1200) 154 cfs (2.51 ft).

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 20 to Mar. 20 (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 1963. 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.--25 years (1930-31, 1933-36, 1937-38, 1943-63), 11.9 cfs (8,620 acre-ft per year).

Extremes.--Maximum discharge during year, 11 cfs Apr. 11 (gage height, 0.74 ft); minimum not determined.

1929-63: 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 ice effect or no gage-height record, which are poor. Diversions above station for irrigation. Flow regulated by Smith Reservoir (capacity, 5,335 acre-ft).

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

0.4 0  
.5 .9  
.6 3.8

0.4 0.9  
.5 1.9  
.6 3.8  
.7 8.5  
.8 15

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.1	1.5					2.5	7.1	5.7	3.0	1.6	1.8
2	2.7	1.1					2.5	7.1	5.7	2.7	1.7	1.8
3	3.1	.9					2.5	7.1	5.7	2.5	1.7	1.8
4	3.1	1.1					3.0	7.1	5.2	2.5	1.6	1.8
5	3.1	.7					3.8	7.1	3.6	2.3	1.6	1.8
6	3.1	.5					5.7	6.6	3.2	2.1	1.6	1.8
7	3.1	.5	(*)				7.1	6.6	3.2	2.1	1.3	2.3
8	3.1	.5					8.5	6.6	3.2	2.1	1.2	2.3
9	* 3.1	.5					9.8	6.2	3.0	2.1	1.3	2.7
10	3.4	.4				4	7.6	6.2	2.5	1.9	1.3	3.4
11	3.4						8.5	6.2	2.3	1.9	1.3	3.4
12	3.4						9.8	6.2	* 2.3	1.9	1.3	3.4
13	3.4						8.5	6.2	2.5	1.9	1.3	3.4
14	3.4						7.6	5.7	2.5	1.9	1.2	3.4
15	3.4						7.1	* 5.7	2.3	1.9	* 1.3	3.4
16	3.4		0.7	4.5	5		8.0	5.7	1.4	2.1	1.7	3.0
17	3.4						8.0	5.7	1.2	2.3	1.8	3.0
18	3.4						* 7.6	5.7	1.2	* 2.3	2.5	* 2.8
19	3.4						7.6	5.7	1.3	2.1	2.5	2.8
20	3.1	(*) .4				* 3.0	7.6	5.7	1.7	2.1	2.5	2.8
21	3.1				(*)	3.0	7.6	5.7	1.9	2.3	2.1	2.8
22	3.1					3.2	7.6	5.7	2.3	2.3	1.9	2.8
23	2.7					3.2	7.6	5.7	2.7	2.3	1.9	2.8
24	2.4					3.2	7.6	5.7	3.2	2.5	1.9	2.8
25	2.4			(*)		3.2	7.6	5.7	3.4	2.3	1.9	2.7
26	2.1					3.2	7.6	6.2	3.4	2.3	1.9	2.7
27	2.4					3.2	7.6	6.2	3.2	2.3	1.9	2.7
28	2.4					2.8	7.6	6.2	3.2	1.9	1.8	2.7
29	2.4				-	2.3	7.6	6.2	3.2	1.8	1.8	2.7
30	2.4					2.5	7.6	6.2	3.0	1.8	1.8	2.5
31	2.1					2.7		6.2		1.7	1.8	
Total	92.1	15.7	21.7	139.5	140	111.5	209.3	191.9	89.2	67.2	53.0	80.1
Mean	2.97	0.52	0.7	4.5	5	3.60	6.98	6.19	2.97	2.17	1.71	2.67
Ac-ft	183	31	43	277	278	221	415	381	177	133	105	159

Calendar year 1962: Max 170 Min - Mean 16.6 Ac-ft 12,010  
Water year 1962-63: Max 9.8 Min - Mean 3.32 Ac-ft 2,400

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 11-20. No gage-height record Nov. 21 to Mar. 19 (stage-discharge relation affected by ice during most of period).

## 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 1963.

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 Oct. 1-31 (elevation, 9,976.7 ft); minimum, 4,000 acre-ft Nov. 12 to Apr. 8 (elevation, 9,946.0 ft).  
1951-63: 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 1962 to September 1963

Date	Elevation (feet)†	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	9,976.7	16,700	-
Oct. 31.....	9,975.5	16,000	-700
Nov. 30.....	9,946.0	4,000	-12,000
Dec. 31.....	9,946.0	4,000	0
Calendar year 1962.....	-	-	+600
Jan. 31.....	9,946.0	4,000	0
Feb. 28.....	9,946.0	4,000	0
Mar. 31.....	9,946.0	4,000	0
Apr. 30.....	9,952.6	6,000	+2,000
May 31.....	9,952.6	6,000	0
June 30.....	9,952.6	6,000	0
July 31.....	9,952.6	6,000	0
Aug. 31.....	9,952.6	6,000	0
Sept. 30.....	9,952.6	6,000	0
Water year 1962-63.....	-	-	-10,700

† 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 NW¼NW¼ 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 1963.

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.--11 years, 82.9 cfs (60,020 acre-ft per year).

Extremes.--Maximum discharge during year, 680 cfs Nov. 7 (gage height, 3.68 ft); minimum daily, 7.8 cfs Oct. 1.  
1952-63: 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.--Three discharge measurements furnished by Bureau of Reclamation.

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

1.0	5.0	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 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7.8	488						96	303	32	15	31
2	11	532						96	322	32	15	19
3	14	630						96	322	27	15	15
4	14	625						96	288	23	15	15
5	17	620						96	240	23	15	15
6	18	620						122	225	23	15	10
7	24	655	(*)					180	198	23	15	8.5
8	25	665						261	189	23	*15	12
9	25	*650						360	189	23	15	14
10	25	630						396	142	28	15	14
11	25	263						396	124	*40	19	14
12	25						12	396	124	46	32	*14
13	25							332	142	56	46	14
14	25							332	153	62	61	14
15	*25		12	12	12	12		346	153	62	61	14
16	25							388	153	56	56	14
17	26							480	153	36	34	14
18	26							568	130	26	25	14
19	31							590	102	22	23	14
20	34							590	91	15	23	14
21	34	12						590	91	15	23	19
22	34							554	91	15	23	22
23	34							33	*540	91	15	22
24	34							32	496	91	15	22
25	34							32	436	*91	*15	23
26	34							50	350	91	15	*31
27	34							67	318	90	15	41
28	34							67	273	66	15	49
29	34							67	225	37	15	49
30	34							255	32	15	37	23
31	108							270		15	49	
Total	895.8	6,606	372	372	336	372	710	10,524	4,514	843	914	532.5
Mean	28.9	220	12	12	12	12	23.7	339	150	27.2	29.5	17.8
Ac-ft	1,780	13,100	738	738	666	738	1,410	20,870	8,950	1,670	1,810	1,060

Calendar year 1962: Max 665 Min 6.4 Mean 103 Ac-ft 74,480  
Water year 1962-63: Max 665 Min 7.8 Mean 73.9 Ac-ft 53,530

\* Discharge measurement made on this day.

Note.--No gage-height record Nov. 12 to Apr. 21.



## RIO GRANDE BASIN

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 1963. 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.--54 years, 340 cfs (246,100 acre-ft per year).

Extremes.--Maximum discharge during year, 1,530 cfs May 19 (gage height, 3.67 ft); minimum daily, 30 cfs Dec. 27.

1903-63: 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 made twice a month during the winter and three times a month the rest of the year. Diversions for irrigation of about 500 acres of hay meadows above station. Some regulation by Platoro Reservoir (see elsewhere in this report).

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. 1, Nov. 13 to Dec. 10, Dec. 18-22)

Oct. 1 to Dec. 31				Jan. 1 to Sept. 30			
0.4	35	1.5	340	0.6	30	2.0	530
.7	92	2.0	570	.7	45	3.0	1,050
1.0	169	3.0	1,190	.9	98	4.0	1,790
				1.4	280		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	65	285	57	42	66	47	215	268	624	98	34	105
2	61	515	57	41	66	46	172	260	652	95	23	83
3	61	697	48	48	60	47	122	300	620	95	39	66
4	61	714	53	46	58	40	139	356	602	98	45	54
5	61	708	48	41	59	32	150	420	562	98	42	52
6	61	714	48	39	60	34	129	503	508	95	47	59
7	61	730	48	38	62	37	168	642	480	89	61	80
8	63	763	51	37	64	47	233	785	440	89	47	59
9	65	758	48	38	63	47	240	906	436	95	45	50
10	65	736	45	40	54	50	193	882	392	89	83	50
11	65	653	42	38	50	49	175	1,030	312	92	68	52
12	65	163	44	35	41	48	197	960	300	108	68	52
13	65	104	48	32	38	46	233	894	312	143	86	52
14	65	90	46	34	42	45	276	894	328	125	95	47
15	65	75	46	36	48	58	308	990	340	115	98	47
16	65	73	46	37	48	52	222	1,050	332	108	101	45
17	79	71	50	37	45	52	200	1,200	316	101	95	45
18	88	67	57	39	44	52	179	1,330	296	80	86	44
19	92	53	51	42	44	53	161	1,370	268	66	77	42
20	90	55	49	39	45	72	157	1,320	268	59	108	44
21	90	73	48	41	49	91	162	1,270	229	59	89	66
22	88	63	41	44	46	129	163	1,280	211	98	80	66
23	88	61	40	47	46	146	161	1,220	197	63	74	61
24	88	61	39	47	48	154	193	1,110	182	52	71	59
25	84	57	36	48	48	150	211	1,000	175	50	68	54
26	84	59	33	46	46	157	240	834	172	47	87	54
27	79	51	30	45	48	175	268	760	164	40	77	56
28	77	53	35	47	46	208	248	678	161	38	108	56
29	73	51	40	52	-	280	240	620	132	36	108	56
30	75	57	40	52	-----	204	240	593	112	36	112	56
31	75	-----	40	54	-----	204	-----	624	-----	34	101	-----
Total	2,264	8,610	1,404	1,302	1,434	2,852	5,995	26,349	10,123	2,491	2,329	1,712
Mean	73.0	287	45.3	42.0	51.2	92.0	200	850	337	80.4	75.1	57.1
Ac-ft	4,490	17,080	2,780	2,580	2,840	5,660	11,890	52,260	20,080	4,940	4,620	3,400

Calendar year 1962: Max 1,960 Min 30 Mean 360 Ac-ft 260,400  
Water year 1962-63: Max 1,370 Min 30 Mean 183 Ac-ft 132,600

Note.--Stage-discharge relation affected by ice Dec. 11-17, Dec. 23 to Mar. 21.

8-2475. San Antonio River at Ortiz, Colo.

Location.--Lat 37°00', long 106°02', in New Mexico, in NE¼ 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 1963 (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.--23 years (1940-63), 26.6 cfs (19,260 acre-ft per year).

Extremes.--Maximum discharge during year, 295 cfs Apr. 15 (gage height, 2.78 ft); no flow June 14 to Aug. 9. 1919-20, 1924-63: 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 for periods of ice effect or no gage-height record, which are poor. Discharge measurements or observations of no flow made two or more times a month. A few small 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 Mar. 28 to Apr. 23)

Oct. 1 to May 10

May 11 to Sept. 30

0.6	1.1	1.1	17	0.6	0	1.0	11
.7	2.1	1.3	35	.7	.7	1.3	35
.8	4.0	1.6	75	.8	3.4	1.5	60
.9	6.7	2.0	150	.9	6.7		
1.0	11	2.5	270				

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.5	2.5	2.8				92	35	1.0		0	2.6
2	1.2	2.3	2.8				51	32	1.5		0	1.8
3	1.1	2.3	2.7				36	32	4.7		0	1.0
4	1.5	2.5	2.5				34	28	3.7		0	.6
5	1.4	2.5	2.2				42	24	2.3		0	2.0
6	1.3	2.3	1.9				34	23	1.2		0	1.5
7	1.5	2.1	2.5				90	23	.6		0	4.9
8	1.6	2.0	2.5				138	22	.3		0	7.6
9	1.7	2.1	2.1				134	19	.3		0	4.1
10	1.8	2.3	2.3				105	17	.2		.9	2.9
11	1.7	2.5	2.1			5	85	10	.2		5.4	2.6
12	1.6	2.3	2.1				99	8.8	.1		16	2.0
13	1.6	2.3	1.8				138	6.7	.1		19	2.0
14	1.6	2.7	1.8				180	5.7	0		5.4	1.8
15	1.8	3.0	1.9				185	5.4	0		2.0	1.5
16	2.1	2.8	2.1	0.6		4	99	4.7	0		1.0	1.5
17	2.1	2.5	2.1				74	3.7	0		.4	1.2
18	4.5	2.3	2.3				66	2.9	0		.3	1.0
19	4.3	2.1	2.4				47	2.3	0		.6	1.0
20	4.5	2.2	2.3				40	2.0	0		2.3	1.0
21	4.3	2.4	2.2				33	2.0	0		1.8	1.2
22	3.0	2.7	2.0				34	2.0	0		2.0	1.5
23	2.5	2.8	2.2				32	2.3	0		2.3	1.5
24	2.3	2.9	2.3			25	34	2.0	0		.7	1.0
25	2.3	2.8	1.7				31	2.0	0		.7	.7
26	2.5	2.7	1.1				45	1.8	0		1.8	.6
27	2.5	2.6	.9				57	1.8	0		7.6	.6
28	2.5	2.5	.9				43	1.8	0		6.0	.4
29	2.3	2.6	1.0				146	1.8	0		5.4	.2
30	2.1	2.7	1.1				77	1.5	0		2.9	.2
31	2.5	-----	1.1				94	1.2	-----		3.1	-----
Total	69.2	74.3	61.7	18.6	112	702	2,153	327.4	16.2	0	87.6	96.6
Mean	2.23	2.48	1.99	0.6	4	22.6	71.8	10.6	0.54	0	2.83	3.22
Ac-ft	137	147	122	37	222	1,390	4,270	649	32	0	174	192

Calendar year 1962: Max 581 Min 0 Mean 41.9 Ac-ft 30,350  
Water year 1962-63: Max 185 Min 0 Mean 10.2 Ac-ft 7,370

Peak discharge (base, 330 cfs).--No peak above base.

Note.--Stage-discharge relation affected by ice Nov. 8-13, Nov. 15 to Dec. 5, Dec. 18-26. No gage-height record Dec. 27 to Mar. 27 (stage-discharge relation affected by ice during most of period).

## RIO GRANDE BASIN

S-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 1963. 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.--44 years, 125 cfs (90,500 acre-ft per year).

Extremes.--Maximum discharge during year, 532 cfs Apr. 14 (gage height, 4.08 ft), from rating curve extended above 250 cfs; minimum not determined.

1915-20, 1924-63: 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 Dec. 3-23 and those for periods of ice effect or no gage-height record, which are fair. Discharge measurements generally made twice a month. 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 Oct. 1 to Nov. 17, Dec. 3-23)

Mar. 19 to Sept. 30

1.7	6.0	2.4	57
1.8	9.0	2.8	120
1.9	13	3.3	250
2.1	26	3.7	390

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	18	15	b10				182	175	95	14	66	18
2	17	14	b10				132	175	102	14	66	17
3	16	14	12				90	220	102	15	72	15
4	15	14	15				104	257	88	16	10	14
5	15	13	16				120	271	79	17	11	13
6	16	13	26				109	288	73	17	11	14
7	14	12	22				170	316	66	16	14	30
8	13	9.5	26				278	334	62	15	13	16
9	12	9.5	22				299	344	69	19	12	13
10	12	13	22			18	229	296	57	18	22	12
11	12	12	17				202	334	53	15	17	12
12	11	10	15				254	247	48	29	29	12
13	11	10	15				324	244	43	25	21	11
14	10	15	21				380	244	42	25	16	11
15	10	17	21				369	254	37	18	14	12
16	11	17	22	11	13		254	264	36	15	15	12
17	13	12	23				229	257	36	13	14	11
18	12	b11	21				223	241	33	13	14	11
19	20	b10	18			22	170	226	32	13	15	11
20	25	b10	14			44	158	211	31	12	13	11
21	20	b11	22			52	165	202	30	13	13	12
22	17	b13	20			62	170	196	27	33	13	12
23	17	b12	20			62	170	185	25	15	14	12
24	16	b11	b21			64	175	172	22	12	13	11
25	16	b11	b15			64	205	155	21	10	13	11
26	16	b10				78	238	138	19	9.0	14	11
27	16	b10				88	229	132	18	9.0	17	11
28	15	b11	11			115	180	122	17	8.4	26	11
29	14	b11				160	175	113	16	7.8	20	11
30	14	b11				140	172	106	15	7.2	20	11
31	15	-----				170	-----	102	-----	7.2	20	-----
Total	459	362.0	539	341	364	1,445	6,155	6,821	1,394	470.6	464.4	389
Mean	14.8	12.1	17.4	11	13	46.6	205	220	46.5	15.2	15.0	13.0
Ac-ft	910	718	1,070	676	722	2,870	12,210	13,530	2,760	933	921	772

Calendar year 1962: Max 1,280 Min - Mean 147 Ac-ft 106,600  
 Water year 1962-63: Max 380 Min - Mean 52.6 Ac-ft 38,090

Peak discharge (base, 900 cfs).-- No peak above base.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 26 to Mar. 19 (stage-discharge relation affected by ice during most of period).

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 1963. 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.--40 years, 83.8 cfs (60,670 acre-ft per year).

Extremes.--Maximum discharge during year, 221 cfs Apr. 15 (gage height, 2.50 ft); no flow Oct. 1 to Nov. 9, July 16 to Sept. 30.

1923-63: 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 periods of no gage-height record, 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 table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used July 12-25)

0.2	0	0.9	7.2
.3	.3	1.0	12
.5	1.1	1.1	19
.6	1.6	1.4	50
.7	2.5	2.0	130
.8	4.0	3.0	308

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		0	1.9		(*)		85	34	47			
2		0	1.9				61	39	50			
3		0	1.9				34	49	54			
4		0	1.9				27	51	50			
5		0	1.9				32	58	43			
6		0	1.9				37	72	36			
7		0	1.9				37	102	*25			
8		0	1.9			5.5	84	112	16	0.9		
9	(*)	0	1.9				132	130	5.6			
10		.9	1.9				122	*120	5.0			
11		1.0	1.9				95	123	5.3			(*)
12		1.0	*1.7				79	124	6.2			
13		1.1	1.6				98	108	6.6			
14		1.2	1.5				127	101	8			
15		*1.2	1.4				176	101	9	*.1		
16		1.2		0.6	7.0		6.0	122	108	0		
17		1.4					6.0	78	113	0		
18		1.3					6.6	55	109	0		
19		1.2					*7.2	*41	102	0		
20		1.4					6.9	33	98	0	(*)	
21		1.5		(*)			6.6	26	76	0		
22		1.7					23	24	79	*0		
23		1.7	1.0				94	24	76	0		
24		1.7					98	16	74	0		
25		1.7					67	21	67	0		
26		1.8					52	19	61	0		(*)
27		1.8					37	18	60	0		
28		1.8					39	20	57	0		
29		1.7					74	24	51	0		
30		1.8					71	33	50	0		
31		-----					71	-----	50	0		
Total	0	30.1	43.1	18.6	196.0	747.8	1,780	2,555	419.2	12.7	0	0
Mean	0	1.00	1.39	0.6	7.0	24.1	59.3	82.4	14.0	0.41	0	0
Ac-ft	0	60	85	37	389	1,480	3,530	5,070	831	25	0	0

Calendar year 1962: Max 1,000 Min 0 Mean 98.1 Ac-ft 70,990

Water year 1962-63: Max 176 Min 0 Mean 15.9 Ac-ft 11,510

Peak discharge (base, 500 cfs).--No peak above base.

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

Note.--No gage-height record Dec. 13 to Mar. 18 (stage-discharge relation affected by ice during most of period), June 14 to July 14.

## RIO GRANDE BASIN

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 1963. 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.--42 years, 193 cfs (139,700 acre-ft per year).

Extremes.--Maximum discharge during year, 723 cfs May 18; no flow at times.

1921-63: Maximum discharge, 3,890 cfs May 15, 1941; no flow at times in 1934, 1948, 1950-51, 1953-63.

Maximum stage known since at least 1854 occurred Oct. 5, 1911, from information by local residents.

Remarks.--Records good except those for Dec. 25 to Mar. 5, which are poor. Discharge measurements, field estimates, 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 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.5	18	40	32	56	79	105	1.2	5.2	0.2	0.1	0
2	4.4	144	40	34	64	78	102	.6	4.4	.2	.1	0
3	5.3	325	39	34	67	80	82	.4	2.3	.2	0	0
4	6.5	451	39	33	71	81	59	.3	2.4	.2	0	0
5	6.8	495	39	31	71	79	42	.2	3.2	.3	0	0
6	6.6	510	39	31	66	76	42	.2	3.2	.3	0	0
7	7.4	528	38	31	62	78	42	.2	3.1	.4	0	0
8	6.8	574	38	30	58	81	43	.2	2.4	.4	0	0
9	6.7	604	38	30	57	83	80	.2	2.3	.4	0	0
10	6.7	599	34	28	54	83	108	.3	2.1	.2	0	0
11	6.7	588	34	24	51	81	102	.4	2.0	.8	0	0
12	6.9	417	36	20	52	77	63	.4	1.9	.9	1.1	0
13	7.6	128	34	23	51	63	47	.6	2.1	.5	.1	0
14	7.6	72	34	26	53	67	48	.7	1.4	.1	0	0
15	7.6	54	38	28	54	72	64	1.1	1.1	.2	0	0
16	7.6	46	43	30	59	72	82	1.2	.9	.1	0	0
17	9.5	44	43	31	63	74	52	1.4	.9	.2	0	0
18	11	40	43	32	66	66	27	.61	.9	.2	0	0
19	18	38	38	33	68	65	17	.61	.8	.2	0	0
20	22	38	32	33	69	61	10	18	.8	.2	.2	0
21	22	38	30	34	74	60	8.1	6.3	.8	.2	.1	0
22	23	38	32	36	75	58	9.4	4.2	.6	.2	0	0
23	23	38	32	37	73	95	6.8	3.3	.6	.2	0	0
24	21	38	30	38	73	129	5.9	2.9	.4	.1	0	0
25	18	40	28	40	75	114	5.1	3.8	.4	.1	0	0
26	17	40	26	41	78	99	4.0	11	.4	.1	0	.1
27	21	41	23	42	80	87	2.1	4.9	.4	0	0	.1
28	20	39	25	40	81	77	2.0	4.4	.4	0	0	.1
29	21	41	27	38	-	84	1.8	3.9	.2	0	0	.1
30	16	40	30	41	-----	133	1.5	2.8	.2	0	0	.1
31	16	-----	30	47	-----	99	-----	3.2	-----	0	0	-----
Total	380.2	6106	1072	1028	1821	2531	1263.7	200.3	47.8	7.8	1.5	0.5
Mean	12.3	204	34.6	33.2	65.0	81.6	42.1	6.46	1.59	0.25	0.06	0.02
Ac-ft	754	12,110	2,130	2,040	3,610	5,020	2,510	397	95	15	3.8	1.0

Calendar year 1962: Max 1,460 Min 0 Mean 177 Ac-ft 128,100  
 Water year 1962-63: Max 604 Min 0 Mean 39.6 Ac-ft 28,690

Note.--Stage-discharge relation affected by ice on main channel Dec. 25 to Mar. 5 and on secondary channel Nov. 17, 19, 20, Dec. 11, Jan. 3 to Feb. 3, Mar. 4. No gage-height record on secondary channel Dec. 14 to Jan. 2, Feb. 11-18, Mar. 5, 6 (stage-discharge relation affected by ice during parts of periods), Sept. 26-30.

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 1963. 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.--36 years, 51.0 cfs (36,920 acre-ft per year).

Extremes.--Maximum discharge during year, 171 cfs July 21 (gage height, 2.05 ft); minimum daily, 10 cfs Dec. 27, Apr. 21, 28, June 23, 24. 1927-63: Maximum discharge, 654 cfs July 1, 1947 (gage height, 5.09 ft), from rating curve extended above 307 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 discharge, in cubic feet per second)

0.2	8.0
.5	24
1.0	59
1.5	107

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	18	12	14	13	19	16	13	36	48	46	40	16
2	19	12	14	12	a 19	15	12	36	49	45	32	15
3	19	12	13	14	a 19	16	13	36	48	45	23	16
4	18	12	14	14	19	15	13	36	45	45	27	16
5	18	12	12	14	18	15	14	36	44	41	25	16
6	18	12	13	14	18	14	12	36	43	31	34	17
7	19	12	*13	14	a 18	15	12	29	47	31	43	19
8	18	12	12	14	a 17	17	12	12	52	31	46	16
9	*18	12	12	13	a 16	16	12	11	51	31	39	16
10	18	12	12	13	a 15	16	12	37	51	*31	35	17
11	18	12	12	12	a 13	14	12	64	50	28	37	17
12	18	12	12	14	a 13	13	12	64	*50	25	46	16
13	18	12	12	14	a 12	12	12	60	50	25	50	14
14	18	14	11	12	a 14	14	12	57	49	25	36	14
15	16	14	12	12	17	14	12	*51	47	22	*31	14
16	11	14	14	12	16	12	12	45	50	21	22	14
17	14	14	15	14	16	14	12	48	48	33	22	12
18	13	14	18	14	16	16	*12	48	43	44	20	*13
19	16	12	18	13	16	18	12	49	36	47	16	14
20	14	*14	16	13	14	*30	11	30	35	53	20	19
21	13	14	14	14	*16	29	10	19	25	60	28	28
22	14	14	12	14	16	24	11	25	14	43	23	29
23	14	14	12	14	14	26	12	29	10	25	19	28
24	13	14	12	14	15	20	11	54	a 10	25	15	25
25	12	14	14	14	16	18	11	51	a 16	29	16	23
26	12	14	14	14	14	16	11	48	a 15	30	19	20
27	12	13	10	14	18	16	11	48	a 32	25	27	18
28	12	13	11	14	16	15	10	45	a 50	25	26	15
29	12	12	12	14	-	14	20	43	a 47	24	27	16
30	12	14	12	14	-----	14	35	48	a 48	31	25	17
31	12	-----	13	16	-----	14	-----	48	-----	41	21	-----
Total	477	388	405	421	450	518	386	1,279	1,203	1,058	890	530
Mean	15.4	12.9	13.1	13.6	16.1	16.7	12.9	41.3	40.1	34.1	28.7	17.7
Ac-ft	946	770	803	835	893	1,030	766	2,540	2,390	2,100	1,770	1,050

Calendar year 1962: Max 158 Min 10 Mean 38.8 Ac-ft 28,120  
 Water year 1962-63: Max 64 Min 10 Mean 21.9 Ac-ft 15,890

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

## 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 1963. 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.--64 years, 626 cfs (453,200 acre-ft per year).

Extremes.--Maximum discharge during year, 724 cfs Nov. 10 (gage height, 2.25 ft); maximum gage height, 2.70 ft Mar. 5 (backwater from ice); minimum daily discharge, 1.6 cfs July 30.

1899-1963: 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 poor. 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)

0.2	0	0.8	58
.3	2.0	1.1	134
.4	7.0	1.5	284
.5	15	2.0	554
.6	26	2.5	940

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	60	88	251			390	289	29	39	7.8	14	32
2	58	102	251			380	280	27	39	7.8	11	30
3	62	289	264			410	243	26	40	7.0	7.0	29
4	69	485	276			200	211	22	40	10	10	25
5	73	599	264			360	192	18	39	11	34	34
6	69	639	247			384	177	18	37	7.8	18	33
7	69	667	247			390	184	17	34	6.5	12	24
8	69	674	243			400	196	18	34	6.5	10	23
9	67	710	259			400	196	20	36	9.4	17	22
10	62	710	276			401	227	20	33	12	12	25
11	56	702	268			368	272	24	27	13	8.6	24
12	54	667	251			363	272	30	26	3.3	20	20
13	53	348	251			368	196	44	25	20	30	19
14	51	223	235			294	177	47	24	13	18	19
15	49	199	227			303	177	45	22	a13	11	19
16	65	188	231	143	315	300	199	40	19	a13	8.6	19
17	67	153	239			280	203	54	22	a13	12	17
18	76	130	247			289	177	49	22	a12	15	17
19	78	180	227			280	140	120	22	a12	12	15
20	82	220	231			289	117	88	22	a10	8.6	16
21	92	268	223			264	100	65	20	a10	5.4	19
22	92	272	200			243	85	56	19	a8.6	15	23
23	100	259	160			235	80	49	15	12	40	23
24	100	284	140			280	54	42	13	9.4	45	22
25	95	284	130			284	45	40	10	6.0	35	22
26	98	284	120			276	44	42	10	7.0	37	18
27	95	276	130			308	45	60	10	6.5	36	13
28	90	280	150			318	39	60	12	5.0	33	9.4
29	85	268	160			280	34	60	9.4	4.0	33	7.8
30	82	255	160			313	30	56	8.6	1.6	36	7.0
31	85		160			298		45		4.5	25	
Total	2,303	10,703	6,718	4,433	3,820	9,948	4,681	1,331	7,290	312.4	645.2	626.2
Mean	74.3	357	217	143	315	321	156	42.9	24.3	10.1	20.8	20.9
Ac-ft	4,570	21,230	13,320	8,790	17,490	19,730	9,280	2,640	1,450	620	1,280	1,240

Calendar year 1962: Max 2,510 Min 39 Mean 435 Ac-ft 315,300  
 Water year 1962-63: Max 710 Min 1.6 Mean 140 Ac-ft 101,600

a No gage-height record.

Note.--Stage-discharge relation affected by ice Nov. 18-20, Dec. 22 to Mar. 9.

## 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 1963.

Gage.--Water-stage recorder.

Average discharge.--10 years, 257 cfs (186,100 acre-ft per year).

Extremes.--Maximum discharge during year, 938 cfs Aug. 29 (gage height, 3.83 ft); minimum daily, 5.0 cfs July 31.

1953-63: 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)

0.9	3.0	1.4	61
1.0	8.0	2.0	222
1.1	16	3.0	555
1.2	27	4.0	1,040

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*57	81	237				292	25	40	7.5	5.5	27
2	59	93	237				280	24	39	7.5	15	*27
3	57	212	240				255	23	39	7.0	14	*27
4	61	418	255				219	22	39	7.0	10	25
5	68	539	246				207	19	38	11	24	24
6	68	579	222				180	19	36	11	23	39
7	63	603	219				183	18	*33	7.5	15	22
8	65	*615	216				192	18	33	6.5	12	22
9	65	640	216				192	18	33	6.0	12	20
10	61	644	243				213	19	30	12	13	19
11	55	640	280				268	20	27	12	13	24
12	53	627	*249				292	23	26	20	13	19
13	52	404	249			342	225	38	25	28	32	18
14	50	219	240				186	46	24	17	22	18
15	48	186	225				169	44	23	*14	13	17
16	55	175	243	148		318	186	39	19	12	9.6	17
17	65	152	240	(*)			213	44	25	11	10	16
18	72	108	243				180	50	20	10	12	15
19	79	152	234				141	83	22	7.5	12	15
20	81	178	234				108	103	23	6.5	*8.8	15
21	90	234	219				83	76	20	6.5	8.0	16
22	93	228	186				74	59	18	6.0	9.6	18
23	93	237	146				70	53	18	8.0	23	18
24	96	268	149				55	42	15	14	38	18
25	90	274	113				40	38	13	11	34	18
26	90	271				270	*38	38	12	8.8	28	17
27	90	268				290	34	50	12	10	28	14
28	88	268				315	34	59	12	9.6	25	11
29	79	255	160			*295	33	55	9.6	8.0	128	8.8
30	76	243				314	27	55	8.0	7.5	34	8.0
31	79					320		48		5.0	27	
Total	2,198	9,811	6,541	4,588	8,904	10,354	4,669	1,268	731.6	315.4	671.5	572.8
Mean	70.9	327	211	148	318	334	156	40.9	24.4	10.2	21.7	19.1
Ac-ft	4,360	19,460	12,970	9,100	17,660	20,540	9,260	2,520	1,450	626	1,330	1,140

Calendar year 1962: Max 2,300 Min 46 Mean 434 Ac-ft 314,200  
 Water year 1962-63: Max 644 Min 5.0 Mean 139 Ac-ft 100,400

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 26 to Jan. 11, Jan. 18, 19, Jan. 30 to Feb. 12, Feb. 25 to Mar. 4, Mar. 7-10.  
 No gage-height record Jan. 12-17, 20-29, Feb. 13-24, Mar. 5-6, 11-28 (stage-discharge relation affected by ice during most of periods).



## 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 1963.

Gage.--Water-stage recorder. Altitude of gage is 8,750 ft (from topographic map).

Average discharge.--10 years, 54.0 cfs (39,090 acre-ft per year).

Extremes.--Maximum discharge during year, 307 cfs May 11 (gage height, 5.19 ft); maximum gage height, 5.27 ft Apr. 9 (backwater from ice); minimum daily discharge, 3.0 cfs Jan. 13.

1953-63: Maximum discharge, 976 cfs June 30, 1957 (gage height, 7.19 ft); minimum daily, that of Jan. 13, 1963.

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	4.0	76
3.3	11	4.5	156
3.5	23	5.1	284

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	20	14	8.0	5.4	4.0	5.0	13	*42	149	63	11	50
2	19	14	6.5	5.8	4.0	5.0	12	42	160	*59	25	36
3	18	13	7.0	5.8	4.0	5.0	*10	43	194	61	56	31
4	*18	12	6.5	5.4	4.0	4.5	10	56	170	61	55	29
5	18	12	7.8	5.0	*4.5	4.0	12	71	*161	59	49	28
6	25	*12	*7.4	5.0	5.0	4.0	13	98	153	56	36	27
7	23	7.8	7.0	5.0	5.6	4.5	16	130	151	51	35	33
8	22	7.0	7.0	4.5	5.6	*5.0	19	165	149	53	*34	34
9	21	7.4	7.4	*4.0	5.0	5.0	25	215	184	70	34	28
10	20	8.6	7.4	3.5	5.0	5.0	60	244	154	73	38	*26
11	18	9.8	7.4	3.5	4.5	4.5	54	270	139	61	86	26
12	17	8.6	7.2	3.5	4.5	5.2	60	258	130	63	64	25
13	17	9.4	6.8	3.0	4.5	5.2	68	204	136	52	59	24
14	16	10	6.8	3.5	5.0	5.2	64	219	153	44	44	22
15	16	10	7.0	4.0	5.0	5.0	64	219	176	41	36	22
16	18	10	7.3	4.0	5.0	4.5	55	217	217	41	35	20
17	21	10	7.4	4.0	5.2	4.5	41	211	172	41	35	21
18	19	9.8	7.2	3.5	5.2	4.5	30	211	182	36	35	22
19	19	9.0	7.0	3.5	5.2	5.0	28	235	160	35	28	23
20	21	10	6.8	4.0	4.5	5.0	24	192	142	31	27	36
21	20	10	6.5	4.5	5.0	5.2	24	198	136	27	32	51
22	19	7.8	6.4	5.0	5.0	5.4	24	*198	125	24	34	38
23	18	8.9	6.4	5.0	5.0	5.6	28	202	117	25	35	34
24	16	8.0	6.4	5.0	5.0	5.6	29	198	109	29	38	32
25	15	8.0	6.4	4.5	4.5	5.2	34	167	101	26	37	29
26	14	8.0	5.4	4.5	4.5	5.2	42	156	89	24	35	29
27	14	8.0	4.6	4.5	4.5	6.0	52	153	84	21	47	26
28	14	8.0	4.5	4.0	5.0	7.0	35	161	79	16	38	25
29	14	8.0	4.5	4.0	-	8.0	32	163	73	16	35	24
30	15	7.0	4.5	4.0	-----	10	42	158	68	14	32	22
31	14	-----	5.2	4.5	-----	14	-----	154	-----	14	36	-----
Total	559	286.1	203.7	135.4	133.8	172.8	1,020	5,250	4,213	1,287	1,221	873
Mean	18.0	9.54	6.57	4.37	4.78	5.57	34.0	169	140	41.5	39.4	29.1
Ac-ft	1,170	567	404	269	265	343	2,020	10,410	8,360	2,550	2,420	1,730

Calendar year 1962: Max 540 Min 4.5 Mean 70.8 Ac-ft 51,240  
 Water year 1962-63: Max 270 Min 3.0 Mean 42.1 Ac-ft 30,450

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 16 to Apr. 15.

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 1963. 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.--44 years, 95.6 cfs (69,210 acre-ft per year).

Extremes.--Maximum discharge during year, 368 cfs May 11 (gage height, 5.22 ft); minimum daily, 3.0 cfs July 30.

1904-18, 1933-63: 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)

3.0	3.0	4.2	116
3.2	8.5	4.5	170
3.3	12	5.0	315
3.6	32	5.5	520
3.9	68		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	37	26	17	14	10	12	45	84	124	12	19	65
2	35	26	17	13	10	12	39	76	136	*7.3	34	53
3	34	25	15	14	10	12	35	74	172	4.5	76	44
4	*32	25	14	15	10	12	30	*86	145	4.2	108	39
5	32	26	15	14	10	11	*31	102	136	4.2	105	37
6	32	*23	*17	12	12	12	36	129	*127	4.2	76	36
7	46	19	18	11	*13	*12	38	162	124	4.0	62	40
8	41	4.5	18	11	11	12	54	210	122	3.8	*67	52
9	38	3.8	17	*11	12	12	78	274	170	4.2	67	44
10	36	3.8	17	12	12	12	97	322	145	1.9	61	*37
11	34	3.8	17	10	11	13	92	336	118	14	134	37
12	32	3.8	18	8.4	11	13	108	312	108	16	110	36
13	31	5.5	16	7.4	12	13	118	241	*110	10	108	36
14	30	10	14	8.6	12	12	116	247	122	7.3	90	32
15	30	16	15	10	12	13	114	241	162	6.1	67	32
16	32	18	16	10	12	13	84	241	244	5.5	60	30
17	38	17	17	11	12	13	78	241	178	6.1	55	29
18	37	15	16	10	12	13	53	290	192	4.8	60	30
19	36	15	15	10	12	13	36	312	168	4.0	48	31
20	40	17	14	10	12	13	36	218	129	4.0	42	38
21	39	19	14	11	10	13	53	205	116	3.8	47	71
22	37	17	14	11	11	14	54	*247	103	3.8	54	54
23	34	19	14	11	11	15	42	253	94	3.8	50	46
24	32	18	15	10	11	15	50	253	82	3.8	50	40
25	30	18	13	10	11	15	55	200	50	3.8	50	37
26	28	19	11	9.0	10	14	76	180	29	3.5	46	36
27	26	19	12	9.6	11	18	94	152	24	3.5	60	34
28	26	18	13	10	12	22	78	150	21	3.5	54	32
29	27	17	13	10	-	26	70	145	18	3.2	49	30
30	26	17	14	*10	-----	32	76	136	15	3.0	42	30
31	26	-----	14	10	-----	37	-----	134	-----	8.1	42	-----
Total	1,034	484.2	470	334.0	315	469	1,966	6,253	3,484	1,890	1,993	1,188
Mean	33.4	16.1	15.2	10.8	11.2	15.1	65.5	202	116	6.10	64.3	39.6
Ac-ft	2,050	960	932	662	625	930	3,900	12,400	6,910	375	3,950	2,360

Calendar year 1962: Max 708 Min 3.8 Mean 115 Ac-ft 83,210  
 Water year 1962-63: Max 336 Min 3.0 Mean 49.8 Ac-ft 36,050

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 8-10, 12, 13, 16-19, 22, 24, 25, Nov. 27 to Dec. 1, Dec. 3-6, 9-11, 13, 14, 16-19, 21-23, Dec. 25 to Jan. 8, Feb. 7-12, Apr. 6. No gage-height record Jan. 9-29, Feb. 13 to Apr. 5 (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 SW¼NW¼ 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 ½ miles southwest of Estes Park.

Records available.--October 1946 to September 1963. 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 Cipolletti weir at different datum.

Average discharge.--17 years, 222 cfs (160,700 acre-ft per year).

Extremes.--Maximum discharge during year, 577 cfs Aug. 5 (gage height, 4.21 ft); minimum daily, 1.2 cfs Oct. 7.

1946-63: Maximum discharge, 671 cfs Jan. 23, 1962 (gage height, 4.63 ft); 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.

Correction.--Corrected figures of daily discharge, in cubic feet per second, for Oct. 29-31, 1961, superseding those previously published, are given herewith:

1961  
Oct. 29..... 0  
30..... 284  
31..... 262

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	153	*381	551	349	453	533	536	540	366	439	483	1.6
2	139	374	489	456	463	398	348	527	366	459	488	1.4
3	95	329	546	457	289	419	395	523	345	466	379	256
4	1.4	351	538	455	379	557	410	551	279	285	56	189
5	75	406	540	455	*504	553	410	555	311	351	323	193
6	1.4	505	538	352	504	546	505	555	379	332	431	242
7	1.2	494	538	455	496	548	451	527	395	5.7	381	22
8	77	481	538	449	504	546	431	459	415	425	357	1.4
9	85	473	538	516	398	391	306	392	394	479	383	205
10	88	485	538	514	404	268	305	394	390	427	302	206
11	87	423	540	546	521	526	*283	335	402	459	78	*206
12	78	487	542	564	502	508	285	314	305	426	332	179
13	1.6	414	*548	561	514	533	327	415	486	414	109	350
14	1.4	414	559	564	519	529	429	475	467	478	136	407
15	86	435	544	561	459	527	433	485	338	499	*290	171
16	88	496	387	540	402	338	278	500	67	508	434	374
17	87	516	561	506	404	212	279	*475	158	527	339	417
18	81	489	557	504	518	470	281	406	70	*509	228	428
19	107	536	564	412	516	515	275	238	211	507	238	422
20	95	553	561	414	548	498	277	355	282	508	269	392
21	404	546	551	457	514	*480	347	451	342	414	302	145
22	546	504	544	463	484	479	359	473	283	524	188	93
23	475	553	398	473	389	321	478	447	296	542	179	291
24	237	551	536	468	265	256	483	398	314	*410	177	279
25	159	489	430	478	553	487	548	345	249	499	84	291
26	437	544	546	362	551	504	548	376	368	540	180	316
27	402	544	546	317	546	491	551	436	*370	481	202	312
28	343	542	546	466	551	493	544	408	392	389	325	282
29	396	548	544	458	-	441	538	414	384	483	508	264
30	347	551	477	471	-----	557	533	414	380	553	396	299
31	377	-----	516	455	-----	557	-----	412	-----	544	152	-----
Total	5,551.0	14,414	16,351	14,498	13,150	14,481	12,173	13,595	9,804	13,882.7	8,729	7,235.4
Mean	179	480	527	468	470	467	406	439	327	448	282	241
Ac-ft	11,010	28,590	32,430	28,760	26,080	28,720	24,140	26,970	19,450	27,540	17,310	14,350

Calendar year 1962: Max 592 Min 0 Mean 328 Ac-ft 237,200  
Water year 1962-63: Max 564 Min 1.2 Mean 394 Ac-ft 285,400

\* 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 SW¼NW¼ 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 1963. 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, 17,890 acre-ft June 19 (elevation, 8,367.01 ft); minimum, 16,580 acre-ft May 2 (elevation, 8,366.30 ft).

1947-63: 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 1962 to September 1963

Date	Elevation (feet)†	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	8,366.75	17,400	-
Oct. 31.....	8,366.61	17,140	+260
Nov. 30.....	8,366.72	17,350	+210
Dec. 31.....	8,366.73	17,370	+20
Calendar year 1962.....	-	-	+20
Jan. 31.....	8,366.66	17,240	-130
Feb. 28.....	8,366.70	17,310	+70
Mar. 31.....	8,366.74	17,380	+70
Apr. 30.....	8,366.45	16,850	-530
May 31.....	8,366.75	17,400	+550
June 30.....	8,366.40	16,760	-640
July 31.....	8,366.49	16,930	+170
Aug. 31.....	8,366.62	17,160	+230
Sept. 30.....	8,366.53	17,000	-160
Water year 1962-63.....	-	-	-400

† 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.

Drainage area--47.1 sq mi.

Records available--October 1944 to September 1963.

Gage--Water-stage recorder. Altitude of gage is 8,310 ft (from topographic map).

Average discharge--19 years, 83.1 cfs (60,160 acre-ft per year).

Extremes--Maximum discharge during year, 482 cfs June 16 (gage height, 3.35 ft); minimum daily, 4.0 cfs Mar. 22-26.  
1944-63: 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. Natural flow regulated by Monarch Lake. No diversion above station.

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

1.2	2.5	1.7	34
1.3	5.5	2.0	79
1.4	10	2.6	215
1.5	16	3.4	505

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8.6	10	7.3	a 5.5	6.4	4.9	5.5	79	228	*168	23	65
2	8.6	10	7.3	a 5.5	6.4	4.9	*6.8	18	376	122	51	54
3	*9.1	10	7.3	a 5.5	a 6.4	4.9	6.8	*15	404	122	75	56
4	9.6	10	7.3	a 5.5	a 6.4	4.9	7.3	18	*299	126	82	56
5	22	9.6	7.3	a 5.5	*a 6.4	4.9	7.3	52	328	141	167	55
6	18	*9.6	*7.3	a 5.5	6.4	4.9	7.3	188	227	83	115	54
7	12	10	7.3	a 5.5	6.4	*4.9	7.3	248	239	130	103	93
8	15	9.6	7.3	a 5.5	6.0	4.9	7.8	245	306	109	*83	206
9	28	9.1	7.3	*a 5.5	6.0	4.6	7.8	296	258	80	120	145
10	23	9.1	7.3	5.5	6.0	4.6	8.2	392	251	116	91	*75
11	15	9.1	6.8	5.5	6.0	4.6	8.6	396	210	141	66	77
12	15	9.1	6.8	5.5	5.2	4.3	9.1	384	*188	55	156	75
13	15	8.6	6.8	5.5	5.4	4.3	9.6	272	278	20	114	50
14	15	8.6	6.8	5.5	5.4	4.3	11	239	306	111	91	36
15	15	8.6	6.8	5.5	5.5	4.3	12	257	432	58	116	41
16	15	9.1	6.4	5.5	5.5	4.3	26	356	474	36	74	42
17	15	8.6	6.4	5.5	5.5	4.3	49	292	396	74	63	41
18	15	8.6	6.4	5.5	5.2	4.3	46	362	305	46	63	40
19	15	8.6	6.4	5.5	5.2	4.3	44	400	356	37	58	38
20	15	8.6	6.4	5.5	4.9	4.3	40	277	280	37	41	50
21	15	8.6	6.4	5.5	4.9	4.3	37	296	300	75	41	74
22	15	8.6	6.4	5.5	4.9	4.0	24	296	314	56	55	42
23	15	8.6	6.4	5.5	4.9	4.0	10	320	233	72	75	35
24	14	8.2	6.0	5.2	4.9	4.0	10	317	212	81	75	38
25	11	8.2	a 6.0	5.2	4.9	4.0	12	289	221	58	95	40
26	10	8.2	a 6.0	5.5	4.9	4.0	13	263	212	56	95	38
27	9.6	8.2	a 5.5	5.5	4.9	4.6	30	215	163	56	97	35
28	9.6	8.2	a 5.5	5.5	4.9	4.6	93	254	218	55	107	32
29	10	7.8	a 5.5	5.5	-	4.9	130	274	150	28	105	30
30	10	7.8	a 5.5	5.5	-----	4.9	116	286	141	16	97	24
31	10	-----	a 5.5	5.5	-----	4.9	-----	269	-----	20	85	-----
Total	433.1	266.9	203.7	169.9	155.8	139.9	802.4	7.865	3,305	2,385	2,691	1,737
Mean	14.0	8.90	6.57	5.48	5.56	4.51	26.7	254	277	76.9	86.8	57.9
Ac-ft	859	529	404	337	309	277	1,590	15,600	16,470	4,730	5,340	3,450

Calendar year 1962: Max 727 Min 5.5 Mean 89.0 Ac-ft 64,430  
Water year 1962-63: Max 474 Min 4.0 Mean 68.9 Ac-ft 49,900

\* Discharge measurement made on this day.

a No gage-height record.

## 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 1963. 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, 430,800 acre-ft Oct. 6 (elevation, 8,275.13 ft); minimum, 267,400 acre-ft May 6 (elevation, 8,249.74 ft).

1949-63: Maximum contents 465,900 acre-ft July 13, 1962 (elevation, 8,280.05 ft); 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 1962 to September 1963

Date	Elevation (feet)†	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	8,275.11	430,600	-
Oct. 31.....	8,273.81	421,500	-9,100
Nov. 30.....	8,270.12	395,900	-25,600
Dec. 31.....	8,265.33	363,800	-32,100
Calendar year 1962.....	-	-	-22,900
Jan. 31.....	8,261.14	336,700	-27,100
Feb. 28.....	8,257.18	312,000	-24,700
Mar. 31.....	8,252.73	285,000	-27,000
Apr. 30.....	8,250.23	270,300	-14,700
May 31.....	8,255.90	304,100	+33,800
June 30.....	8,261.32	337,900	+33,800
July 31.....	8,258.11	317,700	-20,200
Aug. 31.....	8,257.70	315,200	-2,500
Sept. 30.....	8,257.00	310,800	-4,400
Water year 1962-63.....	-	-	-119,800

† 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 1963. 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 discharge during year, 237 cfs July 24 (gage height, 3.09 ft); minimum daily, 9.1 cfs Sept. 27-30.  
1950-63: Maximum daily discharge, 1,400 cfs (estimated) July 3, 4, 1962; minimum, 5.6 cfs Sept. 23-28, 1961.

Remarks.--Records excellent. 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 (gage height, in feet, and discharge,  
in cubic feet per second)

0.4	9.1
.7	22
1.2	53
1.7	92

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	16	21	20	20	20	20	19	40	85	*80	43	27
2	22	21	20	20	20	20	*19	55	85	80	37	27
3	*21	21	20	20	20	20	19	52	85	80	33	18
4	21	21	20	20	20	20	19	*50	*85	80	33	12
5	21	21	20	20	20	20	19	50	85	80	33	12
6	21	*21	17	20	20	20	19	50	80	80	33	*12
7	21	21	16	20	*20	20	19	51	77	80	33	12
8	21	21	16	20	20	*20	19	51	78	80	*29	12
9	21	21	16	20	20	20	19	51	78	80	27	10
10	21	21	16	*20	20	20	19	51	78	81	27	9.9
11	21	21	16	20	20	20	19	51	78	80	28	9.9
12	21	21	16	20	20	20	19	51	78	81	27	9.9
13	21	21	18	20	20	20	19	64	78	81	27	9.9
14	21	21	*20	20	20	20	19	75	78	81	27	9.9
15	21	21	20	20	20	20	19	81	79	80	27	9.9
16	21	21	20	20	20	20	20	79	79	79	27	9.9
17	21	21	20	20	20	20	20	79	75	81	27	9.9
18	21	21	20	20	20	20	20	79	71	67	27	9.9
19	21	21	20	20	20	20	20	79	67	75	27	9.9
20	21	21	20	20	20	19	20	80	64	75	27	9.9
21	21	20	20	20	20	19	20	84	64	75	27	9.9
22	21	20	20	20	20	19	21	85	64	75	27	9.9
23	21	20	20	20	20	19	21	85	64	75	28	9.9
24	21	20	20	20	20	19	21	82	69	77	27	9.9
25	21	20	20	20	20	19	21	80	72	75	28	9.9
26	21	20	20	20	20	19	21	80	78	75	28	9.9
27	21	20	20	20	20	19	21	82	84	75	28	9.1
28	21	20	20	20	20	19	21	84	82	75	27	9.1
29	21	20	20	20	-	19	21	84	80	72	27	9.1
30	21	20	20	20	-----	19	20	85	80	71	27	9.1
31	21	-----	20	20	-----	19	-----	85	-----	54	27	-----
Total	647	620	591	620	560	608	593	2135	2300	2380	900	346.7
Mean	20.9	20.7	19.1	20.0	20.0	19.6	19.8	68.9	76.7	76.8	29.0	11.6
Ac-ft	1,280	1,230	1,170	1,230	1,110	1,210	1,180	4,230	4,560	4,720	1,790	688

Calendar year 1962: Max 1,400 Min 13 Mean 130 Ac-ft 93,870  
Water year 1962-63: Max 85 Min 9.1 Mean 33.7 Ac-ft 24,400

\* Discharge measurement made on this day.

9-195. Colorado River near Granby, Colo.

Location.--Lat 40°07'15", long 105°54'00", in SW 1/4 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 1963 (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, 104 cfs July 24 (gage height, 1.23 ft); minimum daily, 14 cfs Sept. 10-19, 23-30. 1907-11, 1933-53, 1961-63: 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. 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)

0.2	11
.4	20
.7	40
1.0	71

Discharge, in cubic feet per second, May to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1								41	55	55	27	30
2								59	57	56	34	30
3								57	56	*55	33	22
4								*55	55	57	32	15
5								55	55	56	32	15
6								55	*57	55	33	*16
7								55	55	55	34	18
8								54	55	56	33	18
9								54	60	56	31	15
10								54	55	56	30	14
11								51	55	56	31	14
12								47	54	56	*31	14
13								55	54	56	32	14
14								52	55	52	30	14
15								57	57	57	31	14
16								55	63	55	30	14
17								55	59	55	30	14
18								53	58	47	30	14
19								52	55	52	31	14
20								52	53	54	31	15
21								52	51	54	31	15
22								57	51	55	31	15
23								60	50	55	30	14
24								56	53	56	30	14
25								53	56	54	30	14
26								53	56	54	31	14
27								53	55	54	31	14
28								55	54	56	30	14
29								54	52	56	30	14
30								54	52	54	30	14
31								55		40	30	
Total								1,680	1,653	1,692	960	476
Mean								54.2	55.1	54.6	31.0	15.9
Ac-ft								3,330	3,280	3,360	1,900	944

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

\* Discharge measurement made on this day.



## 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, ¾ miles upstream from mouth, and 4 miles north of Granby.

Drainage area.--134 sq mi.

Records available.--May 1953 to September 1963.

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, 8,940 acre-ft Oct. 9 (elevation, 8,129.58 ft); minimum, 3,380 acre-ft Mar. 28 (elevation, 8,103.93 ft).  
1953-63: Maximum contents observed, 9,060 acre-ft Aug. 3, 1953 (elevation, 8,129.99 ft); minimum since first filling to spillway level, 2,380 acre-ft Apr. 2, 1962 (elevation, 8,097.15 ft).

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 1962 to September 1963

Date	Elevation (feet)†	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	8,129.05	8,780	-
Oct. 31.....	8,129.31	8,860	+80
Nov. 30.....	8,117.74	5,900	-2,960
Dec. 31.....	8,118.85	6,140	+240
Calendar year 1962.....	-	-	-50
Jan. 31.....	8,116.63	5,660	-480
Feb. 28.....	8,111.61	4,680	-980
Mar. 31.....	8,104.32	3,440	-1,240
Apr. 30.....	8,117.74	5,900	+2,460
May 31.....	8,118.95	6,160	+260
June 30.....	8,122.97	7,120	+960
July 31.....	8,123.24	7,190	+70
Aug. 31.....	8,126.49	8,050	+860
Sept. 30.....	8,123.69	7,310	-740
Water year 1962-63.....	-	-	-1,470

† Elevation at 2400.

## 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 1963.

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).--10 years, 30.3 cfs (21,940 acre-ft per year).

Extremes (combined flow).--Maximum discharge during year, 47 cfs May 14 (gage height, 3.12 ft); no flow Sept. 17-24.  
1953-63: Maximum discharge, 867 cfs June 7, 1957 (gage height, 4.84 ft); no flow Sept. 17-24, 1963.

Remarks.--Records good. Records show combined flow of creek and McQueary ditch. 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. Prior to Oct. 1, 1962, records included priming and waste water from pump canal. 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.....	0	April.....	377
November.....	3,200	May.....	10,590
December.....	0	June.....	2,580
	- - - - -	July.....	0
Calendar year 1962....	16,670	August.....	639
	- - - - -	September.....	1,900
January.....	0		
February.....	0	Water year 1962-63....	19,290
March.....	0		

Cooperation.--Records of diversions to Lake Granby furnished by Bureau of Reclamation.

## Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9.5	17	7.0	7.2	28	34	22	2.0	41	*32	14	0.1
2	9.5	17	7.0	7.2	28	34	*7.4	1	41	34	14	.1
3	9.5	17	7.0	7.2	28	34	7.4	.1	42	38	14	.1
4	*9.1	17	7.0	7.4	*26	34	7.2	*.1	*42	38	14	.1
5	9.1	13	7.0	7.4	26	34	7.2	.1	42	38	17	.1
6	9.1	*7.1	7.0	7.4	26	34	7.0	.1	41	38	18	*.1
7	9.1	7.0	7.0	7.4	26	*34	7.0	.1	40	38	18	.1
8	14	7.0	7.0	7.4	26	34	7.0	.1	39	36	*18	.1
9	21	7.0	7.0	*7.4	26	34	7.0	.1	39	34	18	.1
10	23	7.0	7.0	11	26	34	7.0	17	39	34	18	.1
11	23	7.0	6.8	15	26	34	7.0	25	39	34	18	.1
12	23	7.0	6.8	15	26	34	7.0	25	39	34	6.8	.1
13	23	7.0	6.8	15	26	34	7.0	25	40	34	.4	.1
14	23	7.0	*6.8	15	26	34	7.0	39	40	34	.4	.1
15	23	7.0	6.8	22	26	34	7.0	46	39	32	.1	.1
16	23	7.0	6.8	26	26	34	7.0	47	39	26	.1	.1
17	23	7.0	6.8	26	26	34	7.0	32	39	24	.1	0
18	19	7.0	6.8	26	26	34	7.0	.2	39	24	.1	0
19	17	7.0	6.8	26	26	34	7.0	18	39	24	.1	0
20	17	7.0	6.8	26	26	34	7.0	16	39	24	.1	0
21	17	7.0	6.8	26	26	34	7.0	.3	39	24	.1	0
22	17	7.0	7.0	26	26	34	7.0	30	39	18	.1	0
23	17	7.0	7.0	18	26	34	7.0	45	39	14	.1	0
24	17	7.0	7.0	6.0	26	34	7.0	43	39	12	.1	0
25	17	7.0	7.0	6.0	26	34	7.0	43	39	12	.1	.1
26	17	7.0	7.0	6.0	30	34	7.0	43	39	11	.1	.1
27	17	7.0	7.0	6.0	34	34	7.0	42	39	11	.1	.1
28	17	7.0	7.2	13	34	34	7.0	41	37	11	.1	.1
29	17	7.0	7.2	28	-	34	7.0	41	32	13	.1	.1
30	17	7.0	7.2	28	-----	34	7.0	41	32	14	.1	.1
31	17	-----	7.2	28	-----	34	-----	41	-----	14	.1	-----
Total	523.9	256.1	215.6	480.0	754	1,054	226.2	703.3	1,172	804	190.3	2.2
Mean	16.9	8.54	6.95	15.5	26.9	34.0	7.54	22.7	39.1	25.9	6.14	0.07
Ac-ft	1,040	508	428	952	1,500	2,090	449	1,390	2,320	1,590	377	4.4

Calendar year 1962: Max 725 Min 6.8 Mean 101 Ac-ft 73,300  
Water year 1962-63: Max 47 Min 0 Mean 17.5 Ac-ft 12,650

\* Discharge measurement made on this day.

Note.--No gage-height record Nov. 7 to May 8.

## 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 1963. 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.--53 years, 40.5 cfs (29,320 acre-ft per year) including diversions to Berthoud Pass ditch and Moffat water tunnel.

Extremes.--Maximum discharge during year, 24 cfs July 22 (gage height, 0.51 ft); maximum gage height recorded, 1.85 ft Feb. 12 (backwater from ice); minimum daily discharge, 2.5 cfs Oct. 4.  
1910-63: 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 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.7	3.4	3.4	8.0	7.4	7.0	12	7.8	9.0	*9.8	12	4.1
2	2.7	3.4	3.4	8.0	7.8	7.0	*11	9.0	10	9.8	13	3.7
3	2.7	3.4	3.4	8.0	7.8	7.0	9.4	9.8	11	9.8	13	3.4
4	2.5	3.4	3.3	8.0	7.8	7.0	10	9.4	8.6	9.8	14	3.4
5	2.7	*3.4	3.2	7.0	7.8	7.0	8.6	*9.4	7.8	9.8	13	3.4
6	3.7	3.5	3.2	7.0	7.8	7.0	7.8	10	7.8	9.0	12	3.5
7	3.7	3.5	3.4	7.0	7.8	7.0	8.6	9.0	7.4	8.6	12	6.6
8	*3.5	3.4	3.5	7.0	7.8	*7.0	9.0	8.6	7.8	8.6	5.4	4.3
9	3.2	3.4	3.5	7.0	*7.8	6.5	11	9.0	11	8.6	*4.8	*3.7
10	3.0	3.5	3.5	7.0	7.0	6.5	9.8	8.6	8.6	8.6	4.8	3.5
11	3.0	3.7	3.5	7.0	7.0	6.2	8.6	8.2	*7.8	8.2	7.8	3.4
12	3.0	3.5	3.5	6.0	7.0	5.8	9.4	7.8	7.0	7.8	5.6	3.2
13	3.0	3.6	3.4	6.0	7.0	5.6	9.8	7.0	6.6	7.4	5.0	3.2
14	3.0	3.9	3.4	6.0	7.0	6.0	11	7.0	9.4	7.4	4.3	3.2
15	3.0	4.1	*3.5	7.0	7.4	6.0	10	7.0	11	7.8	3.9	3.2
16	3.0	4.1	3.4	7.0	7.4	6.0	9.8	7.0	13	7.4	3.9	3.2
17	3.2	4.0	3.4	7.0	7.4	6.0	9.4	7.0	7.0	7.4	4.1	3.2
18	3.2	3.8	3.3	*7.0	7.0	7.0	7.0	7.8	7.0	7.0	3.9	3.0
19	3.2	3.9	3.3	7.0	7.0	7.0	6.2	8.2	6.2	7.4	3.7	3.0
20	3.2	3.9	3.2	7.0	7.0	7.0	6.2	8.2	5.4	9.8	3.5	3.7
21	3.2	3.9	3.2	7.0	7.0	7.0	7.0	7.8	5.2	13	3.9	3.7
22	3.4	3.9	3.1	7.0	7.0	7.0	6.6	8.2	5.0	14	4.8	3.4
23	3.4	3.7	3.1	7.0	7.0	7.0	7.0	9.0	5.6	14	5.4	3.2
24	3.4	3.7	3.0	7.0	7.0	7.0	7.0	8.6	5.4	13	4.8	3.4
25	3.2	3.7	2.9	7.0	7.0	7.0	8.6	8.2	7.8	12	4.1	3.2
26	3.4	3.7	6.0	6.6	7.0	7.0	9.8	7.8	7.8	12	4.3	3.0
27	3.4	3.6	8.0	7.8	7.0	8.0	8.6	7.8	7.8	12	5.2	2.8
28	3.4	3.5	8.0	7.8	7.0	9.0	6.6	8.2	9.8	12	4.1	2.8
29	3.2	3.5	8.0	7.8	-	10	6.6	9.8	9.8	11	3.7	2.8
30	3.2	3.5	8.0	7.4	-----	9.4	7.4	9.4	9.8	11	3.5	2.8
31	3.2	-----	8.0	7.4	-----	10	-----	9.4	-----	11	4.3	-----
Total	97.6	109.5	129.0	220.8	204.0	220.0	259.8	260.0	243.4	305.0	197.8	103.0
Mean	3.15	3.65	4.16	7.12	7.29	7.10	8.66	8.39	8.11	9.84	6.38	3.43
Ac-ft	194	217	256	438	405	436	515	516	483	605	392	204

Adjusted for diversions to Berthoud Pass ditch and Moffat water tunnel

Mean	11.7	10.0	8.51	8.62	8.09	8.10	16.2	48.6	57.6	26.8	30.5	30.6
Ac-ft	733	598	524	530	449	497	961	2,980	3,430	1,640	1,870	1,820

Observed

Calendar year 1962:	Max	143	Min	2.3	Mean	19.0	Ac-ft	13,730
Water year 1962-63:	Max	14	Min	2.5	Mean	6.44	Ac-ft	4,660

Adjusted

Calendar year 1962:	Max	-	Min	-	Mean	36.8	Ac-ft	26,620
Water year 1962-63:	Max	-	Min	-	Mean	22.2	Ac-ft	16,030

\* Discharge measurement made on this day.

Note.--No gage-height record Jan. 1-18, Feb. 16 to Mar. 8, Mar. 18-29 (stage-discharge relation affected by ice during most of periods). Stage-discharge relation affected by ice Nov. 7-10, 12, 13, 17-19, 22, 24, 25, Nov. 27 to Dec. 1, Dec. 3-7, 10, 11, 13, 14, 16-19, 21-31, Feb. 11-15, Mar. 9, 10, 14-17.

## 9-250. Vasquez Creek near Winter Park, Colo.

Location.--Lat 39°55'13", long 105°47'05", in NE¼NW¼ 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 1963. 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 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, 10 cfs Apr. 26; maximum gage height, 1.77 ft Aug. 7; minimum daily discharge, 0.4 cfs Oct. 1-5. 1933-63: 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 fair. Transmountain diversions 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 July 10

July 11 to Sept. 30

0.7	0	1.4	0.7
.8	.5	1.5	1.3
.9	1.8	1.6	2.5
1.0	5.2	1.7	5.5
1.1	10		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.4	1.1	2.2				3.0	4.9	2.1	*2.1	1.6	2.1
2	.4	1.1	2.2				3.8	5.7	2.8	2.1	1.8	1.8
3	.4	1.4	2.2				3.8	*6.2	3.5	1.6	2.1	1.8
4	*.4	1.4	2.2				4.2	5.7	2.5	1.6	2.1	1.8
5	.4	*1.6	2.0				*4.0	6.2	2.1	1.6	2.7	1.8
6	.8	1.4	2.0		(*)		4.2	6.2	2.1	1.6	2.7	1.8
7	.6	1.3	*2.2				4.8	6.2	2.1	1.6	3.2	2.7
8	.6	1.4	2.2			(*)	4.8	6.2	2.1	1.6	2.9	2.5
9	.5	2.1	2.2				5.8	6.2	4.2	1.6	*2.3	*2.1
10	.5	2.1	2.0				5.4	5.7	3.2	1.6	2.1	2.0
11	.5	2.0	2.0				5.2	5.2	*2.5	1.4	3.2	2.0
12	.5	2.0	2.0				6.2	4.9	1.8	*1.3	3.2	2.0
13	.5	1.8	2.2			1.7	7.1	4.5	1.6	1.3	2.9	2.0
14	.5	1.8	2.4				7.1	4.2	1.6	1.3	2.5	2.0
15	.5	2.0	2.4				6.6	3.8	1.6	1.0	2.3	2.0
16	.6	1.8	2.4	1.7	1.6		6.6	3.8	2.8	.9	2.5	2.0
17	.6	1.8	2.2				*6.6	3.5	1.6	.9	2.9	2.0
18	.6	1.8	2.0	(*)			6.6	3.5	1.4	.9	2.9	1.8
19	.6	1.8	2.0				6.2	3.5	1.4	.9	2.7	1.8
20	.6	1.8	2.0				6.2	3.2	1.1	.8	2.5	2.1
21	.5	2.0	2.0				7.1	3.2	1.1	1.8	2.7	2.1
22	.5	2.0	2.0				7.1	3.2	1.0	2.1	3.2	2.0
23	.5	2.2	2.0				6.6	3.2	1.0	2.5	3.8	2.0
24	.7	2.2	1.8				6.6	3.2	.9	2.7	3.8	2.0
25	1.1	2.2	1.8				7.1	3.2	1.0	2.3	3.2	1.8
26	1.1	2.2	1.6				7.1	2.8	1.3	2.1	3.5	1.7
27	1.1	2.2	1.6				6.2	2.8	1.0	2.0	3.2	1.7
28	1.3	2.2	1.6			2.5	4.5	2.5	1.0	1.7	2.1	1.7
29	1.4	2.2	1.6				4.2	2.5	.9	1.6	1.8	1.7
30	1.4	2.2	1.8				4.5	2.5	2.1	1.5	2.1	1.7
31	1.4	-----	1.8		-----		-----	2.5	-----	1.5	2.5	-----
Total	21.5	55.1	62.6	52.7	44.8	57.5	169.2	130.9	55.4	49.5	83.0	58.5
Mean	0.69	1.84	2.02	1.7	1.6	1.9	5.64	4.22	1.85	1.60	2.68	1.95
Ac-ft	43	109	124	105	89	114	336	260	110	98	165	116

Calendar year 1962: Max 146 Min 0.4 Mean 14.7 Ac-ft 10,640  
 Water year 1962-63: Max 7.1 Min 0.4 Mean 2.30 Ac-ft 1,670

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 10-27, Apr. 19, 20, 23. No gage-height record Nov. 28 to Apr. 11 (stage-discharge relation affected by ice during most of period), July 11, 12.

## FRASER RIVER BASIN

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 1963. 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, 48 cfs June 16 (gage height, 1.36 ft); minimum daily, 2.2 cfs Jan. 14-16.

1933-63: 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 or no gage-height record, which are fair. Transmountain diversion above station to Moffat water tunnel not known since 1959.

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

0.5	1.4	1.0	15
.7	4.2	1.3	38
.8	6.5	1.6	76
.9	10		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.2	3.8	3.6	2.7			3.6	*5.8	38	*36	16	7.2
2	4.2	3.8	3.5	2.8			3.8	6.3	40	36	19	7.0
3	4.1	3.8	3.5	2.8			4.2	7.2	40	37	21	6.8
4	4.1	3.8	3.6	2.7			4.2	7.2	38	36	20	6.6
5	4.2	3.8	3.5	2.5			4.6	7.9	37	35	23	6.4
6	5.1	3.6	3.4	2.5	(*)		*4.8	9.6	37	34	24	5.6
7	4.7	*3.2	3.2	2.5			5.4	10	*37	34	21	5.2
8	*4.2	3.4	3.2	2.4			5.6	11	37	33	18	4.8
9	4.1	3.4	3.1	2.4			5.8	12	40	35	*18	*4.2
10	3.9	3.2	2.8	*2.7			5.6	13	37	34	18	4.1
11	3.9	3.4	2.8	2.7		3.0	5.1	12	35	33	9.6	3.9
12	3.9	3.6	2.8	2.4			5.2	10	35	31	10	3.8
13	3.9	3.6	2.8	2.3			6.8	7.9	35	29	9.5	3.8
14	3.9	3.6	2.8	2.2			7.2	6.3	37	28	7.6	3.9
15	4.1	3.9	*2.8	2.2			6.5	9.0	40	27	6.8	3.8
16	4.2	3.8	2.8	2.2	2.9		6.3	14	44	27	6.5	3.6
17	4.2	3.8	2.8	2.3			6.3	13	39	25	6.8	3.6
18	4.1	3.6	2.8	2.4			6.0	14	37	24	6.8	3.6
19	4.1	3.6	2.8	2.4			6.0	16	29	23	6.5	3.6
20	4.1	3.6	2.8	2.4			5.8	16	28	23	6.5	4.2
21	3.9	3.6	2.8	2.4		3.5	5.6	18	28	23	6.5	4.2
22	3.9	3.8	2.8	2.4			5.8	21	28	23	6.8	3.9
23	3.9	3.8	2.8	2.4			6.0	23	34	24	8.6	3.6
24	3.9	3.6	2.8	2.4			6.3	23	34	23	7.2	3.5
25	3.9	3.6	2.7	2.4			6.8	23	34	21	7.2	3.5
26	3.9	3.5	2.7	2.4		3.5	8.3	23	34	21	6.5	3.5
27	3.8	3.5	2.7	2.5			6.8	23	34	19	6.5	3.5
28	3.8	3.5	2.7	2.7			5.6	26	38	18	6.5	3.4
29	3.8	3.4	2.8	2.8			5.1	31	37	17	6.5	3.4
30	3.8	3.5	2.8	2.8			5.8	32	36	16	6.5	3.4
31	4.0	-----	2.8	2.7	-----	-----	-----	38	-----	16	7.8	-----
Total	125.8	108.1	91.8	77.4	81.2	96.0	170.9	489.2	1,077	841	351.2	131.6
Mean	4.06	3.60	2.96	2.50	2.9	3.1	5.70	15.8	35.9	27.1	11.3	4.39
Ac-ft	250	214	182	154	161	190	339	970	2,140	1,670	697	261

Calendar year 1962: Max 199 Min 2.5 Mean 19.7 Ac-ft 14,270  
 Water year 1962-63: Max 44 Min 2.2 Mean 9.98 Ac-ft 7,230

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 25-31, Nov. 3-14, 16-19, 24, 25, Nov. 27 to Dec. 2, Apr. 12, 19, 20, 23. No gage-height record Jan. 12 to Apr. 6 (stage-discharge relation affected by ice during most of period), Aug. 24 to Sept. 9.

9-320. Ranch Creek near Fraser, Colo.

Location--Lat 39°57'00", 105°45'54", in NW 1/4 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 1963. 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--29 years, 20.8 cfs (15,060 acre-ft per year), including diversion to Moffat water tunnel.

Extremes--Maximum discharge during year, 15 cfs June 16 (gage height, 1.23 ft); maximum gage height, 1.37 ft Apr. 4 (backwater from ice); minimum daily discharge, 0.8 cfs Oct. 4.

1934-63: 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 7,110 acre-ft during water year 1963.

Cooperation--Records of flow diverted to Moffat water tunnel furnished by State engineer.

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.9	1.6	1.7	1.0	1.1	1.2	2.6	*3.8	3.4	*3.0	2.4	5.7
2	.9	1.6	1.7	1.1	1.1	1.2	*2.5	3.8	4.1	3.0	2.7	5.1
3	.9	1.4	1.7	1.1	1.1	1.2	2.2	4.1	4.9	2.9	3.9	4.4
4	.8	1.5	1.7	1.2	1.2	1.2	1.7	4.5	4.1	2.8	4.5	4.4
5	.9	*1.6	1.6	1.2	1.2	*1.2	2.0	4.7	3.8	2.7	4.9	4.4
6	1.4	1.6	1.6	1.2	*1.2	1.2	2.3	5.7	3.6	2.6	4.9	4.4
7	1.2	1.6	1.5	1.3	1.2	1.2	2.9	5.7	3.4	2.5	4.2	9.0
8	*1.1	1.6	1.5	1.4	1.2	1.2	3.2	5.7	3.8	2.5	4.9	7.1
9	1.0	1.8	1.5	1.5	1.2	1.2	3.3	6.1	6.4	2.7	*4.2	*6.1
10	1.0	1.9	1.5	*1.6	1.2	1.3	3.3	6.6	*5.5	2.5	3.6	5.7
11	1.0	1.6	1.4	1.5	1.2	1.3	3.2	5.9	4.9	2.4	8.7	5.3
12	1.0	1.5	1.4	1.3	1.2	1.2	3.6	4.9	4.5	2.3	7.1	*5.1
13	1.0	1.7	1.3	1.3	1.3	1.2	3.9	4.4	4.2	2.2	5.7	5.1
14	1.0	1.6	1.2	1.3	1.4	1.2	4.1	4.4	5.5	2.0	4.5	5.1
15	1.0	1.5	1.3	1.3	1.4	1.2	4.3	4.2	7.7	1.6	4.1	4.7
16	1.1	1.5	*1.3	1.3	1.4	1.2	4.0	4.1	1.2	1.7	3.6	4.5
17	1.1	1.4	1.2	1.2	1.3	1.2	3.7	3.9	7.4	1.7	3.9	4.4
18	1.0	1.4	1.2	1.2	1.3	1.2	3.3	3.8	7.4	1.6	3.6	4.2
19	1.0	1.4	1.2	1.2	1.2	1.2	3.2	3.8	6.6	1.5	3.4	3.4
20	1.0	1.4	1.2	1.2	1.2	1.1	3.3	3.3	4.9	1.5	3.3	3.9
21	1.0	1.4	1.3	1.2	1.2	1.2	3.4	3.3	4.5	1.4	3.3	3.9
22	1.0	1.4	1.3	1.2	1.2	1.4	3.5	3.2	4.4	2.0	3.8	3.8
23	1.0	1.4	1.3	1.2	1.2	1.4	3.3	3.4	4.9	2.0	5.3	3.0
24	1.0	1.5	1.2	1.2	1.2	1.4	3.4	3.2	4.7	4.8	4.9	1.5
25	1.0	1.7	1.2	1.2	1.2	1.3	3.5	3.3	4.5	3.6	4.1	1.4
26	1.0	1.7	1.1	1.2	1.2	1.3	4.1	6.8	3.9	2.6	3.9	1.3
27	1.0	1.7	1.0	1.2	1.2	1.6	3.5	5.7	3.2	3.0	6.1	1.3
28	1.0	1.6	1.0	1.2	1.2	1.8	3.2	4.5	3.2	2.7	5.5	1.2
29	1.1	1.6	1.0	1.2	-	2.4	3.6	3.8	3.0	2.6	5.1	1.0
30	1.2	1.6	1.0	1.1	-----	2.2	3.9	3.8	3.2	2.5	4.9	1.0
31	1.3	-----	1.0	1.1	-----	2.4	-----	3.6	-----	2.4	5.7	-----
Total	31.9	46.8	41.1	38.4	34.2	42.5	98.0	138.0	147.6	75.3	140.7	121.4
Mean	1.03	1.56	1.33	1.24	1.22	1.37	3.27	4.45	4.92	2.43	4.54	4.05
Ac-ft	63	93	82	76	68	84	194	274	293	149	279	241

Calendar year 1962: Max 134 Min 0.7 Mean 16.3 Ac-ft 11,820  
 Water year 1962-63: Max 12 Min 0.8 Mean 2.62 Ac-ft 1,900

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 26-31, Nov. 3-5, 7, Nov. 28 to Dec. 4, Apr. 1, 4, 6, 10-14, 16-25, 27. No gage-height record Dec. 26 to Feb. 6 (stage-discharge relation affected by ice during most of period).

## COLORADO RIVER MAIN STEM

9-345. Colorado River at Hot Sulphur Springs, Colo.

Location.--Lat 40°05'00", long 106°05'15", in NE¼ 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.--825 sq mi (revised).

Records available.--July 1904 to September 1963. 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 water-stage recorder (staff gage prior to Jan. 1, 1963) at different datum at site 1.7 miles downstream, used for winter records some years.

Extremes.--Maximum discharge during year, 562 cfs Apr. 8, June 16 (gage height, 1.42 ft); maximum gage height recorded, 3.28 ft Apr. 3 (backwater from ice); minimum daily discharge, 55 cfs Sept. 29, 30.  
1904-63: 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 Oct. 1 to Nov. 6, Apr. 4 to Sept. 30 and fair for remainder of year. Flow affected by transmountain diversions, storage reservoirs, and diversions above station for irrigation of about 13,000 acres.

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

Oct. 1 to Dec. 31 Apr. 4 to Sept. 30		Jan. 1 to Apr. 3.	
0.2	44	0.6	70
.4	85	.8	107
.7	180	1.2	222
1.0	320		
1.3	490		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	71	88	72	56	107	98	250	156	159	142	96	128
2	74	85	72	58	98	98	200	189	170	152	109	107
3	*76	83	72	60	100	98	180	189	261	*159	142	90
4	78	80	72	60	100	94	*184	198	238	184	138	76
5	80	80	70	60	98	87	166	194	*202	184	142	71
6	98	78	*70	58	96	*94	212	225	194	170	152	74
7	90	*70	70	58	94	89	358	256	180	162	142	101
8	88	66	72	58	*98	92	336	*270	173	166	148	132
9	93	64	70	58	98	89	261	266	310	156	176	96
10	93	64	70	*60	89	89	234	280	290	159	135	*80
11	90	64	68	62	87	92	176	290	238	152	156	78
12	90	64	66	62	84	92	189	280	*212	152	207	74
13	90	68	66	56	78	92	194	256	189	152	220	71
14	90	72	64	58	80	84	198	248	198	148	*162	69
15	93	74	66	58	80	92	189	220	275	148	135	69
16	104	70	62	60	82	87	162	230	484	156	122	67
17	98	70	62	58	82	87	156	216	375	159	109	64
18	93	64	58	60	82	94	145	198	320	145	107	62
19	96	66	62	68	84	94	119	198	370	135	93	60
20	90	68	64	68	85	94	119	162	270	132	93	64
21	88	74	64	68	84	94	119	138	243	132	93	76
22	85	66	62	70	82	103	119	173	212	132	95	76
23	85	66	60	66	89	112	107	198	189	152	112	69
24	85	64	58	60	87	127	119	180	184	148	107	64
25	83	64	58	60	87	127	122	170	180	138	109	60
26	83	68	58	60	80	136	148	170	162	132	93	60
27	83	68	58	60	98	163	173	156	162	132	125	57
28	85	70	58	60	98	219	162	148	156	125	132	57
29	85	74	58	64	-	200	145	152	145	125	115	55
30	85	74	60	79	-----	190	148	159	142	122	93	55
31	85	-----	60	92	-----	210	-----	159	-----	115	115	-----
Total	2,707	2,126	2,002	1,935	2,507	3,517	5,390	6,324	6,883	4,566	3,994	2,262
Mean	87.3	70.9	64.6	62.4	89.5	113	180	204	229	147	127	75.4
Ac-ft	5,370	4,220	3,970	3,840	4,970	6,980	10,690	12,540	13,650	9,060	7,927	4,490

Calendar year 1962: Max 2,580 Min 58 Mean 461 Ac-ft 333,800  
Water year 1962-63: Max 484 Min 55 Mean 121 Ac-ft 87,700

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 7 to Dec. 31, Mar. 29 to Apr. 3. No gage-height record Jan. 1-10, 12-29, Feb. 12-19 (stage-discharge relation affected by ice during most of periods).

## LITTLE MUDDY CREEK BASIN

151

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 1963.

Gage.--Water-stage recorder. Altitude of gage is 8,580 ft (from topographic map).

Average discharge.--5 years, 2.96 cfs (2,140 acre-ft per year).

Extremes.--Maximum discharge during year, 12 cfs June 16 (gage height, 2.66 ft); maximum gage height recorded, 3.2' ft sometime during period Nov. 28 to Apr. 4 (backwater from ice); minimum daily discharge determined, 0.1 cfs for many days.

1958-63: Maximum discharge, 93 cfs May 12, 1962 (gage height, 3.71 ft); maximum gage height recorded, 4.89 ft Oct. 10, 1960 (backwater from beaver dam); minimum daily discharge determined, 0.1 cfs for some days in each year.

Remarks.--Records fair 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 June 25 to Sept. 30)

2.3	0
2.4	.5
2.5	3.0
2.6	6.5
2.7	11

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.4	0.2					0.6	4.4	1.5	0.8	0.2	1.2
2	.3	.2					.8	5.1	3.0	*.8	.6	.4
3	.2	.2					1.0	6.1	6.2	1.2	1.1	.2
4	.2	.2					* 1.2	6.5	3.0	1.2	.9	.2
5	.2	*.3					.8	6.5	2.2	1.0	.7	*.1
6	*.4	.3					b.5	7.0	*1.8	.5	.6	.2
7	.3	.1					1.2	7.4	1.5	.4	.4	.8
8	.3	.1					2.0	7.4	1.5	.3	.3	1.2
9	.3	.2					2.0	7.0	5.8	.4	.3	.4
10	.3	.2					b2.0	6.5	4.8	.8	.3	.2
11	.2	.2					b2.5	5.8	3.4	.5	.5	.2
12	.2	.2					b3.0	5.4	2.2	.5	1.0	.2
13	.2	.2					b3.5	4.8	1.8	.8	*1.0	.1
14	.2	.2					b3.5	4.4	1.8	1.0	.4	.1
15	.3	.3					b3.5	4.4	2.0	1.0	.4	.2
16	.4	.2	0.2	0.1	0.2	0.5	b3.0	4.0	7.4	1.0	.2	.2
17	.5	.2					b2.5	4.0	3.4	1.0	.3	.1
18	.4	b.1					b2.5	3.7	3.7	.5	.8	.2
19	.4	b.1					b2.2	3.4	3.4	.3	.4	.1
20	.4	b.1					2.2	3.0	2.8	.2	.2	.1
21	.3	b.1					2.0	*2.8	2.2	.2	.2	.4
22	.2	b.2					2.0	3.0	2.0	.3	.2	.3
23	.2	b.2					2.0	3.4	1.8	.4	.5	.2
24	.2	b.2					2.5	2.8	1.5	.2	.5	.2
25	.2	b.2					4.0	2.5	1.8	.2	.5	.1
26	.2	b.2					5.1	2.8	1.5	.2	.4	.2
27	.2	b.2					5.4	2.2	1.0	.3	1.8	.2
28	.2	.2					3.0	2.0	1.2	.2	1.0	.2
29	.2	.2					2.5	2.2	1.2	.3	.4	.2
30	.2	.2					*3.0	2.0	1.0	.2	.2	.2
31	.2	-----					-----	1.8	-----	.2	1.0	-----
Total	8.4	5.7	6.2	3.1	5.6	15.5	72.0	134.3	78.4	16.9	17.3	8.6
Mean	0.27	0.19	0.2	0.1	0.2	0.5	2.40	4.33	2.61	0.55	0.56	0.29
Ac-ft	17	11	12	6.1	11	31	143	266	156	34	34	17

Calendar year 1962: Max 68 Min - Mean 5.64 Ac-ft 4,090  
Water year 1962-63: Max 7.4 Min - Mean 1.02 Ac-ft 738

Peak discharge (base, 15 cfs).--No peak above base.

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 3-5, Nov. 28 to Apr. 4 (stage-discharge relation affected by ice during most of period), July 30 to Aug. 13.



## 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 1963. 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.--30 years, 102 cfs (73,840 acre-ft per year), including diversions to Jones Pass tunnel.

Extremes.--Maximum discharge during year, 247 cfs June 3 (gage height, 1.47 ft); minimum daily, 15 cfs Feb. 12.

1933-63: 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.....	222	April.....	222
November.....	79	May.....	1,160
December.....	69	June.....	2,240
		July.....	0
Calendar year 1962....	2,020	August.....	472
		September.....	567
January.....	71		
February.....	57	Water year 1962-63....	5,200
March.....	45		

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

0.1	14	1.0	130
.4	41	1.4	226

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	30	30	25	18	19	16	*29	35	145	97	35	39
2	30	30	25	18	18	16	27	34	195	*91	45	35
3	30	29	24	18	18	16	22	35	218	88	53	33
4	29	27	24	18	*18	16	21	41	175	88	48	32
5	29	28	*24	19	18	16	25	43	*136	86	64	*31
6	32	29	21	20	18	*16	26	57	130	74	76	34
7	*33	21	25	20	18	16	31	70	125	73	66	33
8	31	20	24	19	18	16	35	*78	120	74	57	34
9	29	26	22	18	18	16	34	92	140	92	56	32
10	29	26	20	18	17	16	33	116	130	88	64	30
11	29	27	21	b18	b16	16	33	116	113	70	72	29
12	29	24	23	b17	b15	16	33	108	107	68	72	28
13	29	*25	21	b17	b16	16	35	97	*111	63	*53	27
14	29	28	20	19	16	b16	38	103	125	60	45	28
15	31	28	22	18	16	16	39	*110	145	63	40	27
16	34	25	21	18	16	16	34	120	185	56	39	26
17	38	21	21	19	16	16	35	116	156	53	42	26
18	37	21	20	19	16	16	32	160	165	48	42	25
19	36	26	21	*20	16	16	28	167	156	42	37	25
20	35	26	22	20	17	16	30	154	149	40	35	27
21	35	26	22	20	16	16	29	163	132	40	34	29
22	34	24	21	20	17	17	29	158	122	42	35	27
23	33	25	21	20	17	19	28	165	110	45	45	26
24	31	24	21	20	17	19	31	167	103	57	45	25
25	30	25	b20	20	16	19	31	160	100	43	38	23
26	29	25	b19	b19	16	17	38	128	110	42	36	22
27	29	24	20	19	16	20	43	130	103	39	54	21
28	29	22	20	19	16	21	36	165	111	37	45	20
29	29	23	20	19	-	23	31	177	108	35	38	20
30	30	24	19	19	-----	24	30	172	105	35	36	20
31	30	-----	19	19	-----	26	-----	160	-----	34	38	-----
Total	968	759	668	585	471	541	946	3,597	4,030	1,863	1,485	834
Mean	31.2	25.3	21.5	18.9	16.8	17.5	31.5	116	134	60.1	47.9	27.8
Ac-ft	1,920	1,510	1,320	1,160	934	1,070	1,880	7,130	7,990	3,700	2,950	1,650

Calendar year 1962: Max 816 Min 19 Mean 125 Ac-ft 90,670  
 Water year 1962-63: Max 218 Min 15 Mean 45.9 Ac-ft 33,210

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

## WILLIAMS FORK BASIN

153

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 1963.

Gage.--Water-stage recorder. Altitude of gage is 8,640 ft (from topographic map).

Average discharge.--5 years, 0.75 cfs (543 acre-ft per year).

Extremes.--Maximum discharge during year, 4.5 cfs Aug. 8 (gage height, 1.22 ft); no flow for many days.  
1958-63: Maximum discharge, 13 cfs July 20, 1959 (gage height, 1.70 ft); no flow for many days in 1963.

Revisions.--The maximum discharge for the water year 1961 has been revised to 6.5 cfs Sept. 24, 1961 (gage height, 1.03 ft), superseding figure previously published.

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

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.1	0.2					* 0.6	0.5	0.6	0.1	0	0.2
2	.1	.2					.5	.6	.6	* .2	0	.1
3	.1	b.3					.4	.6	.8	.2	.1	.1
4	.1	b.3			(*)		.4	.6	.5	.2	.1	.1
5	.2	b.3	(*)			(*)	.4	.6	* .4	.1	.1	.1
6	.3	.3		(*)			b.4	.7	.4	.1	.1	.1
7	* .4	b.3					b.4	.6	.3	.1	.1	.1
8	.4	b.3						.6	.2	.1	.2	.1
9	.4	b.3						.2	.3	.1	.1	.2
10	.5	b.4					.2	.6	.2	.1	.1	.2
11	.5	.4	0.5				.1	.6	.1	.1	.2	* .2
12	.4	b.5					.1	.5	.1	.1	.2	.2
13	.4	* .6					.1	.4	0	.1	* .2	.2
14	.4	.6					0	.4	0	.1	.2	.2
15	.4	.6					0	.3	0	.1	.2	.2
16	.5	.5		0.4		0.4	0	.4	.1	.1	.2	.2
17	.4	.4					0	.4	0	.1	.2	.2
18	.4	.3					0	.4	0	.1	.2	.2
19	.4	.3					0	.4	0	.1	.2	.1
20	.4	.4					0	.4	0	.1	.2	.2
21	.4	.5					0	* .4	0	.1	.2	.2
22	.3	.5					0	.5	0	.1	.2	.2
23	.3	.5					0	.5	0	.1	.2	.1
24	.3	.5					.1	.4	0	.1	.2	.1
25	b.3	.5	0.3				.1	.4	0	0	.2	.1
26	b.3	.5					.2	.4	0	0	.2	.1
27	b.3	.5					.3	.4	0	0	.2	.2
28	b.3	.5					.3	.4	0	0	.2	.2
29	b.3	.5					.3	.4	.1	0	.1	.2
30	b.3	.5					* .4	.4	.1	0	.2	.2
31	.3							.4		.1	.2	
Total	10.2	12.5	13.3	12.4	11.2	12.4	5.9	14.8	4.8	2.8	5.0	4.8
Mean	0.33	0.42	0.4	0.4	0.4	0.4	0.20	0.48	0.16	0.09	0.16	0.16
Ac-ft	20	25	26	25	22	25	12	29	9.5	5.6	9.9	9.5

Calendar year 1962: Max 7.8 Min 0.1 Mean 1.46 Ac-ft 1,060

Water year 1962-63: Max 0.8 Min 0 Mean 0.30 Ac-ft 218

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 13 to Apr. 1 (stage-discharge relation affected by ice during most of period).

## 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 1963. 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.--50 years, 146 cfs (105,700 acre-ft per year), including diversion to Jones Pass tunnel.

Extremes.--Maximum discharge during year, 165 cfs June 16 (gage height, 2.60 ft); maximum gage height, 3.58 ft Mar. 8 (backwater from ice); minimum daily discharge, 12 cfs May 14, 15.

1904-24, 1933-63: 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 good except those for periods of ice effect or no gage-height record, which are fair. 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)

Oct. 1 to Mar. 31

Apr. 1 to Sept. 30

1.6	31	1.2	9	2.0	78
2.0	78	1.4	18	2.5	148
		1.6	32		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	55	49	45	32	34	30	72	14	21	18	18	68
2	54	48	44	32	34	30	63	14	50	*18	21	63
3	53	45	40	32	32	30	*52	15	105	19	22	59
4	51	42	38	32	*32	28	52	16	72	19	21	55
5	52	42	*37	34	32	28	58	20	30	19	20	*54
6	57	44	36	36	32	*30	64	26	*17	20	20	57
7	*57	32	37	36	32	32	82	*30	18	20	42	60
8	58	36	40	36	32	30	94	23	19	20	44	60
9	54	43	34	34	32	30	86	22	25	22	19	57
10	53	45	32	34	30	30	81	29	23	22	23	53
11	51	42	34	34	30	28	69	32	20	21	40	52
12	51	41	36	28	28	28	69	21	20	20	41	50
13	51	50	34	26	30	26	77	14	20	20	40	49
14	50	*51	34	28	30	25	81	12	26	20	*20	50
15	53	51	34	30	30	30	82	*12	58	19	19	49
16	55	46	32	30	30	31	69	19	140	19	19	46
17	61	36	32	30	30	33	70	14	108	19	19	45
18	59	41	32	30	32	33	69	24	84	18	20	44
19	59	49	34	*32	34	33	59	40	94	18	18	41
20	58	48	36	34	32	32	59	20	86	18	18	35
21	54	48	34	34	30	30	57	22	43	18	23	39
22	53	49	34	34	32	36	55	18	17	19	30	38
23	51	48	34	34	32	39	53	19	17	19	25	36
24	50	46	34	34	32	42	60	22	17	20	20	34
25	49	46	34	34	32	42	60	100	17	20	24	32
26	46	43	32	34	32	44	74	116	18	20	31	31
27	46	44	34	34	32	48	88	85	18	19	59	30
28	46	42	34	34	32	60	72	20	19	19	75	30
29	46	46	34	34	-	64	50	25	18	19	66	29
30	49	44	32	34	-----	66	*13	26	17	19	63	29
31	49	-----	32	34	-----	68	-----	26	-----	19	69	-----
Total	1,631	1,337	1,089	1,014	882	1,136	1,990	896	1,237	600	989	1,375
Mean	52.6	44.6	35.1	32.7	31.5	36.6	66.3	28.9	41.2	19.4	31.9	45.8
Ac-ft	3,240	2,650	2,160	2,010	1,750	2,250	3,950	1,780	2,450	1,190	1,960	2,730

Calendar year 1962: Max 952 Min 11 Mean 173 Ac-ft 125,600

Water year 1962-63: Max 140 Min 12 Mean 38.8 Ac-ft 28,120

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 5 to Mar. 22 (no gage-height record Jan. 7, 8, 14-18, Feb. 13-20).

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 Fork, 2.1 miles upstream from mouth and 2.2 miles southwest of Parshall.

Drainage area.--234 sq mi.

Records available.--April 1939 to September 1963. 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, 85,690 acre-ft Oct. 1 (elevation, 7,803.77 ft); minimum observed, 37,550 acre-ft Sept. 30 (elevation, 7,760.83 ft).

1939-63: Maximum contents observed, 97,130 acre-ft July 9, 1962 (elevation, 7,811.19 ft); 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 1962 to September 1963

Date	Elevation (feet)†	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	7,803.87	85,830	-
Oct. 31.....	7,800.79	81,420	-4,410
Nov. 30.....	7,797.12	76,390	-5,030
Dec. 31.....	7,792.10	69,840	-6,550
Calendar year 1962.....	-	-	+6,720
Jan. 31.....	7,784.34	60,550	-9,290
Feb. 28.....	7,776.35	51,950	-8,600
Mar. 31.....	7,767.27	43,190	-8,760
Apr. 30.....	7,768.95	44,740	+1,550
May 31.....	7,769.92	45,650	+910
June 30.....	7,774.08	49,670	+4,020
July 31.....	7,776.45	52,060	+2,390
Aug. 31.....	7,775.15	50,740	-1,320
Sept. 30.....	7,760.83	37,550	-13,190
Water year 1962-63.....	-	-	-48,280

† Elevation at 0800.

## WILLIAMS FORK BASIN

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 1963. 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.--11 years, 130 cfs (94,120 acre-ft per year), adjusted for storage in Williams Fork Reservoir (10 years, 138 cfs, 99,910 acre-ft per year; figures published in Surface Water Records of Colorado, 1962, in error).

Extremes.--Maximum discharge during year, 336 cfs Sept. 8 (gage height, 2.73 ft); minimum daily, 0.3 cfs May 14.

1948-54, 1958-63: 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, that of May 14, 1963.

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 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	127	129	130	180	189	202	189	119	16	10	4.2	5.2
2	127	130	130	181	189	201	189	121	16	10	4.4	5.2
3	127	129	130	182	189	201	191	119	17	*10	4.4	178
4	*127	129	130	182	189	203	190	50	17	9.8	4.4	272
5	127	130	132	183	189	203	*191	15	17	9.8	3.4	270
6	127	129	132	*183	189	203	4.4	21	*16	9.4	70	304
7	127	130	132	183	*191	*203	3.6	*18	15	9.0	40	334
8	127	129	132	183	191	203	3.0	16	15	9.0	4.2	334
9	127	129	132	183	193	203	3.6	16	15	9.8	4.2	306
10	128	129	132	183	193	203	3.6	16	15	10	4.2	280
11	128	129	131	184	193	204	3.8	16	15	9.0	4.2	*280
12	128	129	131	184	193	204	3.8	16	15	9.0	4.2	280
13	128	129	131	185	193	204	3.8	5.7	15	9.4	5.8	280
14	127	*130	131	185	193	204	4.0	3	15	9.4	*64	280
15	128	130	*132	184	193	206	2.6	4.9	15	9.4	146	280
16	130	129	132	185	193	181	*2.3	16	16	10	146	280
17	130	129	132	186	193	184	2.2	16	15	10	146	280
18	128	129	132	186	195	187	2.4	17	16	9.8	146	280
19	130	130	132	195	195	187	4.0	17	16	9.8	147	280
20	130	130	132	184	195	187	33	17	16	9.8	147	280
21	130	130	132	184	195	187	58	16	16	10	147	280
22	130	129	145	184	195	187	58	15	12	6.4	147	280
23	129	129	180	184	225	187	58	15	9.8	*4.4	148	280
24	129	129	180	185	199	188	58	15	9.8	4.2	108	280
25	129	129	180	185	200	188	58	15	9.8	4.2	109	280
26	129	129	180	185	200	189	60	15	9.8	4.4	109	280
27	129	129	178	187	203	189	77	15	9.8	4.2	109	280
28	129	129	179	187	202	189	85	15	10	4.2	109	280
29	129	130	178	187	-	189	106	15	10	4.2	72	280
30	129	130	181	187	-----	190	119	15	10	4.2	62	280
31	129	-----	180	187	-----	190	-----	16	-----	4.2	5.2	-----
Total	3,979	3,880	4,521	5,723	5,457	6,046	1,806.7	803.9	420.0	247.0	2,255.4	7,888.4
Mean	128	129	146	185	195	195	60.2	25.9	14.0	7.97	72.8	263
Ac-ft	7,890	7,700	8,970	11,350	10,820	11,990	3,580	1,590	833	490	4,470	15,650

Calendar year 1962: Max 618 Min 2.7 Mean 179 Ac-ft 129,400  
 Water year 1962-63: Max 334 Min 0.3 Mean 118 Ac-ft 85,330

\* 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 1963.

Gage.--Water-stage recorder. Altitude of gage is 8,049 ft (from topographic map).

Average discharge.--10 years, 28.8 cfs (20,850 acre-ft per year).

Extremes.--Maximum discharge during year, 164 cfs May 18 (gage height, 2.00 ft); maximum gage height, 2.35 ft Dec. 14 (backwater from ice); minimum daily discharge, 7.0 cfs Aug. 19.

1953-63: Maximum discharge, 503 cfs June 7, 1957 (gage height, 3.48 ft); maximum gage height, 3.72 ft Mar. 26, 1962 (backwater from ice); 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)

Oct. 1 to Apr. 25

Apr. 26 to Sept. 30

0.5 7.0  
.7 16  
.9 35

0.5 7.0  
.8 20  
1.1 43  
1.4 74  
1.7 110

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	16	10	10	9.4	12	11	17	25	66	35	21	22
2	16	11	10	10	12	11	16	25	72	34	22	16
3	16	10	9.6	10	11	11	14	27	78	*33	22	15
4	16	11	9.8	*10	11	11	14	30	71	28	16	14
5	16	11	9.8	9.8	11	10	14	36	67	26	15	14
6	*18	11	9.8	9.4	11	11	16	42	63	24	14	14
7	16	11	*10	9.8	11	10	21	48	59	21	13	18
8	16	10	10	10	*11	*11	23	*55	*55	20	11	16
9	15	9.6	10	11	12	10	20	62	59	21	10	14
10	14	10	10	13	11	11	19	66	51	21	11	14
11	14	11	10	12	11	11	*19	71	50	21	14	*14
12	14	11	10	11	9.8	11	22	72	67	21	13	13
13	14	*11	9.8	11	11	11	26	79	71	20	12	13
14	14	12	9.6	8.0	11	10	27	88	70	19	10	13
15	12	12	9.4	9.0	11	11	27	85	68	20	*9.0	13
16	14	12	9.8	10	11	11	24	85	74	20	9.0	13
17	12	11	10	11	11	11	22	85	61	20	7.4	13
18	12	10	9.6	11	11	11	20	91	48	18	7.8	13
19	13	11	9.4	11	11	11	20	92	46	18	7.0	13
20	12	12	9.0	11	11	11	17	87	43	18	7.4	13
21	12	13	9.0	12	11	11	17	*86	42	18	11	15
22	11	12	9.6	12	11	11	16	87	41	19	11	13
23	11	12	9.6	12	11	12	17	87	39	22	11	13
24	10	11	9.6	12	11	12	18	87	41	22	13	13
25	10	11	9.6	12	11	12	21	84	43	21	15	13
26	9.8	11	8.6	11	11	12	28	79	38	20	15	13
27	10	11	8.4	12	11	14	29	76	38	21	16	13
28	10	10	8.4	12	11	14	24	74	37	24	14	12
29	10	10	8.4	12	-	14	22	71	36	23	14	12
30	10	10	9.0	12	-----	14	24	68	35	21	14	12
31	11	-----	9.0	11	-----	16	-----	71	-----	20	18	-----
Total	404.8	328.6	294.8	337.4	309.8	358	614	2,121	1,629	689	403.6	417
Mean	13.1	11.0	9.51	10.9	11.1	11.5	20.5	68.4	54.3	22.2	13.0	13.9
Ac-ft	803	652	585	669	614	710	1,220	4,210	3,230	1,370	801	827

Calendar year 1962: Max 295 Min 6.8 Mean 42.0 Ac-ft 30,420  
Water year 1962-63: Max 92 Min 7.0 Mean 21.7 Ac-ft 15,690

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 8-13, 17-20, 22-25, Nov. 27 to Dec. 8, Dec. 10-19, 27, Jan. 14-20, Mar. 22, 26. No gage-height record Dec. 20-26, Dec. 28 to Jan. 4 (stage-discharge relation affected by ice during most of period).

## 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.--76.0 sq mi (revised).

Records available.--April 1937 to September 1943, October 1953 to September 1963. 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.--16 years, 27.6 cfs (19,980 acre-ft per year).

Extremes.--Maximum discharge during year, 115 cfs May 9 (gage height, 3.03 ft); minimum daily, 1.5 cfs July 31, Aug. 1, 1937-43, 1953-63: Maximum discharge, 720 cfs 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)

1.5	1.0	2.1	15
1.6	1.6	2.2	22
1.7	2.6	2.4	41
1.8	4.2	2.7	76
2.0	10	3.0	118

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6.5	7.4	5.8	3.7	6.4	7.4	14	28	36	6.8	1.5	9.4
2	6.3	8.1	5.6	3.7	6.4	7.4	14	28	37	6.5	3.4	7.8
3	6.3	7.8	5.6	3.6	6.4	7.8	14	37	59	*6.8	6.5	6.3
4	6.3	7.1	5.4	*3.7	6.4	7.8	12	54	41	8.7	5.2	5.0
5	6.8	7.1	5.2	3.9	7.4	7.4	13	62	36	9.4	5.0	4.2
6	*8.7	7.1	5.0	3.7	7.4	7.4	14	71	30	7.1	5.0	4.0
7	9.4	7.0	*5.2	3.4	7.4	7.1	17	76	26	6.8	4.5	6.0
8	7.4	6.4	5.0	3.4	7.4	7.1	27	*93	*26	6.0	4.5	8.4
9	7.1	6.0	4.9	3.4	7.2	7.1	20	95	39	7.1	6.0	6.3
10	7.1	6.4	4.7	3.7	7.0	7.1	21	96	28	6.5	8.7	5.2
11	6.5	6.6	4.6	3.7	6.6	7.1	*23	93	19	6.5	12	*5.2
12	6.5	6.2	4.5	3.5	6.0	6.8	27	90	16	7.4	13	5.0
13	6.5	*6.0	4.4	3.4	*6.4	5.8	31	77	16	6.0	9.7	5.0
14	6.5	6.2	4.2	3.5	6.8	8.4	37	71	14	5.0	7.8	5.0
15	6.5	6.5	3.9	3.7	7.0	6.3	42	66	15	4.5	*6.5	4.7
16	7.1	6.3	4.2	4.0	7.4	6.3	31	66	24	5.0	5.8	4.2
17	9.7	6.1	4.2	4.3	7.8	6.0	26	65	17	5.5	5.8	3.9
18	9.4	5.8	4.1	4.5	7.8	6.3	19	64	29	4.5	6.5	3.9
19	9.0	5.6	3.9	4.2	7.4	6.3	14	65	26	3.7	5.5	3.7
20	9.7	6.0	3.7	4.2	7.4	6.3	14	59	16	3.6	4.7	4.0
21	9.0	6.0	3.7	4.8	7.1	6.5	12	*54	14	3.2	5.5	6.5
22	8.4	6.0	3.9	5.0	6.8	7.4	12	59	14	3.2	7.4	5.8
23	8.1	6.6	4.0	5.0	6.8	*9.0	13	65	13	4.5	6.3	4.5
24	7.8	6.6	4.0	5.0	7.1	9.4	13	65	12	5.0	5.5	3.9
25	7.8	6.4	4.0	5.5	7.1	8.4	16	62	12	3.7	4.7	3.7
26	7.1	6.3	3.5	5.0	7.1	9.0	28	53	10	3.4	4.5	3.4
27	6.5	6.3	3.6	4.5	7.1	10	44	48	10	2.6	6.0	3.4
28	7.1	6.2	3.6	5.0	7.1	12	27	45	9.0	2.3	6.8	3.4
29	7.4	6.1	3.7	5.3	-	12	18	42	8.4	2.0	5.2	3.4
30	7.1	6.0	3.7	5.8	-----	12	18	41	7.4	1.7	4.2	3.4
31	7.1	-----	3.7	6.4	-----	13	-----	39	-----	1.5	5.8	-----
Total	232.7	194.2	135.5	132.5	196.2	247.9	631	1929	659.8	156.5	189.5	148.6
Mean	7.51	6.47	4.37	4.27	7.01	8.00	21.0	62.2	22.0	5.05	6.1	4.95
Ac-ft	462	385	269	263	389	492	1,250	3,830	1,310	310	370	295

Calendar year 1962: Max 636 Min - Mean 51.4 Ac-ft 37,190  
 Water year 1962-63: Max 96 Min 1.5 Mean 13.3 Ac-ft 9,630

Peak discharge (base, 170 cfs).--No peak above base.

\* Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 7-14, 17-19, 22-25, Nov. 27 to Dec. 6, Dec. 9-11, 13, 14, 17-19, 21, 26-30, Jan. 8-12, Feb. 14-16, Mar. 14-16. No gage-height record Jan. 13 to Feb. 13 (stage-discharge relation affected by ice during most of period).

9-410. Muddy Creek near Kremmling, Colo.

Location.--Lat 40°17'37", long 106°28'59", in SE¼ sec. 10, 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.--87.4 sq mi (revised).

Records available.--September 1937 to September 1943, October 1955 to September 1963. 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.--14 years, 53.3 cfs (38,590 acre-ft per year).

Extremes.--Maximum discharge during year, 481 cfs May 11 (gage height, 4.93 ft); minimum daily, 1.9 cfs Aug. 1, 1937-43, 1955-63: Maximum discharge, 992 cfs May 9, 1957 (gage height, 6.46 ft); maximum gage height, 6.72 ft Apr. 17, 1962 (backwater from ice); 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 table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used June 17 to Aug. 3)

2.4	1.1	3.3	51
2.5	2.7	3.8	140
2.6	5.0	4.3	270
2.8	12	4.9	460
3.0	23		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.3	5.9	5.0				31	108	114	19	1.9	7.8
2	5.3	5.6	5.6				33	130	126	*18	2.4	7.8
3	5.0	5.6	4.3				35	165	180	17	6.6	6.2
4	5.0	5.6	5.6				*52	205	128	15	9.3	5.0
5	4.8	5.6	5.6				b56	246	*124	17	9.7	4.3
6	5.3	5.3	5.3				b54	270	106	18	11	*4.1
7	*7.2	4.8	*5.6				b52	291	92	18	13	4.8
8	6.9	4.3	5.6				b60	342	83	16	11	5.3
9	7.2	4.1	b54				b78	*384	87	16	8.5	5.0
10	6.9	4.1	b52	(*)			b70	408	81	16	7.5	4.1
11	5.9	4.8	b50			5.0	85	418	59	16	7.5	4.8
12	5.6	4.3	b45				106	397	50	19	13	3.6
13	5.9	4.3	b41				114	291	46	16	11	3.4
14	5.6	*5.6	4.1		(*)		112	288	49	12	*8.1	3.4
15	5.3	7.2	4.3				102	264	66	12	5.9	3.4
16	5.9	6.9	4.3	3.5	4.5		71	300	118	11	5.0	3.6
17	8.1	b54	b43				64	315	90	13	5.3	3.2
18	7.5	b48	b41				59	324	64	12	8.1	2.5
19	13	b45	b35				47	324	61	9.7	8.1	2.4
20	16	5.9	b39				43	258	54	7.5	5.6	2.2
21	11	6.2	b40				46	273	48	6.9	5.9	6.6
22	10	b54	b40			(*)	41	267	40	7.2	8.1	7.2
23	8.9	5.6	b40				47	270	36	6.9	11	5.3
24	9.3	b56	b40				59	246	33	6.9	11	4.5
25	16	5.6	b35				76	220	31	6.6	8.1	3.4
26	7.2	5.6	2.8			12	106	172	30	5.9	6.6	3.4
27	5.9	6.2	3.2				120	175	28	5.0	8.1	2.9
28	5.9	5.9	3.2				85	162	25	4.0	9.3	2.9
29	5.6	5.9	3.4				76	148	22	3.2	7.2	2.7
30	5.9	5.6	3.2				83	138	21	2.5	6.6	2.7
31	5.6	-----	3.1				-----	128	-----	2.1	6.9	-----
Total	229.0	162.2	133.7	108.5	126.0	232.0	2,063	7,927	2,092	355.4	247.3	128.5
Mean	7.39	5.41	4.31	3.5	4.5	7.5	68.8	256	69.7	11.5	7.98	4.28
Ac-ft	454	322	265	215	250	460	4,090	15,720	4,150	705	491	255

Calendar year 1962: Max 718 Min 1.9 Mean 81.8 Ac-ft 59,200  
Water year 1962-63: Max 418 Min 1.9 Mean 37.8 Ac-ft 27,380

Peak discharge (base, 300 cfs).--May 11 (0330) 481 cfs (4.93 ft); May 19 (0330) 400 cfs (4.70 ft).

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Jan. 26 to Apr. 4 (stage-discharge relation affected by ice during most of period).



## 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.--11.5 sq mi (revised).

Records available.--October 1955 to September 1963.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 7,933 ft (from topographic map).

Average discharge.--8 years, 2.18 cfs (1,580 acre-ft per year).

Extremes.--Maximum discharge during year, 11 cfs May 5 (gage height, 1.45 ft); maximum gage height recorded, 2.13 ft Mar. 27 (backwater from ice); no flow July 28 to Aug. 1.

1955-63: Maximum discharge, 148 cfs Mar. 27, 1960 (gage height, 2.70 ft, from floodmarks), by slope-area measurement of peak flow; maximum gage height, 3.32 ft Apr. 10, 1962 (backwater from plugged culvert); no flow July 28 to Aug. 1, 1963.

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

Revisions.--Revised figures of discharge, in cubic feet per second, for the water year 1962, superseding those previously published, are given herewith:

Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge
1962		1962-Con.		1962-Con.		1962-Con.	
Aug. 15	0.3	Aug. 27	0.4	Sept. 8	0.4	Sept. 20	0.5
16	.3	28	.4	9	.5	21	.7
17	.3	29	.4	10	.6	22	1.0
18	.4	30	.3	11	.5	23	.6
19	.5	31	.4	12	.4	24	.6
20	.4	Sept. 1	.4	13	.4	25	.6
21	.4	2	.4	14	.4	26	.7
22	.5	3	.4	15	.4	27	.7
23	.5	4	.4	16	.4	28	.8
24	.8	5	.4	17	.4	29	1.0
25	.4	6	.4	18	.4	30	.6
26	.4	7	.4	19	.4		

Month	Cfs-days	Maximum	Minimum	Mean	Runoff in acre-feet
August 1962.....	15.9	1.4	0.3	0.51	32
September 1962.....	15.8	1.0	.4	.53	31
Water year 1961-62.....	-	32	-	3.12	2,260

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.6	1.0	0.8				5.0	4.1	1.8	0.2	0	1.4
2	.7	.8	.8				3.2	4.1	2.4	*.2	.1	.5
3	.7	.8	.8	(*)			3.0	4.4	4.4	.2	.4	.3
4	.7	.8	.8				2.8	6.3	2.4	.2	.3	.2
5	*.7	*.8	.8				3.2	7.3	*1.8	.2	.3	.2
6	.6	.8	.8				4.9	8.6	1.6	.2	.3	.4
7	.7	.5	*.9		(*)		5.6	8.6	1.4	.2	.3	1.4
8	.7	.5	.9				4.6	*8.6	1.0	.2	.6	.8
9	.6	.5	.8				4.0	8.2	2.2	.2	.5	.4
10	.6	.7	.8				3.6	7.9	2.2	.3	.3	.3
11	.6	.7	.8				*3.9	7.6	1.4	.3	.6	.3
12	.6	.6	.8				4.7	6.0	1.4	.3	.6	*.3
13	.6	.6	.8				5.4	4.7	1.0	.2	.4	.2
14	.7	.8	.8				5.4	4.1	1.0	.2	*.3	.3
15	.7	.8	.8				4.7	3.6	1.0	.2	.2	.3
16	.8	.7	.8	0.6	0.8		3.6	3.3	3.1	.3	.2	.3
17	1.1	.6	.8				2.9	3.1	1.8	.3	.3	.3
18	1.0	.5	.8				2.4	2.9	1.4	.3	.3	.2
19	1.3	.5	.8				2.4	2.6	1.4	.2	.2	.2
20	1.1	.7	.7				2.0	2.4	1.3	.2	.2	.3
21	1.0	.8	.7			*.9	2.0	2.2	.8	.2	.4	.7
22	1.0	.9	.7			1.0	1.6	2.2	.6	.2	.4	.3
23	.8	.9	.7			1.3	1.6	*3.1	.6	.2	.4	.3
24	.8	.8	.7			1.6	2.4	2.9	.4	.2	.3	.2
25	.8	.8	.7			1.6	3.3	3.3	.3	.1	.3	.2
26	.8	.8	.6			1.4	5.7	2.4	.3	.1	.3	.3
27	.8	.7	.5			1.6	6.6	2.0	.3	.1	.4	.2
28	.8	.8	.6			2.4	4.1	2.0	.3	0	.3	.3
29	.8	.8	.6			2.9	3.1	1.8	.3	0	.2	.3
30	.8	.8	.6			3.3	3.6	1.8	.3	0	.2	.3
31	.8	-----	.6			4.1	-----	1.8	-----	0	.8	-----
Total	24.3	21.8	23.1	18.6	22.4	40.1	111.3	133.9	40.2	5.7	10.4	11.7
Mean	0.78	0.73	0.75	0.6	0.8	1.29	3.71	4.32	1.34	0.18	0.34	0.39
Ac-ft	48	43	46	37	44	80	221	266	80	11	21	23

Calendar year 1962: Max 32 Min - Mean 3.15 Ac-ft 2,280  
 Water year 1962-63: Max 8.6 Min 0 Mean 1.27 Ac-ft 920

Peak discharge (base, 15 cfs).--No peak above base.

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 7 to Dec. 3, Mar. 23, 24, Mar. 27 to Apr. 10. No gage-height record Dec. 4 to Mar. 21 (stage-discharge relation affected by ice during most of period).

9-412. Red Dirt Creek near Kremmling, Colo.

Location.--Lat 40°09'41", long 106°33'32", in NE¼ 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.--19.0 sq mi, revised (includes 1.4 sq mi in Yampa River basin).

Records available.--October 1955 to September 1963.

Gage.--Water-stage recorder. Altitude of gage is 8,961 ft (from topographic map).

Average discharge.--8 years, 20.6 cfs (14,910 acre-ft per year).

Extremes.--Maximum discharge during year, 58 cfs June 16 (gage height, 1.65 ft); maximum gage height recorded, 1.98 ft Apr. 11 (backwater from ice); minimum discharge not determined.

1955-63: 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 or no gage-height record, which are poor. No diversion above station. Flow regulated by McMahon (Red Dirt) Reservoir (capacity, about 4,500 acre-ft).

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

0.6	3.4	1.3	27
.8	6.7	1.6	53
1.0	13	1.7	64

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9.7	7.0	3.3				1.6	8.6	4.6	5.2	4.2	5.4
2	9.7	7.0	2.8				1.4	8.6	5.2	*5.2	4.5	5.2
3	9.7	7.0	2.7				1.3	14	5.2	5.3	4.5	5.0
4	9.4	7.0	2.7				1.3	16	4.9	5.2	4.5	5.0
5	9.4	*7.0	*2.5	(*)			1.5	18	*5.0	5.2	4.5	5.0
6	*8.9	6.7	2.4				2.0	20	4.9	5.1	4.4	5.4
7	8.9	6.5	2.5				2.8	22	4.8	5.1	4.4	5.4
8	8.6	6.5	2.3				3.0	*2.5	4.8	5.0	4.5	5.2
9	8.6	6.5	2.2				2.5	3.3	4.9	4.9	4.4	5.0
10	8.3	6.5	2.2				*2.1	3.6	4.7	4.8	4.4	4.8
11	8.3	6.4				0.5	6.0	3.7	4.7	4.8	4.8	*4.8
12	8.6	6.4					10	3.2	4.7	4.6	4.5	4.8
13	8.6	6.3					1.5	2.8	4.7	4.5	4.5	4.7
14	8.6	6.3					2.6	2.5	4.7	4.4	4.4	4.7
15	8.6	6.1					2.6	2.7	4.7	4.3	*4.4	4.7
16	8.6	5.9	2.2	0.4	0.5		2.3	3.3	5.2	4.2	4.4	4.5
17	8.6	5.6					20	3.2	4.7	4.2	4.7	4.5
18	8.6	5.6					20	3.1	4.7	4.1	4.4	4.4
19	8.9	5.6					1.6	3.2	4.6	4.0	4.4	4.4
20	8.3	5.6					10	4.0	4.6	3.9	4.2	4.4
21	8.3	5.6					7.5	4.5	4.6	3.9	4.7	4.5
22	8.0	5.4					6.7	4.8	4.6	3.8	3.8	4.4
23	8.0	5.2					5.9	*4.8	5.1	3.7	4.7	4.2
24	8.0	5.2					6.7	4.8	5.6	3.7	4.5	4.2
25	7.5	4.8					14	4.8	5.5	3.6	4.5	4.1
26	7.5	4.7	.5			1.0	1.9	5.0	5.4	3.4	4.7	4.0
27	7.5	4.5					1.1	5.0	5.4	3.3	4.7	4.0
28	7.5	4.4					5.8	4.6	5.4	3.3	4.7	3.8
29	7.5	4.1					4.5	4.8	5.3	3.0	4.7	3.7
30	7.5	3.8					6.7	4.9	5.3	2.8	4.8	3.7
31	7.5							4.6		2.0	5.2	
Total	261.7	175.2	53.1	12.4	14.0	21.0	279.3	1,044.2	1,485	1,305	1,400	1,379
Mean	8.44	5.84	1.71	0.4	0.5	0.7	9.31	33.7	49.5	42.1	4.52	4.60
Ac-ft	519	348	105	25	28	42	554	2,070	2,950	2,590	278	274

Calendar year 1962: Max 157 Min - Mean 24.8 Ac-ft 17,960  
 Water year 1962-63: Max 56 Min - Mean 13.5 Ac-ft 9,780

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 7, 8, 11-13, 17-19, 22, 23, Nov. 28 to Dec. 4, Dec. 11-13, Apr. 11-14. No gage-height record Dec. 14 to Apr. 10 (stage-discharge relation affected by ice during most of period).

## MUDDY CREEK BASIN

9-413. Pass Creek near Kremmling, Colo.

Location.--Lat 40°08'00", long 106°29'20", in NW 1/4 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 7 1/2 miles northwest of Kremmling.

Drainage area.--17.8 sq mi.

Records available.--October 1957 to September 1963.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 7,840 ft (from topographic map).

Average discharge.--6 years, 9.29 cfs (6,730 acre-ft per year).

Extremes.--Maximum discharge during year, 62 cfs May 8 (gage height, 2.97 ft); maximum gage height, 3.11 ft Mar. 22 (backwater from ice); minimum daily discharge, 0.8 cfs Aug. 1.  
1957-63: Maximum discharge, 204 cfs May 11, 1962 (gage height, 3.63 ft), from rating curve extended above 75 cfs; minimum daily, 0.6 cfs Aug. 2, 8, 12-14, 1958.

Remarks.--Records good 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 tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to July 9

July 10 to Sept. 30

2.0	1.3	2.4	8.6	2.1	0.4	2.4	3.4
2.1	2.2	2.5	13	2.2	.9	2.6	9.4
2.2	3.4	2.7	29	2.3	1.8		
2.3	5.4	2.9	57				

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.4	3.8					6.0	14	14	2.4	0.8	4.6
2	3.6	3.6					6.4	15	15	* 2.3	1.1	3.2
3	3.6	3.6					6.4	19	15	2.4	1.5	2.2
4	3.8	3.4					* 5.7	25	13	2.6	1.8	2.0
5	* 3.8	3.4				(*)	9.5	29	* 12	2.6	1.6	2.0
6	4.4	3.4			(*)		14	34	11	2.4	2.6	2.1
7	4.2	3.4					19	44	9.5	2.2	2.0	2.2
8	4.2	3.2					20	* 48	8.0	2.0	2.0	3.2
9	4.0	3.0					17	50	9.5	2.3	2.8	4.1
10	3.8	3.3				2.9	14	42	7.3	* 2.4	2.1	3.9
11	3.8	3.6					15	41	6.4	2.2	7.0	* 3.6
12	3.6	3.3					18	36	9.9	2.8	4.9	3.6
13	3.4	3.2	(*)				20	30	* 9.0	2.2	3.4	3.9
14	3.4	* 3.7					22	27	8.6	1.6	2.8	3.0
15	3.6	3.8					20	25	8.3	1.6	* 2.2	3.0
16	4.4	3.8	2.8	2.2	2.7		16	23	24	1.6	2.6	2.4
17	4.8	3.7					14	21	12	1.8	2.8	2.1
18	4.6	3.3					12	19	7.3	1.5	3.2	2.0
19	5.7	3.1		(*)			13	18	7.0	1.6	2.4	2.0
20	5.2	3.4					11	16	5.4	1.5	2.4	2.0
21	4.4	3.5					10	15	4.8	1.5	2.8	3.4
22	4.2	3.5					9.9	16	4.2	1.6	2.6	2.4
23	4.0	3.6					9.9	* 21	4.0	1.5	2.4	2.1
24	3.8	3.5					9.9	18	3.6	1.8	2.4	2.1
25	3.8	3.5				5.0	10	15	3.3	1.6	2.1	2.1
26	3.6	3.5					14	14	3.3	1.5	2.4	2.1
27	3.6	3.7					16	13	3.3	1.2	3.0	2.1
28	3.8	3.6					12	14	3.3	1.0	3.6	2.1
29	3.8	3.2					12	14	2.9	1.1	3.0	2.1
30	3.8	3.0					12	14	2.6	1.0	3.6	2.1
31	3.8						12	14	2.6	1.1	3.9	
Total	124.1	103.6	86.8	68.2	75.6	113.0	394.7	744	247.5	56.9	83.8	79.7
Mean	4.00	3.45	2.8	2.2	2.7	3.6	13.2	24.0	8.25	1.84	2.70	2.66
Ac-ft	246	205	172	135	150	224	783	1,480	491	113	166	158

Calendar year 1962: Max 164 Min 1.7 Mean 14.7 Ac-ft 10,620  
Water year 1962-63: Max 50 Min 0.8 Mean 5.97 Ac-ft 4,320

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 7-14, Nov. 17 to Dec. 25, Mar. 23 to Apr. 1, Apr. 4. No gage-height record Dec. 26 to Mar. 22 (stage-discharge relation affected by ice during most of period), July 9, 10.

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 1963.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 10,986 ft (from State engineer).

Extremes.--1957-63: 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 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1							0	2.3	14	*0	16	14
2							0	1.5	17	0	22	10
3							0	2.5	14	2.0	27	8.7
4							0	3.0	*14	5.7	34	8.5
5							0	6.0	14	5.1	26	9.5
6							0	*8.0	14	0	29	*8.5
7							0	8.1	16	0	19	15
8							0	8.7	18	0	15	16
9							0	12	16	0	18	12
10							0	13	26	0	37	9.8
11							0	14	24	0	30	12
12							0	13	25	0	50	8.5
13							0	12	28	0	27	6.7
14							0	12	29	0	*23	6.1
15							0	12	*28	0	11	5.4
16							0	14	28	0	8.1	4.9
17							0	17	22	0	12	4.6
18							0	19	24	1.8	15	4.3
19							0	20	20	2.2	12	4.0
20							0	16	22	1.7	9.1	4.3
21							0	14	24	2.8	8.1	5.0
22							0	14	26	3.7	7.9	4.6
23							0	*14	27	2.0	7.9	*4.0
24							.3	14	26	1.2	10	3.8
25							1.0	15	23	0	8.7	3.6
26							1.7	14	23	0	*10	3.2
27							2.1	13	23	0	21	3.1
28							1.2	14	14	0	21	3.0
29							.7	16	0	0	15	2.8
30							1.5	16	0	0	12	2.6
31								17		0	12	
Total	0	0	0	0	0	0	8.5	375.1	599	28.2	573.8	208.5
Mean	0	0	0	0	0	0	0.28	12.1	20.0	0.91	18.5	6.95
Ac-ft	0	0	0	0	0	0	17	744	1,190	56	1,140	414

Calendar year 1962: Max 49 Min 0 Mean 5.71 Ac-ft 4,140

Water year 1962-63: Max 50 Min 0 Mean 4.91 Ac-ft 3,560

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

Note.--No gage-height record Oct. 1 to May 3, July 1-31.

## BLUE RIVER BASIN

9-443. Bemrose-Hoosier 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 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 1963.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 10,986 ft (from State engineer).

Extremes.--1957-63: 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 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1							0	1.2	4.3	*0.4	0.6	0.6
2							0	1.4	4.7	0	1.7	1.4
3							0	2.1	4.5	0	2.7	3.8
4							0	2.5	*4.5	0	2.6	3.6
5							0	3.0	4.1	0	2.3	2.7
6							0	*3.3	4.0	0	4.1	*3.7
7							0	2.7	4.1	0	3.2	5.0
8							0	3.2	4.1	0	4.0	4.8
9							0	3.5	4.3	0	4.1	4.8
10							0	3.3	4.0	0	4.7	4.8
11							0	3.7	3.8	0	5.4	4.8
12							0	3.2	3.8	0	5.2	4.7
13							0	3.2	3.7	0	5.4	4.5
14							0	3.0	3.8	0	*4.8	4.5
15							0	3.3	*4.3	0	4.7	4.5
16							0	3.5	5.7	0	4.8	4.3
17							0	3.8	6.3	0	5.0	4.0
18							0	4.3	6.3	0	4.8	3.8
19							0	4.3	5.7	0	4.5	3.7
20							0	4.1	5.0	0	4.1	4.1
21							0	4.1	5.0	0	4.1	4.0
22							0	4.3	4.8	0	4.1	3.5
23							0	*4.5	4.7	0	4.0	*3.3
24							.1	4.5	4.5	0	3.7	3.2
25							.2	4.3	4.1	0	3.5	3.0
26							*1.0	4.1	4.0	0	3.2	3.0
27							.9	4.0	3.8	0	.7	2.9
28							.9	4.1	2.7	0	2.7	2.9
29							.6	4.5	.9	0	4.1	2.7
30							1.0	4.5	.9	0	4.0	2.7
31							-----	4.5	-----	0	2.9	-----
Total	0	0	0	0	0	0	4.7	110.0	126.4	0.4	116.4	109.3
Mean	0	0	0	0	0	0	0.16	3.55	4.21	0.01	3.75	3.64
Ac-ft	0	0	0	0	0	0	9.3	218	251	0.8	231	217

Calendar year 1962: Max 18 Min 0 Mean 2.46 Ac-ft 1,780  
 Water year 1962-63: Max 6.3 Min 0 Mean 1.28 Ac-ft 927

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

Note.--No gage-height record Oct. 1 to Apr. 26, Apr. 28, 29, July 2-30.

9-448. McCullough-Spruce-Crystal 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, 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 1963. 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.--1957-63: Maximum daily discharge, 74 cfs Aug. 12, 1963; 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.

Cooperation.--Gage-height record furnished by city of Colorado Springs.

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1							0	1.6	30	(*)	4.6	1.8
2							0	1.7	32		16	1.3
3							0	2.6	28		36	14
4							0	4.9	*28		46	14
5							0	7.2	27		46	14
6							0	*12	25		53	*12
7							0	12	30		34	8.1
8							0	12	31		35	3.9
9							0	16	30		54	9.2
10							0	19	22		60	13
11							0	22	23		68	12
12							0	20	32		74	12
13							0	17	45		48	11
14							0	17	50		*26	10
15							0	18	*50		6.1	9.5
16							0	25	56		11	8.5
17							0	27	42		17	8.1
18							0	33	41		5.8	7.6
19							0	30	36		9.2	7.0
20							0	25	37		14	8.5
21							0	27	44		13	9.0
22							0	24	42		16	7.8
23							0	*25	45		16	*7.0
24							.1	28	44		17	6.7
25							.4	27	42		16	6.3
26							*1.1	25	42		*17	5.9
27							1.0	27	39		8.3	5.4
28							.4	30	25		.5	5.2
29							.5	31	0		4.5	5.0
30							.9	33	0		9.0	4.7
31								30			15	
Total	0	0	0	0	0	0	4.4	630.0	1,018	0	796.0	276.4
Mean	0	0	0	0	0	0	0.15	20.3	33.9	0	25.7	9.21
Ac-ft	0	0	0	0	0	0	8.7	1,250	2,020	0	1,580	548

Calendar year 1962: Max 64 Min 0 Mean 6.93 Ac-ft 5,020  
 Water year 1962-63: Max 74 Min 0 Mean 7.47 Ac-ft 5,410

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

Note.--No gage-height record Oct. 1 to Apr. 26, Apr. 29, 30, July 1-31.

## BLUE RIVER BASIN

9-466. Blue River near Dillon, Colo.

Location.--Lat 39°32'58", long 106°02'22", in NW¼ 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 1963.

Gage.--Water-stage recorder. Altitude of gage is 9,120 ft (from topographic map).

Average discharge.--6 years, 91.8 cfs (66,460 acre-ft per year) including diversion to Hoosier Pass tunnel.

Extremes.--Maximum discharge during year, 138 cfs July 11 (gage height, 3.19 ft); minimum daily, 21 cfs for many days.  
1957-63: Maximum discharge, 782 cfs June 8, 1958 (gage height, 4.73 ft); minimum daily, 17 cfs Mar. 21, 1961.

Remarks.--Records good. 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)

2.4	19
2.5	25
2.7	41
3.0	82
3.3	148

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	45	32	28	24	22	23	30	40	76	*91	47	79
2	43	32	28	24	23	23	30	40	76	93	48	77
3	*43	32	28	24	22	23	29	40	76	95	52	72
4	43	31	28	24	22	23	28	41	80	96	51	69
5	43	31	28	24	22	23	*29	46	79	98	56	*63
6	43	31	28	24	22	23	29	51	76	109	62	62
7	42	31	28	24	22	*b22	31	*54	*71	109	62	65
8	41	31	28	23	22	22	34	60	68	111	57	68
9	40	30	28	23	22	b22	35	63	68	127	57	82
10	40	30	28	23	22	b22	36	66	71	122	61	80
11	40	30	28	23	b21	22	36	71	68	135	72	71
12	40	30	*28	b23	b21	22	37	74	65	120	80	66
13	38	30	28	b23	b21	b22	38	77	62	100	82	65
14	38	30	27	23	*b21	b22	38	74	*61	93	*74	62
15	37	30	27	23	21	23	39	72	61	86	63	60
16	38	*31	27	23	21	23	42	72	69	79	61	58
17	38	31	27	22	b21	23	43	76	84	72	66	54
18	37	31	27	21	21	23	45	77	91	71	66	54
19	37	30	27	21	21	22	42	79	87	66	69	53
20	38	30	27	*21	21	22	40	82	86	65	71	52
21	38	30	26	21	21	22	39	80	80	61	63	53
22	38	30	26	21	b21	22	39	*79	76	60	58	56
23	36	30	26	21	21	23	38	79	72	61	57	56
24	36	29	26	21	21	23	37	79	68	62	57	53
25	36	29	26	21	21	23	36	80	66	65	56	52
26	35	29	26	b21	22	23	37	79	66	65	54	51
27	35	29	25	b21	23	24	38	77	65	61	57	51
28	34	29	25	b22	23	26	39	74	63	58	77	49
29	33	29	24	23	-	27	40	74	60	54	102	48
30	33	28	24	23	-----	28	40	74	68	52	91	47
31	32	-----	24	22	-----	29	-----	76	-----	49	82	-----
Total	1,190	906	831	697	604	720	1,094	2,106	2,159	2,586	2,011	1,828
Mean	38.4	30.2	26.8	22.5	21.6	23.2	36.5	67.9	72.0	83.4	64.9	60.9
Ac-ft	2,360	1,800	1,650	1,380	1,200	1,430	2,170	4,180	4,280	5,130	3,997	3,630

Calendar year 1962: Max 396 Min 24 Mean 87.9 Ac-ft 63,620  
Water year 1962-63: Max 135 Min 21 Mean 45.8 Ac-ft 33,200

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 Mar. 29 to Apr. 5.

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 1963.

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.--16 years, 60.5 cfs (43,800 acre-ft per year).

Extremes.--Maximum discharge during year, 230 cfs June 16 (gage height, 2.35 ft); minimum not determined.

1942-46, 1951-63: 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	1.6	67
1.1	17	2.0	140
1.3	32	2.5	275

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	23	17				8.8	16	22	118	82	35	64
2	24	17				8.8	14	23	124	84	40	55
3	*23	16				8.8	13	29	126	*79	46	51
4	23	16				8.6	14	36	116	89	58	48
5	23	16		10		8.4	14	45	115	95	60	*51
6	24	16	(*)			8.4	19	61	115	88	52	48
7	24	15				8.2	20	*64	*118	89	46	58
8	24	14				8.2	20	70	111	95	48	52
9	23	16				8.2	*19	88	115	106	54	48
10	22	16				8.2	19	104	104	107	51	47
11	21	16				8.2	19	118	97	91	60	45
12	21	16				8.2	23	109	100	82	61	44
13	21	16				8.2	24	98	109	74	55	44
14	20	16				8.4	26	100	120	70	48	42
15	21	15				8.8	25	115	136	66	45	40
16	22	*15	12		9	9.0	26	134	180	62	*46	39
17	23	15				8.8	21	134	136	58	51	38
18	22	13				8.6	20	146	142	52	48	38
19	23	14			(*)	8.0	19	136	126	50	40	36
20	23	15		6		8.0	18	122	124	48	39	51
21	22	15		(*)		9.2	17	120	122	47	40	45
22	21	15				10	16	116	120	45	48	39
23	20	15				*11	16	118	116	48	56	37
24	20	15				11	17	128	111	55	58	37
25	19	15				10	20	122	106	45	55	35
26	19	15				9.6	26	115	98	42	56	34
27	19	15				11	28	118	93	38	76	34
28	19	14				14	21	126	89	38	69	33
29	19	14				14	20	126	82	37	62	32
30	18	14				16	20	130	77	35	61	32
31	17					16		122		34	64	
Total	663	457	372	218	252	300.6	590	3,095	3,446	2,031	1,628	1,297
Mean	21.4	15.2	12	7	9	9.70	19.7	99.8	115	65.5	52.5	43.2
Ac-ft	1,320	906	738	432	500	596	1,170	6,140	6,840	4,030	3,230	2,570

Calendar year 1962: Max 377 Min - Mean 60.2 Ac-ft 43,610  
 Water year 1962-63: Max 180 Min - Mean 39.3 Ac-ft 28,470

\*Peak discharge (base, 500 cfs).--No peak above base.

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 25-30, Nov. 3-5, 7-13, 17-20, 22-24, Mar. 28, 29, Apr. 3, 4, 18-20, 23. No gage-height record Nov. 25 to Mar. 22 (stage-discharge relation affected by ice during most of period).



## BLUE RIVER BASIN

9-477. Keystone Gulch near Dillon, Colo.

Location.--Lat 39°35'40", long 105°58'19", in NE 1/4 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 1963.

Gage.--Water-stage recorder. Altitude of gage is 9,350 ft (from topographic map).

Average discharge.--6 years, 5.27 cfs (3,820 acre-ft per year).

Extremes.--Maximum discharge during year, 15 cfs May 9 (gage height, 1.87 ft); minimum not determined.

1957-63: 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 ice effect or no gage-height record, which are poor. No known 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 Aug. 21-25, Sept. 28-30)

Oct. 1 to Mar. 31

Apr. 1 to Sept. 30

1.6 2.7  
1.7 4.8

1.5 1.7  
1.6 3.0  
1.7 6.0  
1.8 11

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.8	2.6	2.4				3.4	3.3	5.1	2.7	2.0	3.0
2	2.8	2.6	2.4				3.2	3.9	5.4	2.7	2.4	2.6
3	2.8	2.5	2.4				3.0	5.1	5.7	*2.7	2.6	2.5
4	*2.8	2.6	2.4				3.0	6.0	5.1	3.0	3.0	2.5
5	3.0	2.7	2.3				3.2	6.0	4.8	3.0	2.9	*2.4
6	3.0	2.6	*2.3				3.5	7.0	4.5	2.9	2.9	2.5
7	3.0	2.4	2.4				3.5	*7.0	*4.5	2.9	2.5	3.0
8	3.0	2.3	2.3				3.5	8.5	4.2	3.0	2.5	2.7
9	2.8	2.4	2.2				*3.3	9.5	6.0	3.3	4.2	2.6
10	2.8	2.6	1.9				3.0	9.5	5.4	3.6	4.2	2.5
11	2.8	2.7	2.1			2.0	3.0	10	4.5	2.9	3.3	2.5
12	2.8	2.5	2.2				3.9	8.5	4.2	2.7	3.3	2.4
13	2.8	2.5	2.1				4.2	9.0	4.2	2.6	2.7	2.4
14	2.7	2.7	2.1				4.2	8.5	4.2	2.7	2.5	2.4
15	2.8	*2.7	2.3				4.2	9.0	4.2	2.6	2.4	2.4
16	3.0	2.5	2.2	1.9	2.2		3.9	9.0	9.5	2.6	*2.4	2.5
17	3.0	2.2	2.2				4.2	8.5	5.4	2.6	2.7	2.4
18	3.0	2.1	2.1				3.0	9.0	5.4	2.6	2.7	2.4
19	3.0	2.3	2.3		(*)		3.3	8.5	5.1	2.4	2.4	2.2
20	3.2	2.5	2.2			(*)	3.3	8.0	4.5	2.4	2.4	2.6
21	3.3	2.5	2.2	(*)			3.3	8.0	4.2	2.2	2.2	2.5
22	3.3	2.3	2.0			2.2	3.3	8.0	3.9	2.2	2.4	2.5
23	3.1	2.3	2.2			2.4	4.2	8.0	3.6	2.4	2.6	2.6
24	2.9	2.3	1.9			2.4	4.2	7.5	3.6	2.6	2.6	2.6
25	2.8	2.3	1.8			2.2	6.0	6.5	3.3	2.0	2.6	2.5
26	2.7	2.4	1.7			2.4	5.1	6.5	3.0	2.0	3.0	2.4
27	2.7	2.3	1.8			2.5	4.2	6.0	2.9	1.8	3.6	2.4
28	2.7	2.2	1.8			3.0	3.3	6.0	2.9	2.0	2.9	2.4
29	2.7	2.2	2.0			3.0	3.9	5.7	2.7	2.0	2.6	2.4
30	2.6	2.3	2.0			3.5	3.6	5.7	2.7	2.0	2.7	2.4
31	2.6	-----	1.9			3.5	-----	5.4	-----	2.0	3.0	-----
Total	89.3	73.1	66.1	58.9	61.6	69.1	110.9	227.1	134.7	79.1	86.2	75.2
Mean	2.88	2.44	2.13	1.9	2.2	2.23	3.70	7.33	4.49	2.55	2.7 <sup>R</sup>	2.51
Ac-ft	177	145	131	117	122	137	220	450	267	157	17 <sup>R</sup>	149

Calendar year 1962: Max 36 Min - Mean 6.89 Ac-ft 5,000

Water year 1962-63: Max 10 Min - Mean 3.10 Ac-ft 2,240

Peak discharge (base, 35 cfs).--No peak above base.

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 23 to Nov. 8, Nov. 11. No gage-height record Nov. 9, 10, Nov. 12 to Apr. 9 (stage-discharge relation affected by ice during most of periods).

## BLUE RIVER BASIN

169

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 1963. 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.--43 years, 64.0 cfs (46,330 acre-ft per year).

Extremes.--Maximum discharge during year, 239 cfs June 16 (gage height, 3.41 ft); maximum gage height recorded, 3.46 ft Dec. 26 (backwater from ice); minimum discharge not determined.

1910-19, 1929-63: 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, 5.16 ft Dec. 17, 1961 (backwater from ice); 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. Water also bypassed station through old power canal beginning Sept. 1, 1963 (1,250 acre-ft in water year 1963).

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

2.1	15	3.0	135
2.3	32	3.5	280
2.6	68		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	34	23	20			16	26	28	113	76	33	62
2	33	23	b19			16	24	29	123	76	35	54
3	32	22	18			16	23	33	127	*72	43	48
4	*31	21	b18			16	b24	43	112	81	56	47
5	31	21	b17			15	*26	50	108	88	67	*45
6	30	21	b16			15	31	60	108	87	65	41
7	30	18	19			*14	40	68	*113	85	68	48
8	29	b17	19			14	41	72	110	93	74	44
9	28	b20	b17			14	38	*90	113	105	82	39
10	27	b22	b14			14	35	103	105	106	76	36
11	27	25	b16			14	30	117	93	85	81	36
12	27	b21	b17			14	32	110	93	78	85	34
13	27	b22	*b16			15	35	93	103	74	74	32
14	26	26	b16			15	38	96	112	68	65	31
15	27	*25	19			16	38	105	123	65	59	30
16	28	24	b17	13	17	16	31	131	200	59	*58	28
17	29	23	b17			15	30	127	145	55	63	26
18	28	b17	b17			15	29	145	145	50	62	25
19	30	23	19		(*)	14	27	140	131	48	51	23
20	30	23	19			14	25	119	129	47	48	38
21	29	22	b18	(*)		14	24	115	131	47	49	41
22	28	b20	b15			17	23	115	125	45	56	34
23	27	21	b17			19	22	112	117	45	67	31
24	25	b19	b14			19	22	125	110	58	68	30
25	24	b20	b13			17	23	123	105	47	65	27
26	24	21	b12			17	30	112	98	43	71	23
27	24	18	13			19	38	115	93	39	92	20
28	24	b17	13			24	29	123	88	34	82	19
29	24	b17	14			24	24	123	81	31	68	18
30	23	b19	14			25	25	129	76	32	60	18
31	23		13			26		125		32	60	
Total	859	631	506	403	476	519	883	3,076	3,430	1,951	1,983	1,028
Mean	27.7	21.0	16.3	13	17	16.7	29.4	99.2	114	62.9	64.0	34.3
Ac-ft	1,700	1,250	1,000	799	944	1,030	1,750	6,100	6,800	3,870	3,930	2,040

Calendar year 1962: Max 376 Min - Mean 71.6 Ac-ft 51,810  
 Water year 1962-63: Max 200 Min - Mean 43.1 Ac-ft 31,210

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

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 27 to Apr. 3 (stage-discharge relation affected by ice during most of period).

## BLUE RIVER BASIN

9-501. Tenmile Creek below North Fork, at Frisco, Colo.

Location.--Lat 39°34'35", long 106°06'30", in SW¼NE¼ 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 1963.

Gage.--Water-stage recorder. Altitude of gage is 9,090 ft (from topographic map).

Average discharge.--6 years, 85.8 cfs (62,120 acre-ft per year).

Extremes.--Maximum discharge during year, 350 cfs May 18 (gage height, 4.36 ft); minimum not determined.

1957-63: 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, 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 Oct. 23 to Dec. 31)

2.3	14	3.3	82
2.7	31	3.6	137
3.0	50	4.1	272

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	28	20	17			15	23	47	188	* 85	28	71
2	27	21	16			15	22	48	216	87	33	63
3	*25	20	17			15	20	58	241	92	41	55
4	25	19	17			15	18	81	210	92	46	*50
5	25	19	16			15	*20	102	175	82	55	51
6	25	20	14			15	22	*135	160	78	96	54
7	24	17	17			* 14	28	150	*152	84	67	66
8	24	16	16			14	30	160	152	96	64	66
9	23	17	15			14	31	199	170	96	77	55
10	23	19	12			14	34	216	152	90	81	54
11	23	20	14			14	35	238	137	75	112	54
12	23	16	* 15			14	35	216	140	70	109	53
13	23	17	14			14	41	191	152	64	92	51
14	23	19	13			14	53	191	*160	62	85	48
15	24	*19	15			15	59	205	152	59	84	46
16	26	19	13	11	15	15	56	238	194	50	* 76	42
17	27	19	13			15	56	244	172	44	78	41
18	27	14	12			14	54	266	178	41	81	37
19	27	16	15			(*)	13	52	252	172	39	37
20	26	19	14			13	52	244	157	38	55	38
21	25	19	14	(*)		13	51	241	157	37	54	37
22	24	17	12			13	50	233	150	37	57	35
23	23	18	13			14	46	233	144	38	66	34
24	22	17	11			14	44	236	135	43	74	34
25	21	18	11			14	44	222	131	36	61	35
26	20	19	10			15	55	210	129	34	61	34
27	19	17	11			16	64	210	120	34	111	30
28	20	15	11			18	50	216	105	37	92	30
29	20	15	12			20	41	213	90	32	78	29
30	20	16	12			21	40	205	87	29	64	28
31	20	-----	11			22	-----	191	-----	28	69	-----
Total	732	537	423	341	420	467	1,226	5,891	4,678	1,809	2,216	1,358
Mean	23.6	17.9	13.6	11	15	15.1	40.9	190	156	58.4	71.5	45.3
Ac-ft	1,450	1,070	839	676	833	926	2,430	11,680	9,280	3,590	4,400	2,690

Calendar year 1962: Max 680 Min 10 Mean 119 Ac-ft 86,410  
Water year 1962-63: Max 266 Min - Mean 55.1 Ac-ft 39,860

Peak discharge (base, 700 cfs).--No peak above base.

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 8-10, 12, 13, 18, 25, Nov. 28 to Apr. 6 (no gage-height record Dec. 31 to Mar. 23).

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 1963.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 8,760 ft (from topographic map).

Extremes.--Maximum discharge during year, 666 cfs May 18 (gage height, 2.32 ft); no flow Sept. 4-30.

1960-63: Maximum discharge, 1,720 cfs June 17, 1960; maximum gage height, 3.60 ft June 14, 1962; no flow Sept. 4-30, 1963.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Flow completely regulated by Dillon Reservoir since Sept. 3, 1963. Contents Sept. 30, 1963, 8,200 acre-ft. Change in contents during water year 1963, +8,200 acre-ft. Natural flow of stream affected by transmountain diversions, transbasin diversions, and diversions above station for irrigation of about 700 acres of hay meadows above and about 400 acres below station. Part of the natural flow of Snake River above station has been diverted through old power canal since Sept. 1, 1963 (1,250 acre-ft in water year 1963), and returned to river below this station.

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

0.0	0	0.8	42
.1	1.4	1.0	82
.2	3.4	1.4	215
.3	6.0	1.8	385
.5	15	2.2	600
.6	21		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	121	94	77	57		58	130	133	400	263	117	251
2	117	94	75	57		59	117	137	450	271	127	231
3	114	91	75	59		59	99	150	475	*271	147	77
4	*111	91	73	59		59	94	190	435	287	168	*0
5	111	94	70	59		57	102	223	380	291	197	0
6	111	91	68	57		58	114	267	362	295	263	0
7	114	80	77	59		57	140	*283	*349	291	227	0
8	111	77	75	57		56	140	308	354	313	227	0
9	108	82	70			56	*137	*376	380	344	263	0
10	105	88	61			56	137	425	354	349	263	0
11	105	94	66			57	130	470	322	318	318	0
12	102	82	*68			57	133	455	318	287	331	0
13	102	85	66			57	147	385	340	259	304	0
14	102	94	64			57	161	400	*362	235	267	0
15	105	94	70			59	168	405	367	223	243	0
16	108	*91	66			56	157	475	502	204	227	0
17	114	85	66			57	157	475	445	193	243	0
18	114	73	64			59	154	518	450	179	*247	0
19	117	82	70			57	147	524	435	168	219	0
20	117	88	68			56	140	480	410	161	204	0
21	114	88	66			57	137	485	400	150	223	0
22	111	80	61			*59	133	465	385	147	208	0
23	105	82	66			73	124	460	362	150	227	0
24	102	77	59			70	124	470	344	175	239	0
25	99	80	b 56			70	121	465	331	157	219	0
26	96	82	b 54			73	140	425	318	150	223	0
27	96	77	56			85	165	420	295	143	313	0
28	96	73	57			102	140	440	271	140	300	0
29	96	73	59			117	127	440	243	121	300	0
30	94	75	59			117	124	435	239	121	263	0
31	94	-----	57			127	-----	425	-----	117	247	-----
Total	3,312	2,537	2,039	1,660	1,680	2,097	4,039	12,009	11,078	6,773	7,364	559
Mean	107	84.6	65.8	53.5	60	67.6	135	387	369	218	238	18.6
Ac-ft	6,570	5,030	4,040	3,290	3,330	4,160	8,010	23,820	21,970	13,430	14,610	1,110

Calendar year 1962: Max 1,510 Min - Mean 314 Ac-ft 227,700

Water year 1962-63: Max 524 Min 0 Mean 151 Ac-ft 109,400

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

b Stage-discharge relation affected by ice.

Note.--No gage-height record Jan. 9 to Mar. 12 (stage-discharge relation affected by ice during most of period).

## BLUE RIVER BASIN

9-535. Blue River above Green Mountain Reservoir, Colo.

Location.--Lat 39°49'55", long 106°13'20", in S½ sec.34 (corrected), T.2 S., R.79 W., on left bank 300 ft north of old State Highway 9, just upstream from high-water line of Green Mountain Reservoir at elevation 7,950 ft, 1.3 miles downstream from Brush Creek, and 18 miles southeast of Kremmling.

Drainage area.--514 sq mi.

Records available.--October 1943 to September 1963.

Gage.--Water-stage recorder. Datum of gage is 7,946.56 ft above mean sea level, unadjusted.

Average discharge.--20 years, 433 cfs (313,500 acre-ft per year).

Extremes.--Maximum discharge during year, 1,120 cfs June 16 (gage height, 2.52 ft); maximum gage height, 3.14 ft Mar. 8 (backwater from ice); minimum daily discharge, 63 cfs Sept. 30.

1943-63: Maximum discharge, 5,020 cfs June 11, 1952 (gage height, 4.93 ft); maximum gage height recorded, 6.93 ft Nov. 5, 1961 (backwater from ice); minimum daily discharge, that of Sept. 30, 1963.

Remarks.--Records good except those for periods of ice effect, which are fair. Flow regulated by Dillon Reservoir since Sept. 3, 1963. Natural flow of stream affected by transmountain and transbasin diversions and many small diversions for irrigation of about 4,000 acres of hay meadows above station.

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

0.7	52
1.0	120
1.3	225
1.8	515
2.4	1,000

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	193	144	135	100		100	217	193	587	438	197	402
2	189	144	132	100		102	205	197	690	*438	225	378
3	185	141	129	104		102	168	205	746	450	275	275
4	*182	138	126	104		102	154	245	658	450	286	141
5	178	141	123	104		98	*164	297	601	456	330	126
6	178	141	118	100		*100	174	360	*567	438	438	*129
7	178	126	138	104		98	221	*420	554	438	390	126
8	174	117	132	100	(*)	96	250	438	580	450	366	126
9	171	132	126			96	230	515	622	528	390	115
10	168	132	117			96	217	554	567	554	438	112
11	164	144	118			98	201	574	515	508	560	104
12	160	132	120			98	205	587	508	470	524	98
13	157	150	116			98	225	489	567	420	522	93
14	157	154	*110			98	250	508	*636	390	450	91
15	160	*150	124			102	275	450	666	372	408	89
16	168	147	118			96	240	574	970	342	*372	86
17	174	141	118			98	235	587	786	319	372	84
18	174	135	112			102	235	643	762	297	390	82
19	174	150	124			98	209	674	754	280	348	80
20	178	150	120	(*) 90		96	209	601	698	270	330	82
21	174	144	118			98	193	629	690	260	330	86
22	174	138	106			100	193	601	666	250	342	80
23	168	141	118			120	174	587	636	245	354	75
24	160	132	104			110	178	622	608	270	366	73
25	150	135	100			100	171	608	587	260	348	71
26	150	141	96			106	193	574	560	255	330	69
27	150	132	100			138	240	560	528	225	432	67
28	150	129	100			178	213	601	496	221	438	65
29	147	132	104			201	193	629	463	213	420	65
30	147	135	104			193	178	622	432	205	396	63
31	147	-----	100			201	-----	636	-----	201	390	-----
Total	5,179	4,168	3,606	2,886	2,940	3,519	6,210	15,780	19,700	10,913	11,827	3,533
Mean	167	139	116	93.1	105	114	207	509	623	352	382	118
Ac-ft	10,270	8,270	7,150	5,720	5,830	6,980	12,320	31,300	37,090	21,650	23,460	7,010

Calendar year 1962: Max 2,180 Min - Mean 475 Ac-ft 343,900  
 Water year 1962-63: Max 970 Min 63 Mean 245 Ac-ft 177,000

Peak discharge (base, 2,600 cfs).--No peak above base.

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 5-7, Dec. 10 to Mar. 26 (no gage-height record Jan. 7-20, Jan. 31 to Feb. 7, Mar. 4-6, 13-23).

## 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 1963.

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, 122,500 acre-ft Oct. 1 (elevation, 7,937.88 ft); minimum, 388 acre-ft Jan. 12 (elevation, 7,801.70 ft).

1942-63: Maximum contents observed, 148,900 acre-ft July 10, 1947 (elevation, 7,950.95 ft); minimum, that of Jan. 12, 1963.

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 1962 to September 1963

Date	Elevation (feet)†	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	7,938.74	124,200	-
Oct. 31.....	7,898.09	61,720	-61,480
Nov. 30.....	7,858.70	25,670	-36,050
Dec. 31.....	7,822.06	6,480	-19,190
Calendar year 1962.....	-	-	-117,000
Jan. 31.....	7,803.81	891	-5,590
Feb. 28.....	7,803.19	742	-149
Mar. 31.....	7,812.28	3,180	+2,440
Apr. 30.....	7,827.73	8,740	+5,560
May 31.....	7,880.10	42,790	+34,050
June 30.....	7,916.59	86,440	+43,650
July 31.....	7,921.13	93,380	+6,940
Aug. 31.....	7,925.98	101,200	+7,820
Sept. 30.....	7,917.32	87,530	-13,670
Water year 1962-63.....	-	-	-35,670

† Elevation at 2400.

## BLUE RIVER BASIN

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 1963.

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.--26 years, 501 cfs (362,700 acre-ft per year).

Extremes.--Maximum discharge during year, 1,800 cfs Nov. 1 (gage height, 7.43 ft); minimum daily, 47 cfs Jan. 25.

1937-63: 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 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,090	1,380	430	568	123	130	100	112	82	84	627	372
2	1,090	1,350	430	772	136	96	101	114	88	150	668	372
3	1,080	1,190	454	868	134	96	100	116	82	* 210	790	211
4	* 1,060	1,250	648	636	134	98	100	114	85	237	772	258
5	1,060	1,110	656	416	92	98	100	116	85	239	616	309
6	1,070	987	672	310	119	* 98	98	114	* 85	239	530	315
7	944	1,010	680	212	* 156	98	98	* 112	87	239	452	* 307
8	1,180	1,010	692	184	120	98	96	111	87	239	318	285
9	1,380	1,030	704	157	228	100	* 96	116	88	239	308	241
10	1,390	1,030	712	157	166	100	98	100	87	241	302	201
11	1,410	1,050	635	139	128	100	100	84	85	239	300	196
12	1,410	1,060	265	104	72	96	100	81	88	237	182	198
13	1,360	1,070	* 308	74	100	96	98	85	87	239	66	284
14	1,360	1,090	179	92	62	98	98	84	87	237	63	327
15	1,440	* 1,100	193	93	81	100	103	82	87	288	68	334
16	1,440	1,100	167	104	150	100	103	87	85	343	* 156	334
17	1,450	507	404	108	136	100	98	85	84	340	250	334
18	1,470	496	420	63	98	101	100	84	87	345	250	407
19	1,480	499	493	55	96	101	98	84	85	348	250	438
20	1,400	464	476	* 54	120	101	98	82	85	374	250	518
21	888	441	483	85	120	101	101	84	85	392	254	547
22	796	426	498	118	120	103	176	84	82	392	248	547
23	1,130	404	471	58	93	103	248	84	82	440	298	547
24	1,390	394	531	59	76	103	250	84	85	464	354	547
25	1,270	400	363	47	81	103	248	82	85	464	352	548
26	1,330	400	455	119	99	101	252	84	84	464	350	547
27	1,360	510	413	118	137	101	252	87	84	464	350	547
28	1,300	405	416	112	126	101	248	85	85	467	350	598
29	1,300	410	416	103	-	101	254	85	84	449	392	600
30	1,310	425	416	111	-----	101	196	88	82	508	346	619
31	1,350	-----	437	112	-----	101	-----	85	-----	530	368	-----
Total	38,988	23,998	14,517	6,208	3,303	3,124	4,208	2,895	2,554	10,141	10,880	11,888
Mean	1,260	800	468	200	118	101	140	93.4	85.1	327	351	396
Ac-ft	77,330	47,600	28,790	12,310	6,550	6,200	8,350	5,740	5,070	20,110	21,580	23,580

Calendar year 1962: Max 1,580 Min 167 Mean 756 Ac-ft 547,200  
 Water year 1962-63: Max 1,480 Min 47 Mean 364 Ac-ft 263,200

\* 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 1963.

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, 1,860 cfs Nov. 2 (gage height, 7.20 ft); minimum daily, 283 cfs June 27.

1904-18, 1961-63: 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 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.100	1.520	644	786	520	529	954	556	372	287	890	540
2	1.290	1.540	656	1.000	526	511	974	613	342	* 370	940	559
3	1.260	1.410	656	1.230	508	496	726	649	481	450	1.000	511
4	1.260	1.380	866	1.160	508	505	628	698	610	490	1.000	559
5	* 1.260	1.380	852	840	499	520	631	677	625	480	900	664
6	1.260	1.200	856	660	463	* 514	631	754	* 559	460	830	670
7	1.210	1.190	898	560	529	487	631	* 834	505	450	750	* 760
8	1.240	1.180	* 904	500	475	490	856	894	466	460	630	806
9	1.500	1.200	908	470	592	490	761	960	553	450	520	720
10	1.520	1.200	887	460	610	484	* 719	999	667	450	490	650
11	1.520	1.220	876	430	590	499	592	964	601	440	510	592
12	1.540	1.230	691	400	520	499	544	996	481	440	440	613
13	1.500	1.210	311	360	* 496	487	568	950	410	440	390	613
14	1.500	* 1.300	346	380	526	480	589	828	380	450	360	733
15	1.550	1.300	370	390	410	481	604	758	427	520	440	722
16	1.580	1.320	339	410	487	487	556	744	810	570	* 550	726
17	1.600	867	559	440	574	460	466	761	690	560	565	716
18	1.600	752	630	410	493	472	433	730	560	540	574	733
19	1.620	748	565	380	460	472	383	716	600	540	568	803
20	1.590	758	622	360	460	472	375	655	530	580	556	834
21	1.350	712	625	380	487	472	386	604	440	580	559	926
22	985	687	650	424	466	505	399	514	390	600	559	904
23	1.160	684	653	436	475	604	535	553	350	660	568	915
24	1.460	634	634	362	454	750	538	616	330	690	613	915
25	1.460	647	585	360	454	631	559	553	320	650	630	915
26	1.520	653	604	338	454	607	604	559	300	640	620	910
27	1.500	755	658	457	514	631	688	562	283	640	600	900
28	1.450	592	688	487	520	726	730	502	292	630	630	930
29	1.470	604	750	445	-	890	674	469	294	670	640	932
30	1.470	631	733	427	-----	901	661	460	299	700	630	950
31	1.490	-----	716	454	-----	932	-----	405	-----	820	590	-----
Total	43,815	30,504	20,732	16,196	14,070	17,484	18,395	21,533	13,967	16,707	19,542	22,721
Mean	1,413	1,017	669	522	502	564	613	695	466	539	630	757
Ac-ft	86,910	60,500	41,120	32,120	27,910	34,680	36,490	42,710	27,700	33,140	38,760	45,070

Calendar year 1962: Max 6,210 Min 311 Mean 1,712 Ac-ft 1,240,000  
 Water year 1962-63: Max 1,620 Min 283 Mean 700 Ac-ft 507,100

\* Discharge measurement made on this day.

Note.--No gage-height record Jan. 5-21, Feb. 10-12, Mar. 8, 9, 14, 20, June 16-26, July 2 to Aug. 16, Aug. 25 to Sept. 1, Sept. 9, 10, 25-28.



## 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 1963.

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.--19 years, 73.7 cfs (53,360 acre-ft per year).

Extremes.--Maximum discharge during year, 298 cfs May 9 (gage height, 4.14 ft); minimum daily determined, 6 cfs Sept. 25, 27-30. 1944-63: 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 ice effect or 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)

2.2	5.5	3.0	48
2.3	8.0	3.3	89
2.5	16	3.6	150
2.7	26	4.0	260

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	13	16					30	55	96	46	9.6	40
2	* 12	16					32	56	115	42	12	30
3	12	16					* 28	65	160	43	20	28
4	11	16					24	84	132	42	20	18
5	12	16					27	98	115	37	22	14
6	12	16					32	130	96	34	39	13
7	13	14					38	155	94	32	* 35	13
8	12	b 13		(*)	11		43	187	103	34	30	13
9	13	b 13					40	238	118	* 56	27	13
10	12	b 14					40	241	100	48	25	12
11	14	b 13		8		10	39	241	87	38	54	* 11
12	16	13					43	217	84	34	89	10
13	15	13					54	184	107	30	52	8.5
14	16	12					64	* 190	113	26	36	8
15	17	13					62	184	132	26	28	7
16	20	13	8.5				* 49	206	208	22	23	7
17	21	12					45	197	164	20	24	7
18	21	10					45	211	* 157	18	24	6.5
19	20	11					40	206	160	18	19	10
20	20	12					36	174	135	16	18	15
21	19	12					34	182	122	16	16	8
22	18	11					34	152	115	18	13	7
23	18	11			10		30	141	105	19	14	8
24	34	10					34	146	98	19	15	7
25	24	9					39	143	87	19	12	6
26	18	9.5		11		15	56	126	79	16	10	7
27	16	9			(*)		74	120	71	14	13	6
28	16	* 8.5					56	* 120	62	13	11	6
29	16	8.5					47	128	56	12	10	6
30	* 17	8		(*)			* 47	130	50	11	10	6
31	16	-----			-----		-----	122	-----	10	19	-----
Total	514	368.5	263.5	281	295	365	1,262	4,829	3,321	829	749.6	351.0
Mean	16.6	12.3	8.5	9.1	10.5	11.8	42.1	156	111	26.7	24.2	11.7
Ac-ft	1,020	731	523	557	585	724	2,500	9,580	6,590	1,640	1,450	696

Calendar year 1962: Max 688 Min - Mean 109 Ac-ft 78,870

Water year 1962-63: Max 241 Min - Mean 36.8 Ac-ft 26,640

Peak discharge (base, 520 cfs).--No peak above base.

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 12 to Apr. 3 (stage-discharge relation affected by ice during most of period), Aug. 26 to Sept. 30.

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 1963.

Gage.--Water-stage recorder. Altitude of gage is 8,544 ft (from topographic map).

Average discharge.--11 years, 32.1 cfs (23,240 acre-ft per year).

Extremes.--Maximum discharge during year, 195 cfs May 11 (gage height, 3.42 ft); minimum daily, 5.2 cfs July 31.  
1952-63: Maximum discharge, 482 cfs May 12, 1962 (gage height, 4.80 ft); maximum gage height, 5.49 ft Apr. 18, 1962 (backwater from ice); minimum daily discharge, 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 May 26				May 27 to Sept. 30			
1.8	5.0	2.7	83	1.8	3.0	2.5	52
1.9	8.0	3.0	125	2.0	9.0	2.8	95
2.0	14	3.5	212	2.1	14	3.0	125
2.3	39			2.3	31		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*8.6	8.5					90	43	46	11	5.5	18
2	7.4	8.5					85	*44	61	11	11	11
3	7.4	8.5					80	47	83	12	13	8.6
4	7.7	8.5					70	54	50	14	13	7.6
5	8.0	9					62	68	49	12	*15	7.2
6	9.8	9					66	88	42	12	14	8.3
7	10	8					77	90	35	11	11	9.6
8	12	8					107	104	33	10	11	10
9	9.2	8.5					94	128	56	*15	12	*8.6
10	8.6	9					76	134	44	14	13	8.3
11	8.0	9				12	71	142	33	12	21	9.0
12	7.7	8.5					71	113	28	14	16	8.3
13	7.7	8.5					73	*104	26	13	11	8.3
14	7.7	9					72	101	25	9.6	8.3	8.6
15	8.6	9.5					62	102	26	9.0	8.0	9.0
16	12	9.5	9	8	10		56	106	98	9.6	9.0	8.0
17	15	9					48	94	*46	11	11	7.6
18	15	8.5					34	90	46	8.3	14	7.6
19	16	8.5					29	85	45	7.6	9.0	7.2
20	16	9					33	79	32	7.2	8.0	7.6
21	16	10					32	76	26	7.6	9.6	9.6
22	16	10					27	81	22	8.0	13	8.3
23	13	9					29	89	19	8.0	9.6	7.6
24	12	9					28	78	17	8.3	8.6	6.6
25	9.8	9					35	70	16	7.2	7.6	6.2
26	8.6	9.5				20	44	67	15	6.6	7.6	6.2
27	8.6	9.5					49	*60	14	6.2	8.6	6.2
28	8.6	*10				(*)	36	58	13	5.8	8.0	5.8
29	8.6	10					34	55	12	5.5	8.0	6.2
30	*8	10					43	51	11	5.5	8.0	6.2
31	8	-----					-----	50	-----	5.2	12	-----
Total	319.6	270.5	279	248	280	460	1,713	2,551	1,069	297.2	334.4	247.3
Mean	10.3	9.02	9	8	10	14.8	57.1	82.3	35.6	9.59	10.8	8.24
Ac-ft	634	537	553	492	555	912	3,400	5,060	2,120	589	663	491

Calendar year 1962: Max 430 Min 6.5 Mean 56.8 Ac-ft 41,150  
Water year 1962-63: Max 142 Min 5.2 Mean 22.1 Ac-ft 16,010

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

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 30 to Mar. 28 (stage-discharge relation affected by ice during most of period). Stage-discharge relation affected by ice Mar. 29 to Apr. 4.

## BIG ALKALI CREEK BASIN

9-608. Big Alkali Creek near Burns, Colo.

Location.--Let 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 1963.

Gage.--Water-stage recorder. Altitude of gage is 7,200 ft (from topographic map).

Average discharge.--5 years, 0.90 cfs (652 acre-ft per year).

Extremes.--Maximum discharge during year, 36 cfs Aug. 5 (gage height, 2.33 ft), from rating curve extended above 1 cfs as explained below; minimum daily determined, 0.1 cfs for many days.

1958-63: 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 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	* 0.3	0.2					0.4	* 0.5	0.6	0.2	0.1	0.2
2	.3	.2					.4	.5	.6	.3	.4	.2
3	.3	.2					.5	.5	.6	.3	.3	.2
4	.3	.2					.5	.6	.6	.3	.2	.2
5	.3	.2					.4	.6	.6	.2	* 4.3	.2
6	.3	.2				0.1	.5	.6	.6	.2	.2	.2
7	.3	b .1					.5	.6	.6	.2	.2	.2
8	.3	.2					.5	.7	.5	.2	.2	* 2.6
9	.3	.2					.5	.8	.5	* .2	.2	.2
10	.3	.2					.5	.8	.5	.2	.5	.2
11	.3	b .1					.5	.8	.5	.2	.2	.2
12	.3	b .1					* .5	.8	.5	.2	.2	.2
13	.3	b .1					.5	* .9	.4	.2	.2	.2
14	.3	b .1					.5	.8	.4	.2	.2	.2
15	.3	.2					.6	.7	.4	.2	.2	.2
16	.3	.2	0.2	0.1	0.1	.2	.5	.7	.6	.2	** .2	.2
17	.3	.2					.5	.7	* .4	.2	.2	.2
18	.3	.2					.5	.7	.6	.2	.3	.2
19	.3	.2					.5	.6	.7	.1	.2	.2
20	.3	.2					.4	.6	.5	.1	.2	.2
21	.3	b .2					.4	.6	.4	.2	.2	.2
22	.3	b .1					.5	.7	.4	.2	.2	.2
23	.3	b .1				.4	.5	.7	.3	.2	.2	.2
24	.3	b .2					.5	.7	.3	.2	.2	.2
25	.3	b .2					.4	.7	.3	.1	.2	.1
26	.3	b .2			(*)	* .4	.5	.8	.3	.1	.2	.1
27	.3	b .2	(*)			.4	.5	* .7	.3	.1	.2	.1
28	.3	* .3				b .3	.5	.6	.5	.1	.2	.1
29	.3	.3		(*)	-	b .4	.5	.6	.2	.1	.2	.1
30	.2	.3			-----	.4	.5	.6	.2	.1	.2	.1
31	* .2	-----			-----	.4	-----	.6	-----	.1	.2	-----
Total	9.0	5.6	6.2	3.1	2.8	7.3	14.5	20.8	13.9	5.6	10.9	7.7
Mean	0.29	0.19	0.2	0.1	0.1	0.24	0.48	0.67	0.46	0.18	0.35	0.26
Ac-ft	18	11	12	6.1	5.6	14	29	41	28	11	27	15

Calendar year 1962: Max 23 Min 0 Mean 2.64 Ac-ft 1,910

Water year 1962-63: Max 4.3 Min - Mean 0.29 Ac-ft 213

Peak discharge (base, 30 cfs).--Aug. 5 (2100) 36 cfs (2.33 ft).

\* Discharge measurement made on this day.

\*\* Field estimate made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 28 to Mar. 26 (stage-discharge relation affected by ice during part of period), Aug. 2-4, 6-15, Sept. 9, 21-30.

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 1963. 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.--34 years, 54.0 cfs (39,090 acre-ft per year).

Extremes.--Maximum discharge during year, 100 cfs May 11 (gage height, 3.36 ft); minimum not determined.

1910-25, 1944-63: 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 periods of ice effect or no gage-height record, which are poor. Transmountain diversions above station by Columbine, Ewing, and Wurtz 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 Apr. 2, 3)

2.4	6.0	3.0	53
2.5	9.0	3.3	102
2.7	21		

Discharge, in cubic feet per second, water year October 1962 to September 1963											
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Sept.
1	*14	14	12				20	34	49	29	14
2	12	14	12				19	34	57	30	17
3	12	12	b 12				*15	36	67	29	21
4	13	13	*12		(*)	(*)	14	47	54	30	32
5	13	12	12				14	53	48	26	45
6	13	12					17	59	46	28	63
7	13	b 11		(*)		10	26	64	45	27	*40
8	13	b 11					33	64	43	*26	45
9	13	b 11					32	76	57	29	56
10	13	b 11					34	77	53	21	42
11	14	12					32	79	46	26	53
12	12	b 11					34	77	40	24	57
13	13	b 11					38	*72	38	22	45
14	15	12					10	41	37	21	26
15	18	12					9.0	40	36	20	20
16	19	12		8	8	10	30	81	56	18	20
17	22	b 11				10	26	79	*52	14	21
18	20	b 10				12	24	81	53	15	37
19	20	b 10				12	22	81	57	15	37
20	20	12				10	20	76	48	14	33
21	19	12				10	19	72	64	14	36
22	25	b 12				9.0	20	76	60	15	33
23	24	b 11				10	22	79	52	18	37
24	22	b 11				10	26	76	47	20	43
25	19	b 11				9.5	29	67	42	15	39
26	16	12				10	40	66	38	14	39
27	14	b 12				12	39	*61	30	21	66
28	12	b 11				15	28	59	28	15	56
29	12	b 10				18	*24	57	26	14	56
30	*12	b 11				18	27	56	26	14	46
31	12					20		52		14	46
Total	489	347	320	248	224	344.5	805	2,039	1,395	648	1,221
Mean	15.8	11.6	10.3	8	8	11.1	26.8	65.8	46.5	20.9	39.4
Ac-ft	970	688	635	492	444	683	1,600	4,040	2,770	1,290	2,420

Calendar year 1962: Max 283 Min 3 Mean 51.1 Ac-ft 36,980  
Water year 1962-63: Max 81 Min - Mean 23.9 Ac-ft 17,300

Peak discharge (base, 280 cfs).--No peak above base.

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Oct. 24-30, Dec. 4 to Mar. 13 (stage-discharge relation affected by ice during most of period).

## EAGLE RIVER BASIN

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 1963. 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 2½ to 2.8 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.--27 years, 87.7 cfs (63,490 acre-ft per year).

Extremes.--Maximum discharge during year, 472 cfs June 18 (gage height, 2.95 ft); minimum not determined.

1910-18, 1944-63: 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 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)

1.1	5.0	1.9	78
1.3	12	2.2	157
1.5	23	2.5	285
1.7	43	2.7	380

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*12						20	58	281	101	11	54
2	11						22	68	285	99	14	43
3	10						*26	83	251	101	32	38
4	8.8		(*)		(*)	(*)	30	119	247	101	40	32
5	8.4						34	154	243	91	50	30
6	8.4					4	36	219	231	81	81	50
7	8.8			(*)			40	268	260	70	*58	68
8	8.8						50	294	268	*70	116	60
9	8.0						60	350	264	94	96	49
10	7.7						55	298	189	99	81	42
11	7.1						55	316	167	74	104	*43
12	6.8						70	298	192	62	96	36
13	6.5						86	*260	260	52	83	31
14	6.2						74	264	303	48	62	28
15	6.8						74	239	303	42	49	28
16	8.4	5	3.5	3	4	7	*62	326	340	36	44	24
17	10						50	335	*281	39	50	21
18	11						46	380	335	33	58	19
19	11						42	355	330	28	43	18
20	12						35	326	285	26	38	18
21	12						32	330	251	24	34	18
22	11						32	303	227	23	31	17
23	10						32	316	211	27	33	16
24	10						38	335	192	42	34	16
25	b 8.5					15	40	316	174	32	30	16
26	b 8						60	277	160	28	36	15
27	b 7.5						81	*268	147	23	81	14
28	b 7						68	298	134	17	70	12
29	b 6.5						*58	303	122	16	52	12
30	*6						55	316	110	14	46	11
31	5.5							321		11	54	
Total	269.7	150	108.5	93	112	275	1,463	9,393	7,043	1,604	1,707	879
Mean	8.70	5	3.5	3	4	8.9	48.8	271	235	51.7	55.1	29.3
Ac-ft	835	298	215	184	222	545	2,900	16,650	13,970	3,180	3,390	1,740

Calendar year 1962: Max 562 Min - Mean 90.4 Ac-ft 65,480  
 Water year 1962-63: Max 380 Min - Mean 60.5 Ac-ft 43,830

Peak discharge (base, 710 cfs).--No peak above base.

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Oct. 30 to Apr. 12 (stage-discharge relation affected by ice during most of period).

9-651. Cross Creek near Minturn, Colo.

Location.--Lat 39°34'05", long 106°24'45", in SW¼ sec.36, T.5 S., R.81 W., on right bank 0.4 mile upstream from mouth and 1½ miles southeast of Minturn.

Drainage area.--33.5 sq mi.

Records available.--May 1956 to September 1963 (discontinued).

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.--7 years, 50.7 cfs (36,710 acre-ft per year).

Extremes.--Maximum discharge during year, 324 cfs June 15 (gage height, 4.37 ft); minimum daily, 0.1 cfs Dec. 27-31, Jan. 6-8, 11-15. 1956-63: Maximum discharge, 754 cfs June 30, 1957; maximum gage height, 5.54 ft July 18, 1957; minimum daily discharge, 0.1 cfs Dec. 27-31, 1962, Jan. 6-8, 11-15, 1963.

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 16 to July 26)

2.2	0.2	3.0	40
2.3	1.4	3.4	90
2.4	3.0	3.8	163
2.6	9.0	4.2	270
2.8	21		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*8.6	5.0	1.4	0.2	0.2	1.2	5.5	21	163	77	19	46
2	8.6	5.0	1.4	.2	.3	1.2	6	22	172	75	20	38
3	8.0	5.5	1.4	.2	.4	1.2	*5.5	26	124	77	34	31
4	7.6	4.8	*1.4	.2	*.5	*1.3	6	44	115	73	35	27
5	7.6	4.0	1.4	.2	.6	1.4	7	58	114	66	48	26
6	7.6	4.0	1.4	.1	.8	1.4	8	72	115	62	112	40
7	6.9	4.0	1.4	*.1	1.0	1.4	10	124	126	56	*61	51
8	6.9	3.8	1.4	.1	1.0	1.4	14	132	135	*57	68	47
9	6.9	3.6	1.6	.2	1.0	1.4	17	161	143	108	72	38
10	6.6	3.6	1.6	.2	1.0	1.3	16	178	102	102	82	32
11	6.2	3.6	1.2	.1	.8	1.2	14	137	83	75	119	*30
12	5.5	3.4	1.0	.1	.6	1.1	15	163	96	60	89	28
13	5.2	3.0	.8	.1	.6	1.0	20	*154	161	47	73	25
14	5.0	2.6	.8	.1	.8	.9	27	148	216	44	54	24
15	5.0	2.6	1.0	.1	1.0	.9	30	126	234	39	44	23
16	6.6	2.8	1.2	.2	1.1	.9	26	172	255	33	38	21
17	7.2	2.8	1.2	.2	1.1	.9	18	172	*178	36	40	19
18	8.0	2.6	1.2	.2	1.1	.9	14	222	225	33	39	18
19	8.3	2.6	1.0	.2	1.1	.9	14	222	213	30	31	15
20	9.5	2.6	1.2	.2	1.1	1.0	12	185	174	28	28	15
21	9.0	2.4	1.2	.2	1.1	1.1	10	188	165	28	30	14
22	8.3	2.4	1.0	.2	1.1	1.4	10	133	176	28	27	12
23	7.6	2.4	1.0	.2	1.1	2.0	10	128	167	34	26	9.5
24	7.2	2.2	1.0	.2	1.1	2.4	10	154	141	45	28	8.6
25	6.9	2.0	.8	.2	1.1	2.8	11	143	124	38	26	8.3
26	6.6	2.0	.2	.2	1.1	2.6	19	132	120	34	31	7.2
27	5.8	1.8	.1	.2	1.1	2.8	25	*141	108	28	58	7.6
28	5.5	1.6	.1	.2	1.2	3.0	20	156	105	26	46	6.6
29	5.5	1.6	.1	.2	-	3.6	*14	163	86	25	35	6.6
30	*5.0	1.6	.1	.2	-----	4.4	17	172	77	22	31	6.2
31	5.0	-----	.1	.2	-----	5.0	-----	195	-----	18	39	-----
Total	214.2	91.9	30.7	5.4	25.0	54.0	431.0	4,244	4,413	1,504	1,483	680.6
Mean	6.91	3.06	0.99	0.17	0.89	1.74	14.4	137	147	48.5	47.8	22.7
Ac-ft	425	182	61	11	50	107	855	8,420	8,750	2,980	2,940	1,350

Calendar year 1962: Max 380 Min 0.1 Mean 58.3 Ac-ft 42,250  
Water year 1962-63: Max 255 Min 0.1 Mean 36.1 Ac-ft 26,130

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

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 7 to Jan. 17 (no gage-height record Nov. 28 to Dec. 1, Dec. 5 to Jan. 7), Feb. 1-15, Mar. 22 to Apr. 9.

## EAGLE RIVER BASIN

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 3½ miles north of Wolcott.

Drainage area.--27 sq mi, approximately.

Records available.--October 1958 to September 1963.

Gage.--Water-stage recorder. Altitude of gage is about 7,300 ft (estimated from nearby level line).

Average discharge.--5 years, 2.24 cfs (1,620 acre-ft per year).

Extremes.--Maximum discharge during year, 295 cfs Aug. 10 (gage height, 5.50 ft), from rating curve extended above 15 cfs as explained below; minimum daily determined, 0.1 cfs Sept. 3-6, 10-30.  
1958-63: 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 at times most years.

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

Discharge, in cubic feet per second, water year October 1962 to September 1963												
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.0	0.7					1.0	2.7	1.3	0.7	0.5	0.2
2	*.9	.6					1.2	3.4	2.0	.6	.5	.2
3	.9	.6					*1.4	4.5	2.4	3.6	.6	.1
4	.9	.6	(*)				1.8	4.7	1.8	1.4	.6	*.1
5	.9	.6					1.6	4.7	1.4	1.2	1.6	.1
6	.9	.7					1.6	4.7	1.2	.9	.8	.1
7	.9	.7					1.9	4.5	1.2	.7	*.7	.2
8	.9	.7		(*)			2.2	4.5	1.0	.6	5.5	4.3
9	.9	.7					2.2	5.1	1.4	*.7	3.2	.2
10	.9	.7					2.0	4.3	1.2	.6	1.7	.1
11	.9	.7					1.8	3.6	.9	.4	1.0	.1
12	.9	.8					1.8	3.4	.9	.5	.8	.1
13	.9	.8					1.8	3.0	.7	.5	.7	.1
14	.9	.7					1.9	*2.7	.6	.4	.6	.1
15	.9	.9					1.9	2.7	.7	.4	.5	.1
16	1.4	.8	0.5	0.2	0.5	1	1.8	2.5	2.9	.3	**4	.1
17	1.2	.8					1.6	2.4	1.8	.3	.4	.1
18	1.0	.8					1.4	2.2	*2.0	.3	.4	.1
19	1.3	.7					2.0	2.0	1.9	.2	.3	.1
20	1.2	.7					1.4	2.0	1.2	.2	.3	.1
21	.9	.7					1.3	1.9	.9	.2	.3	.1
22	.9	.8					1.2	1.9	.6	.3	.3	.1
23	.9	.8					1.4	1.9	.6	3.7	.3	.1
24	.9	.7					1.2	1.8	.4	2.0	.3	.1
25	.9	.6					1.0	1.9	.4	1.6	.3	.1
26	.8	.6			(*)		1.8	1.8	.3	1.4	.3	.1
27	.7	.7	(*)				2.9	*1.6	.3	1.2	.4	.1
28	.7	.7					2.4	1.6	.3	1.0	.3	.1
29	*.7	.6		(*)	-		1.9	1.6	.2	.9	.2	.1
30	.6	.5			-----		*1.8	1.4	.3	.8	.2	.1
31	.6	-----			-----		-----	1.4	-----	.6	-----	-----
Total	28.3	21.0	15.5	6.2	14.0	31	51.2	88.4	32.8	28.2	54.3	7.6
Mean	0.91	0.70	0.5	0.2	0.5	1	1.71	2.85	1.09	0.91	1.75	0.25
Ac-ft	56	42	31	12	28	61	102	175	65	56	108	15

Calendar year 1962: Max 40 Min 0 Mean 6.65 Ac-ft 4,820  
Water year 1962-63: Max 17 Min - Mean 1.04 Ac-ft 751

Peak discharge (base, 15 cfs)							
Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
7-3	1600	3.92	73	8-10	1700	Unknown	+170
7-23	2200	4.38	114	8-31	2130	3.03	21
8-5	2230	5.50	295	9-8	1300	Unknown	+150
8-8	1400	3.73	53				

† About.

\* Discharge measurement made on this day.

\*\* Field estimate made on this day.

Note.--No gage-height record Dec. 4 to Apr. 3 (stage-discharge relation affected by ice during most of period), July 4-9, 24-31, Aug. 1-4, 6, 7, 11-16. Stage-discharge relation affected by ice Nov. 4, 5, 7, 8, 10-13, Nov. 18 to Dec. 3.

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 1963.

**Gage.**--Water-stage recorder. Altitude of gage is 7,450 ft (estimated from nearby level line).

**Average discharge.**--13 years, 43.7 cfs (31,640 acre-ft per year).

**Extremes.**--Maximum discharge during year, 130 cfs June 19 (gage height, 3.31 ft); maximum gage height, 4.85 ft Dec. 29 (backwater from ice); minimum daily discharge, 14 cfs Dec. 27, 28.

1950-63: 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 good 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)

2.4	13	3.0	66
2.6	24	3.2	105
2.8	41		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	30	30	24	20	19	18	23	22	50	33	22	37
2	*30	30	24	22	19	18	22	22	58	32	24	36
3	30	29	*24	24	18	18	*20	20	71	33	28	33
4	29	29	23	24	*18	18	20	20	68	34	38	30
5	29	29	23	22	18	*19	21	29	53	36	48	29
6	29	28	22	20	18	19	23	48	49	36	55	44
7	30	27	23	20	18	b18	24	53	45	35	50	52
8	29	27	23	*20	18	18	26	53	50	36	*51	50
9	29	27	22	20	18	18	26	78	68	*46	44	56
10	28	27	21	20	18	18	24	55	58	49	43	48
11	26	27	22	18	18	18	23	71	52	44	60	*43
12	26	26	22	16	b15	18	23	69	52	40	58	37
13	26	27	21	19	b15	18	25	58	59	36	50	35
14	26	27	21	20	b17	b18	26	*65	65	34	42	33
15	26	28	22	22	18	18	28	53	68	31	36	32
16	28	27	21	22	18	18	25	80	80	30	32	30
17	30	26	21	22	17	18	24	71	73	29	30	29
18	30	26	22	22	17	18	23	22	*76	29	30	28
19	30	25	22	20	17	18	20	83	92	28	27	28
20	30	26	22	20	17	19	20	71	69	27	27	26
21	30	26	21	20	18	19	20	76	55	27	28	26
22	30	25	21	20	18	19	19	56	51	28	26	25
23	30	25	22	19	18	21	18	56	49	29	27	24
24	29	25	22	19	18	20	19	59	46	29	31	24
25	30	25	b20	20	18	19	19	48	44	29	27	23
26	28	24	b16	19	18	20	20	46	43	28	26	23
27	27	24	b14	18	18	21	26	62	40	26	29	22
28	27	24	b14	18	18	22	30	*68	37	25	29	22
29	*28	24	b16	20	-	24	26	65	36	24	27	22
30	29	24	18	20	-----	23	*23	65	35	23	27	22
31	30	-----	19	20	-----	23	-----	59	-----	22	32	-----
Total	889	794	648	626	495	594	686	1,773	1,692	988	1,104	969
Mean	28.7	26.5	20.9	20.2	17.7	19.2	22.9	57.2	56.4	31.9	35.6	32.3
Ac-ft	1,760	1,570	1,290	1,240	982	1,180	1,360	3,520	3,360	1,960	2,190	1,920

Calendar year 1962: Max 228 Min 11 Mean 54.3 Ac-ft 39,280

Water year 1962-63: Max 92 Min 14 Mean 30.8 Ac-ft 22,330

Peak discharge (base, 160 cfs).--No peak above base.

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 30 to Jan. 31 (stage-discharge relation affected by ice during part of period).



## EAGLE RIVER BASIN

9-700. Eagle River below Gypsum, Colo.

**Location.**--Lat 39°39'00", long 106°57'10", 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 1963.

**Gage.**--Water-stage recorder. Altitude of gage is 6,270 ft.

**Average discharge.**--17 years, 583 cfs (422,100 acre-ft per year).

**Extremes.**--Maximum discharge during year, 2,050 cfs Aug. 6 (gage height, 6.12 ft); minimum daily, 110 cfs Dec. 26, 27.

1946-63: 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, Dec. 26, 27, 1962.

**Remarks.**--Records good except those for periods of ice effect, which are fair. 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 tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Aug. 6

Aug. 7 to Sept. 30

2.9	110	4.5	790	3.5	140
3.0	125	5.0	1,180	3.8	200
3.2	175	6.0	2,200	4.0	255
3.5	280			4.4	440
4.0	500			5.0	870

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	205	280	230	190	252	163	240	222	986	485	172	370
2	*208	272	233	202	236	163	256	240	1,040	475	178	335
3	208	268	*230	219	199	166	219	244	1,040	505	219	302
4	202	264	226	b 220	196	160	*208	316	962	500	256	276
5	212	264	222	b 200	196	*151	208	400	888	460	308	255
6	219	260	216	b 190	196	160	216	583	825	432	645	336
7	226	256	222	b 190	190	151	240	790	832	423	528	365
8	222	244	226	*b 190	187	157	296	839	888	405	*428	398
9	222	244	219	b 190	190	160	308	1,130	938	*525	476	360
10	226	260	202	b 190	187	154	292	1,030	839	556	570	326
11	226	272	190	b 180	172	160	272	1,070	701	490	612	322
12	226	260	196	b 160	133	157	264	1,110	695	432	626	*318
13	230	248	196	b 170	141	157	280	923	874	387	535	294
14	230	268	184	b 180	169	145	312	*954	1,010	352	410	272
15	233	276	199	b 200	190	157	360	832	1,140	340	330	258
16	252	280	199	b 210	181	157	332	1,070	1,300	320	283	249
17	268	264	205	216	166	154	308	1,090	1,180	292	286	234
18	272	260	193	199	181	160	284	1,310	*1,100	276	290	212
19	284	256	205	184	169	157	260	1,350	1,370	264	283	208
20	284	260	208	181	172	157	248	1,150	1,100	248	255	210
21	276	252	199	178	172	166	230	1,240	1,030	252	249	208
22	268	252	191	172	169	181	219	1,050	978	248	231	205
23	276	248	196	166	169	193	205	994	909	244	231	200
24	288	240	196	175	166	199	216	1,070	839	276	252	208
25	288	240	b 150	166	166	184	219	1,030	770	276	249	195
26	288	240	b 110	169	160	181	240	954	719	244	240	182
27	280	236	b 110	169	166	187	308	916	659	226	330	171
28	280	230	114	178	172	205	320	*1,000	611	219	370	161
29	*276	230	141	*178	-	248	272	1,070	572	202	322	159
30	284	230	160	175	-----	233	*240	1,060	515	193	294	154
31	280	-----	166	202	-----	233	-----	1,140	-----	184	322	-----
Total	7,739	7,654	5,934	5,789	5,043	5,356	7,872	28,187	27,310	10,731	10,780	7,743
Mean	250	255	191	187	180	173	262	909	910	346	348	258
Ac-ft	15,350	15,180	11,770	11,480	10,000	10,620	15,610	55,910	54,170	21,280	21,380	15,360

Calendar year 1962: Max 3,700 Min 110 Mean 746 Ac-ft 540,000  
 Water year 1962-63: Max 1,370 Min 110 Mean 357 Ac-ft 258,100

Peak discharge (base, 3,500 cfs).--No peak above base.

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

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 1963.

Average discharge.--23 years, 2,163 cfs (1,566,000 acre-ft per year).

Extremes.--Maximum discharge during year, 3,520 cfs May 11 (gage height, 4.48 ft); minimum daily, 500 cfs Jan. 13.  
1940-63: 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 or no gage-height record, 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)

1.9	760	3.0	1,660
2.0	820	4.0	2,870
2.5	1,200	5.0	4,250

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,200	2,220	1,160	950	950	904	1,840	1,220	2,010	1,020	932	1,220
2	*1,680	2,230	1,190	1,000	950	900	1,820	1,140	1,980	976	1,000	1,210
3	1,740	2,250	1,180	1,200	900	950	1,560	1,280	2,090	976	1,100	1,110
4	1,720	2,090	*1,180	1,400	900	800	*1,230	1,420	2,100	1,060	1,400	1,020
5	1,740	2,120	1,350	1,500	900	*778	1,200	1,660	2,110	1,100	1,440	1,030
6	1,740	2,040	1,330	1,200	950	869	1,260	1,860	2,000	1,140	1,780	1,210
7	1,790	1,810	1,370	900	950	808	1,290	2,340	1,880	1,060	1,670	1,370
8	1,700	1,770	1,430	800	950	827	1,420	2,570	1,870	1,020	*1,460	1,420
9	1,820	1,770	1,420	800	900	834	1,700	2,920	1,910	*1,100	1,260	1,460
10	2,100	1,820	1,390	800	950	834	1,520	2,960	1,980	1,260	1,280	1,360
11	2,130	1,860	1,370	800	900	862	1,410	3,200	1,860	1,180	1,480	1,200
12	2,150	1,870	1,390	600	800	841	1,260	3,240	1,700	1,110	1,560	*1,140
13	2,170	1,850	1,200	500	800	834	1,290	3,000	1,750	1,050	1,440	1,100
14	2,120	1,880	b 800	600	750	784	1,440	2,910	1,850	992	1,140	1,100
15	2,160	1,980	b 950	700	750	834	1,510	*2,680	1,950	992	1,010	1,180
16	2,300	2,030	b 900	700	900	827	1,430	2,900	2,310	939	925	1,160
17	2,350	1,990	b 900	750	850	827	1,290	2,940	2,940	976	968	1,140
18	2,380	1,380	b 950	800	900	814	1,170	3,140	2,690	1,020	1,100	1,110
19	2,440	1,320	b1,150	800	900	827	1,080	3,280	*2,880	968	1,120	1,120
20	2,440	1,340	b1,150	750	900	827	1,000	2,970	2,530	946	1,090	1,180
21	2,360	1,340	b1,150	750	850	834	946	2,960	2,240	925	1,060	1,290
22	1,880	1,280	1,100	750	900	890	932	2,680	2,040	939	1,060	1,320
23	1,670	1,250	1,200	800	950	976	904	2,470	1,850	976	1,050	1,300
24	1,960	1,240	1,200	800	900	1,100	1,020	2,560	1,670	1,030	1,100	1,310
25	2,280	1,200	1,000	800	900	1,150	1,050	2,530	1,420	1,100	1,130	1,300
26	2,120	1,220	700	750	814	1,030	1,120	2,290	1,370	1,060	1,140	1,260
27	2,240	1,220	600	700	862	1,040	1,230	2,220	1,270	992	1,190	1,240
28	2,220	1,290	750	700	904	1,170	1,460	*2,230	1,190	960	1,280	1,220
29	2,180	1,110	800	700	-	1,450	1,380	2,230	1,170	953	1,240	1,220
30	2,210	1,140	900	750	-----	1,670	*1,230	2,210	1,060	925	1,180	1,260
31	*2,190	-----	950	850	-----	1,690	-----	2,270	-----	918	1,140	-----
Total	63,180	49,910	34,110	25,900	24,830	29,781	38,992	76,260	57,670	31,663	37,725	36,560
Mean	2,038	1,664	1,100	835	887	961	1,300	2,460	1,922	1,021	1,217	1,219
Ac-ft	125,300	99,000	67,660	51,370	49,250	59,070	77,340	151,300	114,400	62,800	74,830	72,520

Calendar year 1962: Max 13,800 Min 600 Mean 3,222 Ac-ft 2,332,000  
Water year 1962-63: Max 3,280 Min 500 Mean 1,388 Ac-ft 1,005,000

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 22 to Feb. 25 (stage-discharge relation affected by ice during most of period), Mar. 2-4.

## COLORADO RIVER MAIN STEM

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 1963. 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.**--64 year, 2,744 cfs (1,987,000 acre-ft per year).

**Extremes.**--Maximum discharge during year, 5,470 cfs May 7 (gage height, 6.34 ft); minimum daily, 509 cfs Jan. 14.  
1899-1963: 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 table (gage height, in feet, and discharge,  
in cubic feet per second)

2.5	343	4.5	2,090
3.0	615	5.0	2,900
3.5	990	6.0	4,740
4.0	1,500		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,270	*2,240	1,240	990	a 1,100	990	1,770	1,350	2,260	1,080	990	1,230
2	*1,520	2,230	1,230	1,070	a 1,050	990	1,830	1,210	2,170	1,080	999	1,350
3	1,830	2,280	1,340	1,260	a 1,000	954	1,580	1,310	2,290	999	1,100	1,210
4	1,820	2,100	1,300	1,510	a 1,000	892	* 1,370	1,410	2,350	1,060	1,400	1,080
5	1,820	2,100	*1,310	1,660	a 1,000	*792	1,280	1,710	2,260	1,140	1,430	1,040
6	1,820	2,050	1,410	1,350	*a 1,000	963	1,270	1,960	2,170	1,250	1,770	1,240
7	1,850	1,880	1,410	1,040	1,010	828	1,310	2,380	2,040	1,140	1,760	1,380
8	1,790	1,820	1,490	876	1,030	909	1,380	2,760	2,010	1,080	*1,570	1,430
9	1,830	1,840	1,500	*836	1,040	868	1,720	3,280	2,040	1,090	1,440	1,540
10	2,150	1,840	1,480	860	990	900	1,560	3,640	2,100	1,360	1,270	1,490
11	2,160	1,900	1,440	868	1,050	852	1,470	3,660	1,990	1,310	1,470	1,390
12	2,160	1,910	1,410	680	799	892	1,370	3,670	1,860	1,160	1,590	* 1,210
13	2,190	1,880	1,350	567	806	876	1,340	3,480	1,850	1,140	1,520	1,120
14	2,150	1,910	868	509	764	927	1,410	3,370	1,950	1,050	1,340	1,160
15	2,160	2,000	1,040	771	909	945	1,560	* 3,150	2,020	*1,040	1,070	1,220
16	2,290	2,050	954	764	892	715	1,540	3,440	2,320	1,010	990	1,220
17	2,380	2,020	954	799	852	990	1,410	3,530	* 3,030	990	990	1,200
18	2,380	1,610	1,020	860	963	876	1,350	3,850	2,810	1,040	1,090	1,210
19	2,490	1,420	1,240	852	963	844	1,220	4,050	2,970	1,010	1,150	1,130
20	2,460	1,390	1,230	820	963	813	999	3,800	2,630	981	1,170	1,250
21	2,380	1,390	1,230	771	884	892	990	3,620	2,290	954	1,100	1,300
22	2,010	1,380	1,200	764	1,010	900	981	3,280	2,080	972	1,050	1,380
23	1,710	1,360	1,290	868	936	972	945	2,950	1,910	1,040	1,050	1,310
24	1,920	1,310	1,290	844	963	1,090	936	3,030	1,760	1,040	1,090	1,390
25	2,230	1,290	1,080	909	990	1,260	1,100	2,990	1,600	1,190	1,150	1,340
26	2,200	1,280	764	828	828	1,140	1,190	2,700	1,490	1,100	1,190	1,370
27	2,260	1,280	648	757	963	1,040	1,350	2,610	1,420	1,040	1,200	1,320
28	2,190	1,320	736	743	900	1,220	1,500	* 2,540	1,350	1,020	1,310	1,250
29	2,190	1,340	927	a 750	-	1,430	* 1,500	2,540	1,260	990	1,350	1,280
30	2,200	1,210	1,020	a 800	-----	1,660	1,390	2,480	1,170	954	1,230	1,280
31	2,200	-----	1,010	a 950	-----	1,690	-----	2,520	-----	990	1,150	-----
Total	64,710	51,630	36,411	27,926	26,655	31,110	40,621	88,270	61,450	33,300	38,979	38,320
Mean	2,065	1,721	1,175	901	952	1,004	1,354	2,847	2,048	1,074	1,257	1,277
Ac-ft	127,000	102,400	72,220	55,390	52,870	61,710	80,570	175,100	121,900	66,050	77,310	76,010

Calendar year 1962: Max 14,000 Min 648 Mean 3,325 Ac-ft 2,407,000  
Water year 1962-63: Max 4,050 Min 509 Mean 1,476 Ac-ft 1,069,000

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

## 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 1963. 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.--43 years, 152 cfs (110,000 acre-ft per year), including diversion by Twin Lakes tunnel.

Extremes.--Maximum discharge during year, 302 cfs May 20 (gage height, 2.34 ft); minimum daily, 9 cfs Aug. 1. 1910-21, 1931-63: 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 tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Nov. 9

Nov. 9 to Sept. 30

0.8	16	0.2	9	1.0	48
.9	22	.4	14	1.5	110
1.1	39	.6	20	2.0	200
		.8	30	2.5	370

Discharge, in cubic feet per second, water year October 1962 to September 1963												
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	34	*26	24			20	32	*56	138	32	9	33
2	34	26	24			20	*30	60	160	27	10	28
3	*33	26	23			19	26	60	160	27	18	22
4	33	24	24			18	25	81	146	31	19	19
5	32	24	*23		(*)	18	29	100	132	28	67	19
6	31	24	23			*18	28	125	126	34	*85	29
7	32	20	24			19	35	146	124	32	39	44
8	31	18	23			20	41	144	125	23	48	49
9	30	21	22	(*)		19	39	196	125	22	32	43
10	30	20	23			19	40	168	114	*26	32	*40
11	29	23	23			19	37	190	104	24	50	38
12	28	21	23			19	38	162	95	25	44	36
13	28	22	23			20	45	160	108	22	44	35
14	28	24	22			21	52	168	113	19	32	36
15	32	25	22			*20	57	162	118	18	26	36
16	33	25	22	18	16	18	43	*200	112	16	24	35
17	37	24	21			18	42	198	104	14	25	33
18	37	23	20			18	41	228	104	12	50	32
19	37	25	19			18	36	237	102	10	32	31
20	28	25	18			17	35	228	92	9.4	26	32
21	36	25	17			18	33	220	86	9.2	25	36
22	35	24	17			18	32	190	81	9.6	23	35
23	33	25	16			20	33	180	75	10	26	32
24	32	25	15			20	39	174	67	15	25	31
25	29	24	14			20	44	168	*59	10	23	29
26	28	24	10			21	58	164	54	9.6	29	29
27	28	24	12			22	71	148	48	9.5	80	29
28	28	23	14			26	56	158	43	9.5	64	28
29	28	24	15			29	47	*162	38	9.5	51	28
30	27	24	16			28	44	158	33	9.5	39	27
31	28	-----	17		-----	29	-----	152	-----	9.5	36	-----
Total	979	708	609	558	448	629	1,208	4,943	2,986	562.3	1,133	974
Mean	31.6	23.6	19.6	18	16	20.3	40.3	159	99.5	18.1	36.5	32.5
Ac-ft	1,940	1,400	1,210	1,110	889	1,250	2,400	9,800	5,920	1,120	2,250	1,930

Calendar year 1962: Max 948 Min 10 Mean 122 Ac-ft 88,610  
 Water year 1962-63: Max 237 Min 9 Mean 43.1 Ac-ft 31,220

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 23 to Jan. 23, Jan. 10-15. No gage-height record Jan. 4-9, Jan. 16 to Mar. 6 (stage-discharge relation affected by ice during most of period), July 27 to Aug. 1.

## ROARING FORK BASIN

9-780. Fryingpan River at Norrie, Colo.

(Formerly published as Fryingpan Creek at Norrie)

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 1963. Prior to October 1962, published as Fryingpan Creek at Norrie.

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.--22 years (1910-16, 1947-63), 125 cfs (90,500 acre-ft per year).

Extremes.--Maximum discharge during year, 540 cfs May 18 (gage height, 3.62 ft); minimum daily, 8 cfs Dec. 26.

1910-17, 1947-63: Maximum discharge, 1,780 cfs June 30, 1957; maximum gage height, 5.55 ft June 28, 1957; minimum daily discharge, 8 cfs Dec. 26, 1962, 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)

1.7	18	2.5	108
1.9	25	3.0	270
2.1	40	3.5	485
2.3	66		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	30	* 24	19	13	20	14	36	* 20	249	108	30	76
2	30	24	20	14	20	14	* 34	99	298	111	39	60
3	* 29	24	19	15	18	13	26	119	298	111	53	55
4	28	23	18	18	17	12	26	159	252	108	66	51
5	27	23	* 18	20	* 17	16	28	200	* 232	108	130	51
6	29	23	18	20	17	* 16	34	270	218	96	* 108	81
7	28	19	19	20	16	12	48	330	228	92	101	79
8	27	23	19	20	15	12	60	372	235	87	138	83
9	27	25	17	* 20	16	11	50	400	266	103	101	65
10	26	27	15	20	16	12	44	326	214	* 119	94	* 56
11	25	22	13	18	14	13	44	372	196	94	141	56
12	25	23	14	12	12	13	48	359	204	87	150	53
13	25	26	14	15	10	15	60	326	232	77	116	50
14	24	24	13	16	12	15	65	330	260	70	92	51
15	27	23	14	18	13	15	72	* 318	260	63	77	50
16	30	22	15	19	13	14	52	400	282	59	72	47
17	35	23	15	18	10	12	47	426	228	62	74	45
18	34	22	14	16	12	12	46	449	249	56	92	42
19	34	22	16	13	12	13	42	440	260	51	68	40
20	36	22	16	11	10	16	38	431	235	48	65	42
21	34	22	15	10	10	18	36	395	221	50	66	44
22	32	22	14	9	10	20	37	334	207	53	65	41
23	30	20	14	9	9	22	40	338	193	55	77	38
24	29	20	13	9	9	19	52	326	182	66	72	37
25	27	22	11	10	9	17	68	318	* 168	55	63	35
26	26	20	8	10	10	20	103	290	159	50	65	34
27	24	19	9	9	11	22	106	282	147	45	124	32
28	24	19	10	10	12	28	74	278	141	40	96	31
29	23	20	10	11	-	32	63	286	130	37	76	32
30	24	20	12	11	-----	34	72	298	116	36	66	31
31	24	-----	12	14	-----	32	-----	274	-----	34	70	-----
Total	873	668	454	448	370	534	1,551	9,635	6,560	2,231	2,647	1,488
Mean	28.2	22.3	14.6	14.5	13.2	17.2	51.7	311	219	72.0	85.4	49.6
Ac-ft	1,730	1,320	900	889	734	1,060	3,080	19,110	13,010	4,430	5,250	2,950

Calendar year 1962: Max 800 Min 8 Mean 136 Ac-ft 98,690

Water year 1962-63: Max 449 Min 8 Mean 75.2 Ac-ft 54,460

Peak discharge (base, 760 cfs).--No peak above base.

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 18 to Apr. 14 (no gage-height record Dec. 25 to Mar. 6).

9-785. North Fork Fryingpan River near Norrie, Colo.

(Formerly published as North Fork Fryingpan Creek near Norrie)

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 1963. Prior to October 1962, published as North Fork Fryingpan Creek near Norrie.

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.--22 years (1910-16, 1947-63), 52.9 cfs (38,300 acre-ft per year).

Extremes.--Maximum discharge during year, 275 cfs May 8 (gage height, 3.83 ft); minimum not determined.

1910-17, 1947-63: 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 no gage-height record, which are poor. One small diversion bypasses station for domestic use and irrigation of pasture.

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		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7.2	(*)					24	* 43	148	45	7.8	30
2	6.6						* 26	44	164	41	10	23
3	* 6.0						24	54	173	46	16	19
4	5.5						18	87	150	51	18	17
5	4.8		(*)		(*)		20	113	* 135	39	36	16
6	5.2				4.5	(*)	22	148	127	34	* 53	30
7	5.8					3.5	26	173	127	33	29	26
8	5.8						32	202	130	31	28	31
9	5.2			(*)			30	216	148	33	29	24
10	4.8						28	180	113	* 47	26	* 22
11	4.2						28	176	94	37	34	22
12	4.0						30	170	96	30	35	19
13	3.8						34	156	123	26	33	17
14	3.5						40	153	142	24	25	16
15	5.2						44	* 150	148	22	20	15
16	7.2	5	4	3.5			36	192	183	20	18	14
17	9.3						30	192	140	20	19	13
18	9.3						30	216	153	18	22	11
19	9.3						28	206	161	17	18	10
20	9.6						26	198	180	16	16	10
21	8.4					4.5	24	206	142	14	16	10
22	7.8						24	189	127	14	14	9.9
23	6.9						22	198	115	16	14	8.7
24	6.3						28	192	100	19	15	8.7
25	5.5						40	173	* 90	15	14	8.1
26	5.0						57	153	77	14	13	7.5
27	4.5						75	150	69	12	37	6.9
28	4.5					10	50	153	64	10	37	6.6
29	4.5						38	164	59	9.3	25	6.3
30	4.5						38	170	49	8.7	22	6.0
31	5.0							164		7.8	25	
Total	185.2	150	124	108.5	108.0	157.5	972	4,981	3,727	769.8	724.8	473.7
Mean	5.97	5	4	3.5	3.9	5.1	32.4	161	124	24.8	23.4	15.8
Ac-ft	367	298	246	215	214	312	1,930	9,880	7,390	1,530	1,440	940

Calendar year 1962: Max 422 Min - Mean 60.6 Ac-ft 43,880

Water year 1962-63: Max 216 Min - Mean 34.2 Ac-ft 24,760

Peak discharge (base, 420 cfs).--No peak above base.

\* Discharge measurement made on this day.

Note.--No gage-height record Nov. 1 to Apr. 25 (stage-discharge relation affected by ice during most of period).

## ROARING FORK BASIN

9-802. Fryingpan River at Ruedi, Colo.

(Formerly published as Fryingpan Creek at Ruedi)

**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 1963. Prior to October 1962, published as Fryingpan Creek at Ruedi.

**Gage.**--Water-stage recorder. Altitude of gage is 7,500 ft (from river-profile map).

**Extremes.**--Maximum discharge during year, 960 cfs May 8; maximum gage height, 4.02 ft June 19; minimum daily discharge, 22 cfs Jan. 11, 1959-63; Maximum discharge, 1,900 cfs June 14, 1962 (gage height, 4.52 ft); minimum daily, 22 cfs Jan. 11, 1963.

**Remarks.**--Records good except those for period of ice effect or no gage-height record, which are poor. Diversions for irrigation of several hundred acres and small transmountain diversions above station to Arkansas River basin.

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

Oct. 1 to May 27		May 28 to Sept. 30	
1.7	40	2.3	45
2.0	75	2.5	90
2.3	125	2.8	175
2.6	215	3.2	330
3.0	410	3.8	600
3.5	820		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	66	*52	42	34	40	34	83	*159	430	203	61	142
2	65	51	42	36	38	34	*86	171	570	192	65	121
3	*65	51	42	36	38	32	75	184	590	196	88	110
4	62	49	42	36	36	32	67	268	505	206	102	100
5	62	50	*44	36	*36	32	70	330	*455	200	178	95
6	63	52	44	34	36	*32	75	438	418	178	*200	139
7	63	44	42	32	38	30	94	600	418	172	186	151
8	62	42	40	32	38	30	113	676	430	163	200	160
9	61	48	38	*28	38	30	107	820	500	186	175	136
10	59	50	36	26	36	32	107	658	414	*222	160	*118
11	56	50	36	22	34	34	102	712	370	186	210	112
12	55	48	36	24	32	34	105	685	354	172	242	105
13	55	49	38	28	30	36	125	592	402	154	196	95
14	54	54	38	34	32	*40	148	624	475	136	157	90
15	58	56	36	36	36	30	156	*552	525	127	136	95
16	62	54	36	34	36	31	121	703	570	115	124	88
17	68	49	38	32	32	27	109	721	490	118	127	82
18	74	48	38	30	32	27	109	802	475	108	145	80
19	74	b 46	36	30	34	28	99	802	535	105	124	75
20	72	b 46	36	30	32	29	91	739	520	100	110	72
21	68	b 46	36	30	32	31	85	748	450	98	112	75
22	66	b 44	36	30	30	36	85	632	414	102	110	70
23	62	b 42	34	32	30	43	82	640	382	108	115	65
24	60	b 42	32	32	30	44	105	632	350	121	115	63
25	55	b 44	30	30	30	43	119	584	*326	108	110	65
26	53	b 44	24	30	32	46	165	544	302	100	108	61
27	51	b 42	26	30	34	53	223	520	278	95	169	57
28	52	b 42	30	32	34	60	168	500	258	85	169	55
29	52	44	32	32	-	72	138	540	246	80	133	53
30	52	44	32	34	-----	71	135	550	218	72	121	53
31	52	-----	32	36	-----	76	-----	550	-----	65	130	-----
Total	1,879	1,423	1,124	978	956	1,209	3,347	17,676	12,720	4,273	4,378	2,783
Mean	60.6	47.4	36.3	31.5	34.1	39.0	112	570	424	138	141	92.8
Ac-ft	3,730	2,820	2,230	1,940	1,900	2,400	6,640	35,060	25,230	8,480	8,680	5,520

Calendar year 1962: Max 1,660 Min 24 Mean 276 Ac-ft 199,500  
 Water year 1962-63: Max 820 Min 22 Mean 145 Ac-ft 104,600

Peak discharge (base, 1,500 cfs).--No peak above base.

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 29 to Mar. 14 (stage-discharge relation affected by ice during part of period).

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 h'ghway 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 1963.

Gage.--Water-stage recorder. Altitude of gage is 7,380 ft (from river-profile map).

Extremes.--Maximum discharge during year, 1,260 cfs May 20 (gage height, 5.14 ft); minimum daily, 24 cfs Dec. 27.

1959-63: Maximum discharge, 1,680 cfs June 27, 1962 (gage height, 5.65 ft), from rating curve extended above 1,100 cfs; minimum daily, 20 cfs Mar. 6, 12, 1961.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. A few small diversions above station for irrigation of hay meadows.

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

Oct. 1 to Mar. 14

Mar. 15 to Sept. 30

2.1	21	2.1	26	3.4	235
2.3	36	2.3	41	4.0	490
2.6	68	2.6	75	4.5	780
3.0	128	3.0	139	5.0	1,150

Discharge, in cubic feet per second, water year year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	74	53	39	32	55	30	*84	139	836	266	76	100
2	71	*53	38	32	50	30	76	*143	801	278	82	90
3	69	52	38	32	44	32	65	174	585	266	90	83
4	*67	51	38	34	40	32	61	274	*596	274	94	76
5	66	50	38	36	36	30	62	382	656	229	*118	74
6	67	49	*36	36	*34	28	72	525	620	217	98	87
7	66	46	b 36	34	34	*26	84	632	650	217	98	106
8	64	46	b 38	32	34	26	100	674	674	202	90	90
9	63	46	b 36	32	36	28	91	766	580	223	90	*80
10	61	45	b 32	*32	34	30	82	656	418	220	96	75
11	60	44	b 32	30	30	30	76	674	368	*223	147	71
12	58	42	b 34	28	28	30	80	614	480	185	120	66
13	58	42	b 34	28	26	28	102	662	674	170	106	66
14	57	45	32	30	30	*26	133	668	794	157	92	82
15	63	48	34	32	34	b26	145	620	759	147	84	72
16	67	47	34	34	34	b26	115	*822	644	143	80	67
17	71	46	34	34	32	27	100	906	495	143	78	65
18	67	44	34	32	30	28	97	998	500	137	108	62
19	66	44	36	32	32	28	88	1,030	455	128	91	60
20	66	43	36	32	32	29	83	1,060	480	118	87	60
21	63	44	32	32	30	30	78	*1,020	540	117	85	58
22	62	43	32	32	30	34	74	920	530	115	82	55
23	60	42	32	30	30	39	72	843	500	115	90	52
24	57	42	34	30	32	45	83	808	480	112	91	52
25	56	41	32	32	32	43	103	794	431	102	84	50
26	57	41	26	32	30	45	159	794	*408	102	79	48
27	56	40	24	30	30	51	205	801	368	96	112	47
28	56	39	28	28	30	71	161	892	350	87	103	46
29	55	40	32	28	-	115	135	934	318	83	92	45
30	54	39	34	30	-----	84	128	899	292	82	84	45
31	53	-----	34	40	-----	83	-----	871	-----	79	85	-----
Total	1,930	1,347	1,049	988	949	1,210	2,994	21,995	16,262	5,033	2,912	2,030
Mean	62.3	44.9	33.8	31.9	33.9	39.0	99.8	710	542	162	93.9	67.7
Ac-ft	3,830	2,670	2,080	1,960	1,880	2,400	5,940	43,630	32,260	9,980	5,780	4,030

Calendar year 1962: Max 1,480 Min 24 Mean 277 Ac-ft 200,200

Water year 1962-63: Max 1,060 Min 24 Mean 161 Ac-ft 116,400

Peak discharge (base, 1,200 cfs)--May 20 (2200) 1,260 cfs (5.14 ft).

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 5, 6, Dec. 14 to Mar. 14 (stage-discharge relation affected by ice during most of periods).



## ROARING FORK BASIN

9-816. Crystal River above Avalanche Creek, near Redstone, Colo.

Location.--Lat 39°13'55", long 107°13'35", in SW¼ sec.33, T.9 S., R.88 W., on right bank 1¼ miles upstream from Avalanche Creek and ¾ miles north of Redstone.

Drainage area.--167 sq mi.

Records available.--October 1955 to September 1963.

Gage.--Water-stage recorder. Altitude of gage is 6,905 ft (from river-profile map).

Average discharge.--8 years, 288 cfs (208,500 acre-ft per year).

Extremes.--Maximum discharge during year, 1,410 cfs May 20 (gage height, 4.21 ft); minimum daily, 29 cfs Dec. 27.  
1955-63: 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 table, except periods of indefinite stage-discharge relation  
(gage height, in feet, and discharge, in cubic feet per second)

1.4	23	2.5	275
1.6	48	3.0	495
1.8	78	4.0	1,190
2.0	120		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	92	65	54	44	82	42	* 126	219	922	310	92	123
2	90	* 65	52	44	70	42	116	* 225	894	310	e 107	105
3	86	65	52	44	55	42	98	258	698	318	e 110	96
4	* 82	65	52	48	54	42	94	386	* 677	334	e 127	90
5	82	64	51	48	54	42	96	522	747	296	* e 140	92
6	84	62	* 48	44	* 51	40	109	684	691	268	e 127	144
7	82	61	49	45	49	* 36	141	782	719	264	e 110	147
8	78	59	51	43	51	42	171	866	747	250	e 107	116
9	76	59	47	43	49	42	150	957	677	278	e 107	* 102
10	75	59	43	* 45	48	43	129	845	485	e 300	e 120	96
11	73	58	44	42	47	43	123	880	425	* e 270	e 170	92
12	73	56	45	35	38	43	141	803	512	e 210	e 180	90
13	72	55	43	36	40	43	186	810	726	e 200	e 150	90
14	70	59	43	43	44	42	216	796	824	e 190	e 127	109
15	78	62	47	45	50	47	219	740	789	* 186	e 107	96
16	82	62	47	45	46	48	186	929	733	174	94	90
17	84	61	45	45	44	43	159	1,010	528	174	97	84
18	80	59	48	44	46	42	150	1,120	556	168	127	82
19	80	59	49	43	46	42	132	1,150	500	156	102	78
20	80	59	47	42	44	43	120	1,180	512	147	102	78
21	75	59	42	43	44	48	111	* 1,160	568	141	97	76
22	73	58	42	43	44	54	107	1,040	550	141	94	73
23	70	58	45	42	44	62	107	971	517	150	107	72
24	70	58	45	42	42	65	132	929	500	135	107	70
25	70	58	39	43	44	64	171	908	460	126	97	67
26	70	56	33	39	44	68	250	894	* 440	118	92	65
27	70	56	29	38	44	78	306	908	400	113	127	64
28	70	55	39	42	42	120	240	964	382	102	120	62
29	65	54	43	40	-	186	207	1,030	359	98	107	61
30	65	54	45	40	-----	126	204	999	322	94	97	59
31	65	-----	44	48	-----	126	-----	950	-----	92	107	-----
Total	2,362	1,780	1,403	1,328	1,356	1,846	4,697	25,915	17,860	6,113	3,487	2,669
Mean	76.2	59.3	45.3	42.8	48.4	59.5	157	836	595	197	112	89.0
Ac-ft	4,680	3,530	2,780	2,630	2,690	3,660	9,320	51,400	35,420	12,120	6,910	5,290

Calendar year 1962: Max 2,180 Min 29 Mean 387 Ac-ft 280,000  
Water year 1962-63: Max 1,180 Min 29 Mean 194 Ac-ft 140,400

Peak discharge (base, 2,000 cfs).--No peak above base.

\* Discharge measurement made on this day.

e Stage-discharge relation indefinite.

Note.--No gage-height record Oct. 23 to Nov. 1, Jan. 28-30, Feb. 13 to Mar. 7.

## ROARING FORK BASIN

193

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 1963 (discontinued).

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.--28 years, 353 cfs (255,600 acre-ft per year).

Extremes.--Maximum discharge during year, 2,040 cfs May 20 (gage height, 4.91 ft), from rating curve extended above 1,300 cfs; minimum daily, 41 cfs Sept. 30.

1935-63: 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, which are poor. Diversions above station for irrigation of about 115 acres above and about 2,040 acres below station.

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

0.9	40	2.5	380
1.2	68	3.0	600
1.5	109	4.0	1,220
2.0	210	5.0	2,200

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	75	112	86	b 55	111	54	* 151	167	1150	356	66	141
2	72	*111	84	b 65	96	54	143	*175	1130	356	87	120
3	69	108	83	b 65	76	55	120	212	848	364	115	108
4	* 64	106	81	69	73	54	112	376	*812	408	147	102
5	63	104	80	67	72	53	115	528	916	312	*190	97
6	66	103	*76	64	*72	54	129	705	830	276	137	155
7	64	98	78	64	68	*50	159	800	867	276	127	167
8	62	97	79	64	69	52	190	937	923	268	108	133
9	72	98	75	66	67	54	169	1150	895	293	102	* 115
10	81	98	72	*67	66	55	151	979	660	340	114	106
11	79	97	70	62	63	55	141	1010	542	*300	190	97
12	76	94	72	56	54	54	159	916	630	232	203	88
13	75	96	73	b 50	54	54	200	923	902	208	171	87
14	74	98	70	b 55	58	51	250	937	1050	181	141	108
15	97	102	73	b 60	66	57	259	836	1000	163	104	94
16	129	103	72	b 60	62	54	202	1100	930	157	84	83
17	137	98	73	b 60	56	55	177	1200	685	155	79	75
18	131	98	72	63	61	55	171	1500	710	147	119	70
19	131	97	74	62	57	54	155	1540	660	133	97	67
20	131	96	72	62	57	56	147	1580	670	122	96	66
21	127	96	68	62	56	61	135	1500	730	114	91	64
22	123	93	66	61	54	68	129	*1300	740	115	81	66
23	122	93	72	58	56	79	129	1200	700	145	103	68
24	120	93	70	57	55	84	137	1150	665	122	112	56
25	119	90	68	61	54	80	139	1100	615	109	97	48
26	117	90	b 60	57	54	84	222	1080	*542	100	93	46
27	114	88	b 46	55	55	96	290	1090	478	91	137	44
28	112	86	b 55	61	54	123	210	1190	460	84	141	42
29	112	86	b 60	58	-	215	161	1250	416	75	123	42
30	111	84	b 65	61	-----	153	153	1230	372	69	111	41
31	111	-----	b 65	74	-----	147	-----	1160	-----	66	111	-----
Total	3,036	2,913	2,210	1,911	1,796	2,270	5,005	30,821	22,528	6,137	3,677	2,596
Mean	97.9	97.1	71.3	61.6	64.1	73.2	167	994	751	198	119	86.5
Ac-ft	6,020	5,780	4,380	3,790	3,560	4,500	9,930	61,130	44,680	12,170	7,290	5,150

Calendar year 1962: Max 2,330 Min 46 Mean 449 Ac-ft 325,400

Water year 1962-63: Max 1,580 Min 41 Mean 233 Ac-ft 168,400

Peak discharge (base, 2,000 cfs).--May 20 (2300) 2,040 cfs (4.91 ft).

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

## ROARING FORK BASIN

9-840, Cattle Creek near Carbondale, Colo.

Location.--Lat 39°28'00", long 107°03'05", in NE¼NE¼ sec.12, T.7 S., R.87 W., on left bank at ford just downstream from Taylor Creek, half a mile upstream from diversion to Missouri Heights Reservoir and 10 miles northeast of Carbondale.

Drainage area.--31.1 sq mi (revised).

Records available.--October 1950 to September 1955, October 1962 to September 1963.

Gage.--Water-stage recorder. Altitude of gage is 7,640 ft (from topographic map).

Average discharge.--6 years, 14.4 cfs (10,430 acre-ft per year).

Extremes.--Maximum discharge during year, 42 cfs May 8 (gage height, 2.93 ft); maximum gage height, 3.60 ft Aug. 31 (backwater from beaver dam); minimum daily discharge, 1.8 cfs Sept. 29, 30.

1950-55, 1962-63: Maximum discharge, 280 cfs about June 4, 1952 (gage height, 4.75 ft, from recorded range in stage); minimum daily, that of Sept. 29, 30, 1963.

Remarks.--Records fair except those for periods of ice effect, no gage-height record, or indefinite stage-discharge relation, which are poor. Small diversions for irrigation of hay meadows 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 Oct. 1-17)

1.9	1.5	2.5	12
2.1	2.5	2.7	22
2.3	5.5	2.9	40

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6.5	*6.1	4.8				9	*13	13	4.3	e 2.0	3.9
2	6	5.8	4.8				*9	13	14	4.3	e 2.2	3.0
3	*5.5	6.1	5				8.5	13	14	4.7	e 2.4	2.8
4	5.1	5.3	5.3				6.1	16	12	5.1	e 2.6	2.7
5	5.1	5.5	4.8				6.7	17	12	4.5	e 2.8	2.9
6	5.8	5.5	4.4				8.2	23	11	4.3	*e 3.0	3.9
7	5.5	4.9	4.4				9.6	*35	11	4.1	e 3.2	3.9
8	5.1	4.9	4.2			4	10	35	11	4.1	e 3.2	3.1
9	5.3	5.8	4.2				8.8	40	11	4.5	e 3.4	2.9
10	5.5	5.8	4.2				8.2	37	9.9	*4.7	e 3.4	*2.9
11	5.3	5.8	4.0				7.6	36	9.2	4.3	e 3.6	2.9
12	5.5	5.5	4.0				8.8	33	8.2	4.3	e 3.6	e 2.8
13	5.1	5	4.2				10	28	7.6	4.1	e 3.4	e 2.6
14	4.9	5.5	4.4				11	27	7.6	3.7	e 3.4	e 2.4
15	5.5	5.5	4.5				11	26	7.0	3.7	e 3.4	e 2.4
16	6.1	5.3	4.3	3.5	4		9.2	*27	9.6	3.7	e 3.4	e 2.4
17	6.1	4.4	4.1				*8.8	28	8.5	3.5	e 3.4	e 2.4
18	5.5	4.6	3.9				8.2	28	8.5	3.5	e 3.6	e 2.2
19	7.6	4.4	4.3				8.2	27	7.6	3.4	e 3.2	e 2.4
20	6.4	4.8	4.3				7.6	24	7.0	e 3.4	e 3.2	e 2.6
21	5.5	5.1	4.2				7.6	23	6.1	e 3.4	e 3.2	e 2.4
22	5.8	4.8	3.8				7.9	24	5.5	e 3.6	e 3.2	e 2.2
23	5.5	4.6	3.9				7.0	21	5.5	e 4.2	e 3.2	e 2.2
24	5.3	4.6	3.6			6	7.9	21	*5.3	e 3.8	e 3.2	e 2.4
25	5.3	4.8	3.4				8.8	20	5.1	e 3.4	e 3.2	e 2.4
26	5.3	5.1	3.2				12	18	4.9	e 3.0	e 3.6	e 2.2
27	5.5	*6.4	3.2				14	17	4.9	e 2.8	e 4.6	e 2.0
28	5.3	6	3.4				12	16	4.7	e 2.6	e 4.6	e 2.0
29	5.8	5.5	3.4				11	*15	4.5	e 2.4	e 4.2	e 1.8
30	6.1	5	3.4				11	14	4.3	e 2.2	e 3.8	e 1.8
31	6.1	-----	3.4				-----	14	-----	e 2.0	e 3.6	-----
Total	174.9	158.4	127.0	108.5	112	156	273.7	729	250.5	115.6	102.8	78.5
Mean	5.64	5.28	4.10	3.5	4	5	9.12	23.5	8.35	3.73	3.32	2.62
Ac-ft	347	314	252	215	222	309	543	1,450	497	229	204	156

Calendar year 1962: Max - Min - Mean - Ac-ft -  
Water year 1962-63: Max 40 Min 1.8 Mean 6.54 Ac-ft 4,740

Peak discharge (base, 100 cfs).--No peak above base.

\* Discharge measurement made on this day.

e Stage-discharge relation indefinite.

Note.--No gage-height record Oct. 1-3, Jan. 13 to Apr. 2 (stage-discharge relation affected by ice during most of period). Stage-discharge relation affected by ice Nov. 12, 13, 17-20, 22-25, 28-30, Dec. 1-3, 5-14, 21, 22, 24-31, Jan. 1-12.

## ROARING FORK BASIN

195

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 1963.

Gage.--Water-stage recorder. Altitude of gage is 7,780 ft (from topographic map).

Average discharge.--6 years, 7.75 cfs (5,610 acre-ft per year).

Extremes.--Maximum discharge during year, 35 cfs Apr. 26 (gage height, 3.93 ft); minimum daily, 0.1 cfs Aug. 1-20.

1957-63: Maximum discharge, 303 cfs May 11, 1962 (gage height, 5.21 ft), from rating curve extended above 100 cfs; minimum daily, 0.1 cfs Sept. 5, 7-11, 1959, Aug. 1-20, 1963.

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 June 10 to July 17, July 23-28, Sept. 14-19, 24-30)

2.9	0.1	3.4	5.0
3.0	.3	3.7	15
3.1	.8	4.0	37
3.2	1.8		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.6	*0.7	0.7	0.6	0.8	0.4	*9.7	13	3.6	0.2	*0.1	0.2
2	.5	.7	.7	.6	.6	.4	6.4	16	3.4	.2	.1	.2
3	.4	.7	.7	.6	.6	.6	5.0	19	6.4	.2	.1	.2
4	*.4	.7	.6	.6	.6	.6	4.6	19	5.8	.2	.1	*.2
5	.4	.7	.7	.6	*.6	.6	3.6	20	4.5	.2	.1	.2
6	.4	.7	.7	.6	.5	*.6	5.0	18	3.7	.2	.1	.3
7	.4	.6	.7	.5	.5	.6	10	18	3.6	.2	.1	.6
8	.4	.6	.8	*.5	.5	.6	12	*18	3.2	.2	.1	.4
9	.4	.7	.8	.4	.5	.6	11	22	4.1	.3	.1	.3
10	.4	.7	b.7	.4	.6	.6	11	20	3.9	1.8	.1	.3
11	.4	.7	b.6	.4	.6	.6	9.1	18	2.9	*.7	.1	.2
12	.4	.7	b.6	a.3	.6	.6	13	16	2.5	.6	.1	.2
13	.4	.7	b.6	a.3	.7	.6	18	13	2.5	.6	.1	.2
14	.4	.8	b.6	e.3	.8	.6	20	12	2.8	.4	.1	.6
15	.4	.8	b.6	.4	.6	.6	15	11	2.9	.4	.1	.6
16	.4	.8	b.6	.4	.4	.6	10	*10	3.2	.3	.1	.4
17	1.0	.8	b.6	.4	.4	.6	9.1	9.7	4.1	.3	.1	.4
18	.9	.8	b.6	.4	.3	.6	8.1	8.8	a.3.8	.2	.1	.4
19	1.7	.8	b.6	.4	.3	.6	6.4	8.4	a.4.0	.2	.1	.5
20	1.7	.8	b.6	.4	.3	.6	6.1	7.8	a.3.2	.2	.1	.5
21	1.2	.8	.6	.4	.4	.7	6.1	7.0	2.4	.2	.2	.5
22	1.1	.8	.6	.4	.4	.9	5.8	*6.7	1.6	.2	.2	.5
23	1.0	.8	.6	.4	.3	1.4	5.0	7.0	1.1	.6	.2	.4
24	1.0	.7	.6	.4	.4	1.6	9.7	6.7	*.8	.6	.2	.4
25	1.0	.7	.6	.4	.4	1.5	15	6.1	.6	.4	.2	.3
26	.9	.7	.6	.5	.4	1.8	18	5.6	.6	.4	.2	.3
27	.9	*.8	.6	.5	.4	2.4	18	4.8	.4	.3	.2	.2
28	.9	.8	.6	.5	.4	3.2	12	4.5	.3	.3	.2	.3
29	1.0	.7	.6	.6	-	4.8	10	4.3	.2	.2	.2	.3
30	1.0	.7	.6	.6	-----	5.3	13	4.1	.2	.2	.2	.3
31	.8	-----	.6	.6	-----	6.4	-----	3.7	-----	.2	.2	-----
Total	22.8	22.0	19.7	14.4	13.9	41.6	305.7	358.2	82.3	11.2	4.2	10.4
Mean	0.74	0.73	0.64	0.46	0.50	1.34	10.2	11.6	27.4	0.36	0.14	0.35
Ac-ft	45	44	39	29	28	83	606	710	163	22	8.3	21

Calendar year 1962: Max 200 Min 0.3 Mean 15.6 Ac-ft 11,290  
Water year 1962-63: Max 22 Min 0.1 Mean 2.48 Ac-ft 1,800

Peak discharge (base, 60 cfs).--No peak above base.

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

## 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 1963. 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.--57 years, 1,391 cfs (1,007,000 acre-ft per year).Extremes.--Maximum discharge during year, 3,670 cfs May 21 (gage height, 3.82 ft); minimum daily, 290 cfs Dec. 27.  
1905-9, 1910-63: 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 except those for periods of ice effect, which are fair. 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, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)

0.9	290	2.0	1,010
1.1	360	3.0	2,280
1.5	580	4.0	4,030

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	652	620	468	462	566	356	566	400	2,360	1,020	392	796
2	636	604	468	462	545	352	559	410	2,560	980	376	740
3	628	573	456	486	425	364	492	415	2,340	1,000	396	684
4	612	566	456	517	410	352	468	552	2,130	1,090	462	636
5	612	559	450	462	400	348	462	788	2,140	1,010	604	596
6	620	552	430	430	392	356	474	1,160	1,960	892	732	716
7	636	538	430	425	* 376	336	524	1,640	1,920	901	692	892
8	628	517	440	420	376	348	636	1,820	2,010	865	692	847
9	620	531	430	415	376	352	620	2,380	2,070	874	716	* 780
10	620	538	415	445	368	360	596	1,990	1,730	1,030	644	724
11	612	538	405	405	368	360	552	2,060	1,440	990	788	684
12	612	510	415	310	314	352	552	1,950	1,430	950	910	652
13	604	498	415	300	317	352	604	1,820	1,910	901	874	612
14	596	531	400	350	336	317	700	1,950	2,180	829	748	628
15	604	545	420	400	388	368	748	* 1,660	2,410	780	636	620
16	692	566	410	420	372	352	660	2,220	2,360	* 700	580	559
17	740	531	415	430	344	352	590	2,420	* 2,000	660	559	524
18	748	524	410	420	372	352	552	2,840	1,940	612	644	492
19	788	524	430	400	356	348	517	2,990	2,030	566	628	450
20	764	524	425	380	356	356	486	2,960	1,920	504	588	430
21	732	517	405	440	356	372	440	3,100	1,960	474	604	430
22	708	510	392	420	348	400	425	2,730	1,970	504	566	425
23	692	498	405	400	356	440	415	2,590	1,820	524	573	405
24	668	498	435	380	356	474	435	2,560	1,770	531	652	372
25	668	498	400	400	344	425	445	2,450	1,620	510	660	352
26	660	498	300	380	* 336	* 425	531	2,380	1,510	480	636	348
27	644	486	* 290	360	360	445	724	2,310	1,410	450	804	344
28	636	* 474	348	390	348	480	628	* 2,420	1,300	450	930	336
29	* 628	468	396	370	-	676	* 492	2,560	1,250	* 420	812	332
30	620	468	420	* 370	-----	559	430	2,520	1,100	400	756	332
31	604	-----	450	420	-----	538	-----	2,600	-----	396	756	-----
Total	20,284	15,804	12,829	12,669	10,561	12,267	16,313	62,645	56,550	22,293	20,410	16,738
Mean	654	527	414	409	377	396	544	2,021	1,885	719	658	558
Ac-ft	40,230	31,350	25,450	25,130	20,950	24,330	32,360	124,300	112,200	44,220	40,480	33,200

Calendar year 1962: Max 7,240 Min 290 Mean 1,529 Ac-ft 1,107,000  
Water year 1962-63: Max 3,100 Min 290 Mean 765 Ac-ft 554,200

Peak discharge (base, 6,300 cfs).--No peak above base.

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 26, 27, Jan. 12-30.

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 1963.

Gage.--Water-stage recorder.

Average discharge.--8 years, 27.1 cfs (19,620 acre-ft per year).

Extremes.--Maximum discharge during year, 108 cfs May 8 (gage height, 3.72 ft); no flow July 30 to Aug. 3.

1955-63: Maximum discharge, 790 cfs May 12, 1962 (gage height, 5.41 ft), from rating curve extended above 350 cfs; no flow at times in most years.

Remarks.--Records good except those for periods of ice effect 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).

Rating table, except periods of ice effect (gage height, in feet  
and discharge, in cubic feet per second)  
(Shifting-control method used Aug. 18 to Sept. 30)

1.4	0	2.6	10
1.6	.2	2.8	19
1.8	.5	3.0	32
2.0	.9	3.5	80
2.2	2.2	3.6	92
2.4	4.8		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.1	0.9	1.8				24	34	37	2.2	0	0.4
2	1.0	1.0	1.3				* 15	31	41	1.8	0	.4
3	.9	1.1	* 1.4				8.8	38	50	1.7	0	.4
4	.9	1.2	1.6				6.8	56	42	6.2	.4	.3
5	* .9	1.3	.9				9.4	67	38	3.8	2.6	* .3
6	1.0	1.4	b.8				14	74	32	2.6	2.5	1.0
7	1.1	1.3	b.8				24	82	29	1.8	1.0	3.5
8	1.1	* 1.6	b.8			1	29	* 87	27	1.6	.6	1.6
9	1.0	1.4	b.8				26	87	27	2.0	* .5	.9
10	.9	1.3	b 1.0				24	79	25	3.7	.6	.7
11	.9	1.3	b 1.2				16	76	23	2.5	.6	.5
12	.8	1.2	b 1.2				21	69	21	4.9	.5	.4
13	.8	1.3	b.8				28	59	18	4.6	.4	.4
14	.8	1.5					31	51	18	2.2	.4	1.6
15	.8	1.7		0.8	1		28	55	16	1.2	.2	1.3
16	1.2	1.7					21	56	18	* .9	.2	.8
17	1.6	b 1.2					22	56	16	.8	.2	.6
18	1.3	b 1.2					22	53	* 17	.7	.3	.5
19	1.9	b 1.4					14	53	16	.6	.2	.4
20	2.1	1.7					15	51	13	.5	.4	.4
21	1.6	2.0				4	15	49	12	.4	.4	.4
22	1.2	1.7	1				13	50	9.7	.4	.8	.4
23	1.1	1.6					8.2	54	9.1	2.7	1.1	.3
24	1.0	1.4					22	58	6.8	1.1	1.8	.3
25	.9	1.4					28	50	5.7	.6	1.0	.3
26	.9	1.8					40	46	5.0	.4	.7	.3
27	.9	1.4					50	* 49	4.5	.2	.9	.2
28	.9	1.1				12	34	44	3.8	.2	.8	.2
29	.9	1.7					27	42	3.1	.1	.6	.2
30	.9	1.6					31	43	2.5	0	.4	.2
31	.9							41		0	.4	
Total	33.3	42.4	32.4	24.8	28	127	667.2	1,740	586.2	52.4	20.5	19.2
Mean	1.07	1.41	1.05	0.8	1	4.1	22.2	56.1	19.5	1.69	0.66	0.64
Ac-ft	66	84	64	49	56	252	1,320	3,450	1,160	104	41	38

Calendar year 1962: Max 527 Min 0.4 Mean 48.7 Ac-ft 35,230

Water year 1962-63: Max 87 Min 0 Mean 9.24 Ac-ft 6,680

Peak discharge (base, 160 cfs).--No peak above base.

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 14 to Apr. 2 (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 NE¼ 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 1963.

Gage.--Water-stage recorder.

Extremes.--Maximum discharge during year, 35 cfs Aug. 11 (gage height, 3.99 ft); no flow for many days.

1959-63: Maximum discharge, about 350 cfs May 12, 1962 (gage height not determined); 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 periods of ice effect, which are poor. One small diversion above station for irrigation of hay meadows.

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

2.5	0	3.3	3.7
2.7	.1	3.4	5.7
2.8	.2	3.6	12
2.9	.5	3.8	20
3.1	1.5	3.9	26
3.2	2.3	4.0	36

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.2	0	0.7		0.2	0.7	1.2	14	5.5	0	0	0.6
2	.1	.1	.7		.4	.6	* 1.0	14	6.0	0	0	.1
3	.1	.1	*.6		.6	.6	6.3	18	11	0	0	.1
4	.1	.1	.7		.8	.6	4.7	20	8.1	0	0	0
5	*.1	.1	.5		1.0	.5	5.3	23	6.6	0	0	* 0
6	.1	.1	.5		1.2	.6	7.5	24	5.5	0	.1	.6
7	.1	.1	.5		* 1.4	.7	1.2	24	4.9	0	.2	1.4
8	.1	*.1	.4		1.2	.7	1.3	* 25	4.3	0	0	.9
9	.1	.1	.4		1.0	.7	1.2	31	4.3	0	* 0	.3
10	.1	.2	.3		1.0	.6	1.2	27	4.7	1.4	0	.1
11	.1	.2	.3		.9	.6	1.0	24	3.7	1.2	1.7	.1
12	.1	.1	.3		.7	.6	1.2	22	3.3	.5	.4	.1
13	.1	.1	.3		.6	.5	1.4	18	2.6	.5	.2	0
14	.1	.2	.3		.7	.4	1.8	17	2.9	.4	.1	.3
15	.1	.5	.3		.8	.6	1.7	16	2.4	.1	0	.7
16	.1	.5	.3	0.1	.8	.6	1.3	15	2.9	* 0	0	.3
17	.1	.3	.3		.8	.6	1.2	14	3.0	0	0	.2
18	.1	.4	.3		.7	.7	1.1	14	* 3.3	0	0	.1
19	.1	.6	.3		.7	.8	9.4	13	4.1	0	0	.1
20	.1	.7	.4		.7	1.0	7.8	13	2.6	0	0	0
21	.1	.7	.3		.7	1.6	7.5	12	2.0	0	0	0
22	0	.6	.2	(*)	.6	2.7	7.2	12	1.5	0	0	0
23	0	.5	.2		.6	3.7	6.0	12	1.3	0	0	.1
24	0	.7	.2		.6	3.7	9.0	12	.9	.8	.4	0
25	0	.7	.1		.6	3.0	1.2	11	.6	.3	.4	0
26	0	.8	.1		.6	4.3	16	10	.5	.1	.2	0
27	0	.6	.1		.7	5.3	20	* 8.7	.4	.1	.5	0
28	0	.6	.2		.6	8.7	14	7.8	.2	0	.3	0
29	0	.6	.2		-	1.0	1.1	7.2	.1	0	.1	0
30	0	.6	.2		-----	8.4	1.3	6.3	.1	0	.1	0
31	0	-----	.2		-----	9.7	-----	6.0	-----	0	.1	-----
Total	2.2	11.0	10.4	3.1	21.2	73.8	334.7	491.0	99.3	5.4	4.8	6.1
Mean	0.07	0.37	0.34	0.1	0.76	2.38	11.2	15.8	3.31	0.17	0.15	0.20
Ac-ft	4.4	22	21	6.1	42	146	664	974	197	11	9.5	12

Calendar year 1962: Max 240 Min 0 Mean 18.9 Ac-ft 13,670  
Water year 1962-63: Max 31 Min 0 Mean 2.91 Ac-ft 2,110

Peak discharge (base, 80 cfs).--No peak above base.

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

Note.--Stage-discharge relation affected by ice Nov. 6-19, 22, 23, 29, 30, Dec. 6-14, Dec. 21 to Feb. 14 (no gage-height record Dec. 24 to Feb. 7), Feb. 22-26, 28, Mar. 2-17.

## 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.--34.3 sq mi (revised).

Records available.--October 1936 to September 1943 (published as East Fork Rifle Creek near Rifle), October 1956 to September 1963. 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.--14 years, 38.9 cfs (28,160 acre-ft per year).

Extremes.--Maximum discharge during year, 70 cfs Oct. 15 (gage height, 2.34 ft); minimum daily 28 cfs June 11-13, 15, 28, 1936-43, 1956-63: 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 except those for period of no gage-height record, which are poor. 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 Nov. 28

Nov. 29 to Sept. 30

1.9 32  
2.0 40  
2.1 49

1.8 22  
2.0 37  
2.5 85

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	42	42	40	38	38	35	36	32	30	30	30	33
2	*43	42	40	38	36	35	35	32	30	30	31	32
3	43	42	40	38	36	36	35	32	30	31	31	32
4	43	41	40	38	36	37	35	31	29	32	31	32
5	43	42	40	38	36	35	*35	31	29	32	31	31
6	43	42	40	38	36	36	35	31	29	33	*31	31
7	43	*41	40	38	38	36	35	31	29	31	30	32
8	42	40	41	38	36	*35	35	*32	29	*31	31	32
9	42	40	40	38	36	36	35	33	29	31	31	*32
10	42	40	40	38	36	36	35	32	29	31	31	33
11	42	40	39	*36	36	36	34	32	28	32	31	33
12	42	40	39	34	*34	36	34	32	28	32	31	32
13	41	40	39	34	35	35	34	31	28	32	31	33
14	41	40	39	34	35	35	35	31	29	32	31	33
15	41	41	39	34	36	36	35	31	28	32	31	32
16	44	40	39	34	36	35	33	31	29	31	31	33
17	43	40	38	34	36	35	34	30	30	31	31	33
18	42	40	39	36	38	35	35	30	*29	31	31	33
19	44	38	38	34	37	35	34	30	30	30	31	33
20	42	40	38	34	36	35	34	29	30	30	31	33
21	42	40	38	34	36	36	34	29	30	30	31	34
22	42	39	38	34	36	36	33	29	32	30	31	32
23	42	39	38	34	35	36	33	30	32	30	32	33
24	40	39	38	36	35	36	32	30	31	30	32	32
25	40	39	35	36	35	37	33	31	30	30	31	32
26	40	39	34	36	35	37	34	31	30	30	32	32
27	40	39	34	36	35	37	34	*30	30	30	32	32
28	40	38	34	36	35	37	33	29	28	30	32	32
29	40	*39	36	36	-	39	32	30	30	30	31	32
30	41	40	38	36	-----	37	32	30	31	30	31	32
31	42	-----	40	36	-----	37	-----	30	-----	29	32	-----
Total	1,297	1,202	1,191	1,114	1,005	1,115	1,023	953	886	954	965	971
Mean	41.8	40.1	38.4	35.9	35.9	36.0	34.1	30.7	29.5	30.8	31.1	32.4
Ac-Ft	2,570	2,380	2,360	2,210	1,990	2,210	2,030	1,890	1,760	1,890	1,910	1,930

Calendar year 1962: Max 151 Min 26 Mean 45.1 Ac-ft 32,650  
 Water year 1962-63: Max 44 Min 28 Mean 34.7 Ac-ft 25,130

\* Discharge measurement made on this day.

Note.--No gage-height record Dec. 26 to Feb. 12.



## 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 1963. Monthly discharge only for some periods, published in WSP 1313.

**Gage.**--Water-stage recorder and concrete control. Datum of gage is 5,808.82 above mean sea level (Bureau of Reclamation bench mark). 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.**--18 years, 25.1 cfs, unadjusted (18,170 acre-ft per year).

**Extremes.**--Maximum discharge during year, 1,720 Aug. 9 (gage height, 7.74 ft), from rating curve extended above 35 cfs on basis of slope-area measurement of peak flow; minimum daily, 5.0 cfs Apr. 11.

1939-46, 1952-63: Maximum discharge, 1,720 cfs Aug. 9, 1963 (gage height, 7.74 ft), from rating curve extended above 35 cfs on basis of slope-area measurement of peak flow; minimum daily, 2.7 cfs Feb. 6, 1941.

Flood of July 27, 1951, reached a stage of 7.7 ft, from floodmarks at site 100 ft downstream (discharge not determined).

Discharge previously published has been found to be unreliable and should not be used.

**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 Harvay 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 1962 to September 1963

Month	Diversion	Month	Diversion
October.....	2,000	April.....	1,080
November.....	2,290	May.....	7.9
December.....	2,240	June.....	27
		July.....	25
Calendar year 1962.....	20,680	August.....	304
		September.....	118
January.....	2,110		
February.....	1,660		
March.....	774	Water year 1962-63.....	12,640

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	23	9.7	11	9	14	33	11	35	31	28	26	31
2	*22	9.7	11	9	12	31	9.9	34	31	28	26	30
3	21	9.7	11	9	11	31	7.4	34	31	29	28	29
4	20	9.7	11	10	11	30	7.4	34	29	29	28	20
5	17	9.7	10	a 9.5	10	28	*7.4	32	30	29	*28	17
6	18	9.7	10	a 9.5	10	29	7.4	32	28	27	28	28
7	18	*9.7	10	*a 9	10	28	7.1	31	28	28	28	29
8	16	9.4	10	8.8	10	*22	6.8	*31	28	*28	29	28
9	10	9.4	10	8.5	10	22	6.0	30	30	31	*27	*27
10	7.9	9.4	10	8.8	10	22	5.7	30	30	30	a 25	27
11	7.6	9.4	10	8.2	10	25	5.0	30	28	30	a 20	29
12	7.6	9.1	10	8.2	*6	29	12	30	28	30	a 20	29
13	8.8	9.7	10	9.2	7	28	18	31	26	29	*20	30
14	12	9.7	10	9.9	8	28	20	30	28	29	19	31
15	16	10	10	11	9	28	20	33	26	29	18	31
16	21	9.7	10	10	10	27	20	32	28	28	20	30
17	18	9.7	10	10	11	27	20	31	30	28	18	31
18	18	9.7	10	10	12	28	24	32	*30	28	19	30
19	24	10	9.5	10	12	28	24	32	30	28	18	30
20	18	10	9.2	10	12	28	25	32	30	28	16	37
21	18	10	9	9.9	12	28	24	31	29	28	16	30
22	18	9.7	9	9.6	12	28	26	31	30	28	20	27
23	18	10	9	9.2	11	26	28	31	29	27	27	27
24	18	10	9	9.2	11	24	28	30	28	28	27	27
25	18	10	8.5	8.8	14	24	30	30	28	27	27	27
26	18	10	7	8.5	35	24	35	29	29	26	28	25
27	18	10	7.5	8.2	35	20	38	*29	28	26	29	22
28	18	9.7	8	8.2	34	16	39	31	28	26	29	20
29	16	*11	8	8.2	-	14	37	32	28	26	28	21
30	10	11	8.5	7.8	-----	12	35	31	28	26	28	22
31	10	-----	9	9	-----	11	-----	31	-----	26	30	-----
Total	503.9	294.5	295.2	284.2	369	779	584.1	972	865	868	820	822
Mean	16.3	9.82	9.52	9.17	13.2	25.1	19.5	31.4	28.8	28.0	26.5	27.4
Ac-ft	999	584	586	564	732	1,550	1,160	1,930	1,720	1,720	1,630	1,630

Calendar year 1962: Max 199 Min 4.5 Mean 33.0 Ac-ft 23,850  
 Water year 1962-63: Max 97 Min 5.0 Mean 20.4 Ac-ft 14,800

Peak discharge (base, 140 cfs).--Aug. 9 (2000) 1,720 cfs (7.74 ft).

\* Discharge measurement made on this day.

a No gage-height record.

Note.--Stage-discharge relation affected by ice Nov. 19, Dec. 5-19, 21-31, Jan. 1-4, 31, Feb. 1-17, 25, 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 upstream from road bridge, 4 miles upstream from mouth, and 4.8 miles southwest of Rifle.

Drainage area.--7.90 sq mi.

Records available.--October 1952 to September 1963.

Gage.--Water-stage recorder and plank control. Altitude of gage is 6,685 ft (from topographic map).

Average discharge.--11 years, 4.05 cfs (2,930 acre-ft per year).

Extremes.--Maximum discharge during year, 29 cfs May 9 (gage height, 3.43 ft); minimum daily, 0.4 cfs Mar. 5-10.  
1952-63: Maximum discharge, 72 cfs June 5, 1957, from rating curve extended above 40 cfs; maximum gage height, 3.71 ft May 12, 1962; minimum daily discharge, 0.3 cfs Jan. 4-6, 1959.

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

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.8	1.8	1.1	0.9	b 1.2	0.6	* 2.1	3.9	7.3	2.6	0.7	2.6
2	* 1.8	1.8	1.1	.9	b 1.2	.5	1.8	4.2	8.2	2.3	1.1	2.1
3	1.6	1.6	* 1.1	.9	1.2	.5	2.3	5.0	8.5	2.3	2.3	1.8
4	1.4	b 1.4	1.2	.9	1.2	*.5	1.4	6.1	7.3	2.1	3.6	1.8
5	1.4	b 1.2	b 1.2	.9	1.2	.4	1.6	7.6	7.0	2.1	* 3.1	1.8
6	1.6	b 1.1	b 1.2	.9	1.2	.4	1.6	8.5	6.7	2.1	2.8	4.5
7	1.6	b 1.0	b 1.2	*.9	1.2	.4	2.6	12	6.7	1.8	2.1	3.1
8	1.6	*b 1.0	b 1.1	.9	1.2	.4	2.8	*16	6.4	*1.8	1.8	2.8
9	1.6	b 1.0	b 1.0	.9	1.2	.4	2.8	21	6.4	2.8	1.8	*2.8
10	1.6	b 1.0	b 1.0	.9	1.2	.4	2.8	20	6.1	3.1	3.1	2.3
11	1.6	1.1	b 1.1	.9	* 1.2	.5	2.3	17	5.6	2.1	3.3	1.8
12	1.6	b 1.1	b 1.1	.9	b 1.2	.5	3.1	13	5.3	2.1	3.3	1.8
13	1.6	b 1.2	b 1.0	.9	b 1.2	.5	3.6	12	5.0	1.8	2.6	1.8
14	1.8	1.2	b 1.0	.8	b 1.2	.5	4.2	11	5.0	1.6	2.6	2.3
15	1.8	1.4	b 1.1	.8	b 1.2	.5	4.2	10	4.5	1.4	2.3	1.8
16	2.6	1.4	b 1.1	.9	1.2	.5	3.6	11	4.7	1.4	2.1	1.6
17	2.6	1.4	b 1.0	.9	1.2	.5	3.3	10	4.5	1.2	2.3	1.4
18	2.1	b 1.4	b 1.1	.9	1.2	.5	2.8	9.9	* 5.0	1.2	2.1	1.4
19	2.6	b 1.3	b 1.2	.9	.9	.5	3.1	9.9	5.0	1.2	1.6	1.2
20	2.1	1.4	1.2	.9	.9	.7	2.6	9.4	4.5	1.1	2.6	1.2
21	2.1	b 1.4	1.2	.9	.9	.8	2.3	9.1	4.2	1.1	2.1	1.6
22	2.1	b 1.2	1.2	.9	.8	1.1	2.3	9.1	3.9	1.4	2.1	1.4
23	1.8	1.2	1.2	.9	.8	1.4	1.8	9.1	3.6	1.6	2.6	1.2
24	1.8	1.2	1.2	1.1	.8	1.2	2.6	9.1	3.6	1.2	2.3	1.2
25	1.8	1.2	1.2	1.1	.6	b 1.2	3.1	7.6	3.6	.9	1.8	1.1
26	1.8	1.2	1.2	1.1	.7	1.8	4.2	7.0	3.3	.9	2.3	1.1
27	1.8	b 1.2	1.1	1.1	.6	b 1.4	4.7	* 6.7	3.3	.8	2.3	1.1
28	2.1	b 1.2	1.1	1.1	.6	2.3	3.9	7.3	2.8	.7	2.3	1.1
29	2.1	b 1.1	1.1	1.1	-	2.8	3.6	7.3	2.8	.7	2.1	1.1
30	2.3	b 1.1	1.1	1.1	-----	2.1	3.6	7.0	2.6	.6	1.8	1.1
31	2.1	-----	1.1	1.1	-----	2.1	-----	7.0	-----	.6	1.8	-----
Total	58.2	37.8	34.8	29.3	29.2	27.9	86.7	303.8	153.4	48.6	70.7	53.9
Mean	1.88	1.26	1.12	0.95	1.04	0.90	2.89	9.80	5.11	1.57	2.28	1.80
Ac-ft	115	75	69	58	58	55	172	603	304	96	140	107

Calendar year 1962: Max 54 Min 0.6 Mean 6.79 Ac-ft 4,910

Water year 1962-63: Max 21 Min 0.4 Mean 2.56 Ac-ft 1,850

Peak discharge (base, 25 cfs).--May 9 (1800) 29 cfs (3.43 ft).

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

## 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 upstream from mouth, and 5 miles southeast of Grand Valley.

Drainage area.--10.5 sq mi (revised).

Records available.--October 1956 to September 1963.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 6,630 ft (from topographic map).

Average discharge.--7 years, 8.18 cfs (5,920 acre-ft per year).

Extremes.--Maximum discharge during year, 56 cfs Sept. 20 (gage height, 2.56 ft); minimum daily, 1.1 cfs Mar. 15, 17-19.  
1956-63: 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 good except those for periods of ice effect or no gage-height record, which are poor. Slight regulation by Battlement Reservoir. No diversion above station.

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

1.5	1.0	2.2	19
1.6	2.0	2.3	27
1.8	5.0		
2.1	14		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.5	2.8	2.2	2.3	2.0	2.2	* 3.4	5.9	1.3	4.0	2.4	5.3
2	* 3.4	2.8	2.2	2.3	2.2	2.2	2.8	5.9	1.4	4.0	3.2	4.8
3	3.0	2.6	* 2.3	2.2	2.4	2.2	3.4	7.1	1.5	3.8	4.6	4.7
4	2.9	2.6	2.0	2.2	2.4	* 2.4	2.6	8.6	1.3	3.8	4.0	4.4
5	3.5	2.6	1.8	2.2	2.2	2.6	2.6	9.8	1.4	3.8	* 8.2	4.4
6	3.0	2.6	1.8	2.0	2.2	2.6	3.5	12	1.3	3.8	7.4	5.6
7	2.9	* 2.0	2.0	* 2.0	2.2	2.4	4.4	13	1.2	3.8	4.2	4.8
8	3.0	2.8	2.0	2.0	2.2	2.4	4.7	* 14	1.2	* 3.8	4.2	4.6
9	3.0	2.4	2.0	2.0	2.2	2.4	4.2	16	1.2	4.0	4.7	* 4.4
10	3.0	2.0	1.8	1.6	2.2	2.2	4.1	16	1.1	4.1	6.2	4.4
11	3.0	1.9	2.0	1.6	* 2.2	* 2.0	4.0	16	1.0	4.0	5.0	4.2
12	3.0	2.2	2.0	1.4	2.2	1.2	4.1	16	1.0	3.8	4.7	4.1
13	3.0	2.4	2.0	1.6	2.4	1.3	4.8	14	9.8	3.5	4.4	4.2
14	3.0	2.6	2.0	1.6	2.4	1.7	5.6	14	9.2	3.4	4.2	4.6
15	3.4	2.8	2.0	1.6	2.4	1.1	5.3	14	8.9	3.5	4.2	4.2
16	4.1	2.4	1.8	1.6	2.2	1.8	4.4	18	8.3	4.1	4.2	3.5
17	3.6	1.9	1.8	1.8	2.2	1.1	4.1	18	8.0	4.0	4.2	3.8
18	3.5	2.0	2.0	1.8	2.0	1.1	3.8	18	8.9	3.6	4.2	3.8
19	4.0	2.4	2.2	1.6	2.0	1.1	3.6	19	* 8.3	3.5	4.0	3.6
20	3.5	2.6	2.0	1.6	1.8	1.2	3.5	18	7.4	3.5	4.1	4.6
21	3.4	2.6	1.8	1.6	1.8	1.4	3.4	18	7.1	3.5	4.1	4.8
22	3.4	2.9	2.0	1.6	1.8	1.5	3.2	20	6.8	3.8	3.8	3.8
23	3.2	2.4	2.0	1.6	1.8	1.8	3.4	20	6.2	4.0	5.6	3.0
24	3.2	2.3	1.6	1.8	2.0	1.6	4.0	21	5.9	3.5	5.6	1.8
25	3.2	2.3	1.4	1.8	2.2	1.7	4.6	19	5.6	3.2	4.8	1.3
26	3.0	2.2	1.2	1.6	2.2	1.7	6.2	18	6.2	3.0	4.8	1.4
27	2.9	2.3	1.4	1.6	2.0	1.9	6.8	16	5.3	2.9	6.8	1.4
28	2.9	2.3	1.8	1.6	2.0	3.4	5.3	16	4.6	2.8	5.6	1.5
29	2.9	3.0	2.0	1.6	-	3.4	5.0	* 14	4.2	2.6	5.0	1.6
30	2.8	2.3	2.2	1.6	-----	2.6	5.3	14	4.1	2.8	4.8	2.0
31	2.8	-----	2.4	1.6	-----	3.4	-----	13	-----	2.6	5.0	-----
Total	99.0	73.0	59.7	55.0	59.8	61.6	126.1	462.3	273.8	110.5	148.2	110.6
Mean	3.19	2.43	1.93	1.77	2.14	1.99	4.20	14.9	9.13	3.56	4.78	3.69
Ac-ft	196	145	118	109	119	122	250	917	543	219	294	219

Calendar year 1962: Max 51 Min 1.2 Mean 10.5 Ac-ft 7,580

Water year 1962-63: Max 21 Min 1.1 Mean 4.49 Ac-ft 3,250

Peak discharge (base, 40 cfs).--Sept. 20 (1600) 56 cfs (2.56 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 18, 19, Dec. 5-30, Jan. 10 to Feb. 1. No gage-height record Feb. 2 to Mar. 11 (stage-discharge relation affected by ice during most of period).

9-942. Roan Creek above Clear Creek, near De Beque, Colo.

Location.--Lat 39°29'30", long 108°21'15", in SE¼NW¼ sec.32, T.6 S., R.98 W., on left bank 1.7 miles upstream from Clear Creek and 14 miles north of De Beque.

Drainage area.--151 sq mi.

Records available.--October 1962 to September 1963.

Gage.--Water-stage recorder. Altitude of gage is 5,560 ft (from topographic map).

Extremes.--Maximum discharge during year, 339 cfs Aug. 8 (gage height, 5.6 ft, from floodmarks), from rating curve extended above 15 cfs on basis of slope-area measurement of peak flow; minimum daily, 3.3 cfs Sept. 30.

Remarks.--Records good except those for Aug. 8, which are poor. Diversions for irrigation of about 1,400 acres above station.

Rating tables (gage height, in feet, and discharge,  
in cubic feet per second)  
(Shifting-control method used Nov. 5-9)

Oct. 1 to Feb. 1		Feb. 2 to Sept. 30	
2.3	4.0	2.1	2.8
2.4	6.0	2.2	4.0
2.6	12	2.4	9.0
2.9	26	2.7	22
		3.0	38

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8.1	9.9	10	8.7	26	8.1	* 13	11	12	6.6	5.4	8.4
2	8.1	10	11	9.3	18	7.8	13	11	11	6.6	5.8	6.9
3	8.7	10	* 11	9.6	14	8.1	12	11	10	6.9	6.0	* 6.9
4	8.1	11	11	9.3	13	* 7.8	13	11	11	7.2	8.1	6.3
5	* 8.7	10	10	9.3	11	6.6	13	12	12	7.2	* 7.5	6.3
6	9.6	9.9	9.9	9.3	11	7.5	12	12	12	7.2	9.0	7.8
7	9.3	* 9.9	10	* 9.3	10	7.5	11	12	12	7.2	7.5	7.2
8	7.5	9.6	9.9	8.7	10	7.5	11	12	11	* 7.8	* 27	6.3
9	7.2	9.0	9.6	7.8	10	7.8	11	12	11	8.7	7.5	5.4
10	7.5	9.0	9.0	9.3	9.8	7.8	11	* 12	11	8.1	8.7	3.4
11	7.5	8.7	8.7	8.1	* 10	7.5	11	11	11	7.8	13	4.4
12	6.9	9.0	8.7	6.9	8.7	7.8	9.8	11	10	7.8	6.0	4.8
13	6.9	9.0	9.0	5.6	8.7	7.8	7.2	11	9.8	7.5	5.2	5.2
14	7.2	9.0	9.6	6.0	9.0	8.1	7.2	11	9.8	7.2	4.8	5.2
15	6.3	10	8.7	6.0	9.4	8.7	7.5	11	9.8	6.9	4.4	5.0
16	6.9	10	9.3	7.2	9.4	8.4	8.1	11	9.8	6.9	4.4	4.4
17	7.5	10	9.3	7.8	9.4	8.4	8.1	11	10	6.6	5.2	4.2
18	7.2	11	9.3	8.1	9.0	8.7	7.2	11	11	6.0	5.4	4.2
19	6.6	10	9.3	7.5	8.7	8.7	9.0	11	* 10	6.0	4.8	4.0
20	6.6	11	9.3	7.2	9.0	8.7	9.4	11	9.0	6.0	4.4	5.8
21	6.9	11	9.0	7.8	9.0	9.0	9.0	11	8.7	6.0	4.2	5.8
22	7.8	11	9.0	7.5	9.0	9.8	9.8	11	8.1	6.0	4.6	4.6
23	9.0	11	9.6	* 6.9	9.0	11	13	11	8.1	6.0	5.2	5.0
24	9.0	11	8.4	6.9	9.0	11	11	11	8.1	5.8	4.6	4.6
25	8.1	11	5.8	6.9	9.4	11	11	11	8.1	5.8	4.4	4.4
26	8.1	11	5.4	6.6	9.0	11	11	11	8.1	5.6	5.0	4.2
27	8.4	11	5.8	6.0	8.7	11	12	12	8.1	5.6	7.8	3.6
28	9.0	10	6.0	6.3	8.1	12	12	11	7.8	5.6	5.6	3.5
29	9.0	8.7	6.6	6.6	-	17	12	* 11	6.9	5.6	5.6	3.4
30	9.9	9.0	7.5	6.9	-----	13	11	11	6.6	5.6	5.6	3.3
31	10	-----	8.1	9.6	-----	12	-----	11	-----	5.4	10	-----
Total	247.6	300.7	273.8	239.0	295.3	287.1	316.3	348	291.8	205.2	212.7	154.5
Mean	7.99	10.0	8.83	7.71	10.5	9.26	10.5	11.2	9.73	6.62	6.86	5.15
Ac-ft	491	596	543	474	586	569	627	690	579	407	422	306

Calendar year 1962: Max - Min - Mean - Ac-ft -  
 Water year 1962-63: Max 27 Min 3.3 Mean 8.69 Ac-ft 6,290

Peak discharge (base, 80 cfs).--Aug. 8 (1500) 339 cfs (5.60 ft); Aug. 11 (1300) 83 cfs (3.64 ft).

\* Discharge measurement made on this day.

## ROAN CREEK BASIN

9-950, Roan Creek near De Beque, Colo.

Location.--Lat 39°27'15", long 108°19'00", on line between secs. 10 and 15, T.7 S., R.98 W., on left bank 15 ft downstream from bridge, half a mile downstream from Kimball Creek and 11 miles north of De Beque.

Drainage area.--321 sq mi (revised).

Records available.--April 1921 to September 1926, October 1962 to September 1963.

Gage.--Water-stage recorder. Altitude of gage is 5,380 ft (from topographic map). Prior to October 1962, chain gage at different datum.

Average discharge.--6 years, 52.6 cfs (38,080 acre-ft per year).

Extremes.--Maximum discharge during year, 110 cfs Sept. 5 (gage height, 2.22 ft), from rating curve extended above 22 cfs; minimum daily, 7.7 cfs Sept. 29, 30.

1921-26, 1962-63: Maximum discharge observed, 1,110 cfs May 21, 1922, from rating curve extended above 700 cfs; maximum gage height observed, 4.6 ft (datum then in use) May 6, 7, 1922; minimum daily discharge, 7.7 cfs Sept. 29, 30, 1963, 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. Diversions above station for irrigation of about 3,500 acres above and about 500 acres below station.

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)  
(Shifting-control method used Sept. 7-30)

0.9	6.5
1.1	13
1.4	28
1.6	43

Discharge, in cubic feet per second, water year October 1962 to September 1963												
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	14	18	20	16	37	14	* 22	16	17	13	11	18
2	14	18	22	16	34	13	22	16	18	13	12	13
3	14	17	* 22	17	28	13	20	17	17	14	13	13
4	14	17	22	17	26	*14	20	18	18	14	14	12
5	* 15	17	21	17	24	12	20	18	17	14	*13	18
6	14	17	21	17	23	14	18	19	17	13	16	21
7	15	* 17	21	*17	22	13	17	19	17	13	15	13
8	15	17	21	17	22	13	17	19	16	*14	22	14
9	16	18	20	18	20	13	16	20	15	15	13	*14
10	15	18	20	18	20	13	15	* 20	15	15	15	8.0
11	14	17	20	17	*19	13	15	19	14	14	18	10
12	12	17	20	b15	18	11	15	18	14	13	13	12
13	12	17	20	b12	18	11	13	20	13	13	13	13
14	12	17	20	b13	18	11	12	20	13	13	12	13
15	12	18	20	b13	19	12	12	20	13	13	12	12
16	13	18	20	b15	20	11	12	17	13	12	12	11
17	14	18	20	b17	19	11	13	18	13	12	12	11
18	13	18	20	18	19	11	12	18	14	12	13	11
19	13	19	20	17	18	11	13	18	*13	12	12	10
20	12	20	20	18	18	12	13	18	13	12	12	11
21	13	20	19	18	17	14	13	18	13	12	12	14
22	14	22	20	18	17	26	13	18	13	12	12	8.0
23	17	21	20	*17	17	27	20	18	13	12	13	9.8
24	17	21	18	17	16	22	20	18	14	12	13	9.2
25	17	21	b14	18	14	18	18	18	15	12	12	9.2
26	18	22	b12	17	14	18	18	17	15	12	12	9.5
27	17	22	b12	b16	15	21	19	18	14	11	17	8.9
28	17	21	b13	b16	14	26	19	18	14	11	20	8.0
29	18	20	b14	17	-	34	17	*18	13	11	14	7.7
30	17	20	15	17	-----	24	* 16	18	13	11	13	7.7
31	18	-----	15	19	-----	22	-----	17	-----	11	13	-----
Total	456	563	582	515	566	498	490	564	437	391	424	350.0
Mean	14.7	18.8	18.8	16.6	20.2	16.1	16.3	18.2	14.6	12.6	13.7	11.7
Ac-ft	904	1,120	1,150	1,020	1,120	988	972	1,120	867	776	841	694

Calendar year 1962: Max - Min - Mean - Ac-ft -  
Water year 1962-63: Max 37 Min 7.7 Mean 16.0 Ac-ft 11,570

Peak discharge (base, 100 cfs).--Sept. 5 (2400) 110 cfs (2.22 ft).

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

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 1963.

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.--30 years, 3,924 cfs (2,841,000 acre-ft per year).

Extremes.--Maximum discharge during year, 8,070 cfs May 19 (gage height, 6.47 ft); maximum gage height, 6.95 ft Feb. 1 (backwater from ice); minimum daily discharge, 1,100 cfs Jan. 14.

1933-63: 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)  
(Shifting-control method used Oct. 4 to Dec. 25, Apr. 3-17, July 30 to Aug. 1)

3.0	1,230	5.0	4,400
3.5	1,800	6.0	6,740
4.0	2,540	7.0	9,800

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,100	2,930	1,940	1,600	2,000	1,540	2,440	* 1,890	5,300	2,180	1,410	2,070
2	2,080	2,990	1,970	1,700	1,800	1,550	2,520	1,840	5,020	2,100	1,430	2,010
3	2,410	2,990	1,960	1,900	1,700	1,560	2,490	1,760	5,260	2,030	1,460	2,010
4	2,540	2,950	2,030	2,100	1,600	1,520	2,200	1,890	4,970	2,040	1,570	1,900
5	* 2,490	* 2,800	1,970	2,200	1,600	1,470	2,060	2,180	4,820	2,130	1,800	* 1,880
6	2,510	2,850	2,040	2,200	1,600	1,380	2,030	2,760	4,640	2,100	2,060	1,940
7	2,540	2,730	2,070	2,000	1,600	1,490	2,080	3,700	4,340	2,100	2,400	2,140
8	2,570	2,590	2,100	1,800	1,600	1,410	2,240	4,380	4,240	1,970	2,140	2,280
9	2,460	2,540	2,180	1,600	1,600	1,420	* 2,440	5,280	4,300	1,960	2,080	2,240
10	2,610	2,560	* 2,140	1,400	1,600	1,420	2,660	6,100	4,280	2,040	2,190	2,190
11	2,810	2,570	2,160	1,500	1,500	1,430	2,430	6,050	3,800	2,240	1,920	2,080
12	2,810	2,620	2,120	1,400	1,600	1,410	2,350	6,120	3,460	2,130	2,200	1,990
13	2,810	2,610	2,100	1,200	1,300	* 1,490	2,250	5,910	3,480	2,060	2,400	1,830
14	2,830	2,570	1,940	1,100	1,400	1,450	2,300	5,760	4,000	1,940	2,190	1,830
15	2,780	2,680	1,680	1,300	1,500	1,500	2,440	5,570	4,380	1,840	1,890	1,810
16	2,990	2,780	1,790	1,400	1,500	1,470	* 2,480	* 5,840	4,510	1,790	1,670	1,860
17	3,220	2,800	1,740	1,400	1,500	1,440	2,300	6,450	4,970	1,690	1,540	1,810
18	3,240	2,740	1,700	1,400	1,500	1,540	2,130	7,000	4,970	* 1,690	1,630	1,760
19	3,330	2,220	1,880	1,500	1,570	1,450	2,060	7,710	* 4,990	1,670	1,740	1,720
20	3,380	2,190	1,970	1,400	1,500	1,420	1,880	7,770	4,840	1,610	1,750	1,720
21	3,310	2,180	1,970	1,400	1,500	1,420	1,780	7,590	4,510	1,540	1,750	1,890
22	3,200	2,160	1,900	1,400	1,460	1,530	1,700	7,060	4,180	1,540	1,680	1,760
23	2,680	2,120	1,930	1,400	1,490	1,620	1,670	6,300	3,900	1,560	1,660	1,810
24	2,570	2,100	2,000	1,500	1,530	1,730	1,600	6,170	3,650	1,530	1,730	1,760
25	2,850	2,080	1,960	1,400	* 1,530	1,800	1,640	6,170	3,350	1,590	1,750	1,750
26	3,130	2,040	1,600	1,400	1,530	1,810	1,730	5,840	3,100	1,630	1,800	1,720
27	2,930	2,040	1,400	1,400	1,470	1,740	1,890	5,550	2,860	1,540	1,960	1,720
28	3,010	2,030	1,200	1,300	1,540	1,760	2,190	5,410	2,690	1,480	2,040	1,680
29	3,010	2,040	1,500	1,400	-	2,100	2,160	* 5,550	2,540	1,440	2,140	1,640
30	2,930	2,000	1,600	1,500	-----	2,350	2,010	5,500	2,410	1,410	2,040	1,660
31	2,930	-----	1,600	1,800	-----	2,360	-----	5,500	-----	* 1,370	2,060	-----
Total	87,060	74,500	58,140	49,000	43,620	49,580	64,150	162,590	123,750	55,930	58,080	56,460
Mean	2,808	2,483	1,875	1,548	1,558	1,599	2,138	5,245	4,125	1,804	1,874	1,882
Ac-ft	172,700	147,800	115,300	95,210	86,520	98,340	127,200	322,500	245,500	110,900	115,200	112,000

Calendar year 1962: Max 24,400 Min 1,200 Mean 5,504 Ac-ft 3,985,000  
Water year 1962-63: Max 7,770 Min 1,100 Mean 2,416 Ac-ft 1,749,000

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 26 to Feb. 18 (no gage-height record Dec. 26 to Feb. 1).

## PLATEAU CREEK BASIN

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 1963.

Gage.--Water-stage recorder. Datum of gage is 8,016.31 ft above mean sea level (Bureau of Reclamation bench mark).

Average discharge.--5 years, 8.79 cfs (6,360 acre-ft per year).

Extremes.--Maximum discharge during year, 84 cfs May 8 (gage height, 2.67 ft); minimum daily, 0.1 cfs Aug. 2, 3.  
1958-63: Maximum discharge, 272 cfs May 23, 1958 (gage height, 3.56 ft); minimum daily, 0.1 cfs Aug. 2, 3, 1963.

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.

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.6	1.9	2.6				10	12	1.5	1.5	0.2	2.0
2	1.5	1.9	2.6				7.0	* 13	2.8	1.4	.1	1.4
3	* 1.2	1.8	2.6				7.0	19	7.5	1.8	.1	1.2
4	.8	1.9	2.4		(*)		7.2	31	3.7	2.2	.4	.9
5	1.0	* 1.9	2.8				7.5	40	3.0	1.5	* 1.5	* 1.0
6	1.8	1.6	3.2				7.7	48	2.7	.8	2.3	2.0
7	1.8	1.0	3.2				9.5	50	2.7	.7	2.2	2.0
8	1.9	1.0	3.2				9.5	52	2.5	.6	1.5	1.6
9	2.0	1.3	3.2				10	50	3.2	.9	1.5	1.4
10	1.6	1.6	* 3.2				10	44	3.0	3.7	3.4	1.2
11	1.0	1.8	3.2			2.2	8.6	36	2.5	2.0	3.9	1.2
12	1.3	1.3	3.2			(*)	11	24	* 2.3	2.2	2.8	1.0
13	1.5	1.3	3.2				19	19	1.2	2.2	2.0	1.2
14	1.6	1.8	3.0				23	12	.8	1.2	1.8	4.3
15	1.9	1.9	3.0	(*)	2.2		19	12	1.4	.9	1.5	2.3
16	2.8	1.6		2			15	10	1.6	*.7	1.4	1.8
17	3.2	1.4					13	9.5	.8	.7	1.8	1.6
18	3.5	1.4					11	8.0	.7	.4	1.9	1.5
19	5.2	1.2					12	6.0	.6	.6	1.5	.7
20	4.3	1.8					9.5	3.9	.5	.7	2.0	.3
21	3.2	2.0					7.5	2.2	.4	.6	2.2	.2
22	3.0	2.2					7.0	2.8	.3	.8	* 1.8	.2
23	2.7	2.2	2.5				7.7	3.5	.3	2.0	1.9	.2
24	2.5	2.2				5	10	* 5.4	*.6	2.0	2.3	.2
25	2.3	2.4					15	4.8	1.9	1.6	1.9	.4
26	2.3	2.6					25	4.1	1.9	1.5	2.2	1.3
27	2.0	2.4					27	3.0	2.0	1.0	2.2	1.2
28	1.9	2.4				(*)	19	3.0	1.9	.9	1.6	1.2
29	1.9	2.4					10	14	3.4	1.6	1.5	1.2
30	1.9	2.6					12	12	3.5	1.5	.7	1.3
31	1.9	-----					14	2.2	-----	.2	1.5	-----
Total	67.1	54.8	84.6	62	61.6	120	370.7	537.3	57.4	38.8	54.2	37.5
Mean	2.16	1.83	2.73	2	2.2	3.87	12.4	17.3	1.91	1.25	1.75	1.25
Ac-ft	133	109	168	123	122	238	735	1,070	114	77	108	74

Calendar year 1962: Max 149 Min 0.8 Mean 17.1 Ac-ft 12,380  
Water year 1962-63: Max 52 Min 0.1 Mean 4.24 Ac-ft 3,070

Peak discharge (base, 140 cfs).--No peak above base.

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 17 to Dec. 15, Apr. 3, 4. No gage-height record Dec. 16 to Mar. 28 (stage-discharge relation affected by ice during most of period), June 22-24, Aug. 3, Sept. 20-24.

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.Drainage area.--24.4 sq mi.Records available.--April 1960 to September 1963.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, 27,960 acre-ft May 14 (elevation, 7,978.2 ft); minimum observed, 4,750 acre-ft Sept. 30 (elevation, 7,933.8 ft).

1960-63: Maximum contents observed, 34,110 acre-ft June 12-15, 1962 (elevation, 7,985.3 ft); 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 1962 to September 1963

Date	Elevation (feet)†	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	7,965.3	18,620	-
Oct. 31.....	7,964.9	18,370	-250
Nov. 30.....	7,964.8	18,310	-60
Dec. 31.....	7,964.8	18,310	0
Calendar year 1962.....	-	-	+5,610
Jan. 31.....	7,965.3	18,620	+310
Feb. 28.....	7,965.7	18,880	+260
Mar. 31.....	7,966.7	19,520	+640
Apr. 30.....	7,972.4	23,470	+3,950
May 31.....	7,974.3	24,890	+1,420
June 30.....	7,966.7	19,520	-5,370
July 31.....	7,954.0	12,310	-7,210
Aug. 31.....	7,942.7	7,610	-4,700
Sept. 30.....	7,933.8	4,750	-2,860
Water year 1962-63.....	-	-	-13,870

† Elevation at 0800.



## PLATEAU CREEK BASIN

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, 1½ miles downstream from Leon Creek, and 6 miles east of Collbran.

**Drainage area.**--80.4 sq mi (revised).

**Records available.**--September 1921 to September 1963. Prior to October 1933 monthly discharge only, published in WSP 1317.

**Gage.**--Water-stage recorder. Altitude of gage is 7,130 ft (from topographic map).

**Extremes.**--Maximum discharge during year, 500 cfs May 8 (gage height, 3.77 ft); minimum daily, 4.2 cfs Apr. 14, 21-23.

1921-63: 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, 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, and for power development.

Rating table, except periods of ice affect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used May 10-29)

0.8	4.0	1.7	56
.9	6.0	2.5	145
1.2	18	3.0	250
1.4	30		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	17	13	1.0	7.2	8.4	5.6	8.0	29	32	18	21	22
2	14	13	9.6	7.2	8.0	5.6	7.2	*26	37	17	21	18
3	*15	12	8.8	7.2	7.6	5.8	7	29	42	16	23	12
4	15	12	7.6	6.4	*7.2	5.6	b 6.8	43	38	17	27	11
5	16	*12	b 7.5	5.8	6.4	b 5.5	6.8	79	37	17	*26	*10
6	16	12	b 7.5	5.8	6.4	b 5.5	6.8	149	34	18	20	14
7	16	9.6	7.6	5.8	6.4	b 5.5	7.2	137	33	16	18	14
8	15	14	b 8	5.8	6.4	b 5.5	13	183	32	18	18	13
9	15	16	b 8	5.8	6.4	b 5.5	*6.8	108	32	19	18	12
10	14	14	*b 9	5.6	6.4	5.6	6.4	138	*29	36	27	12
11	14	12	b 9	5.6	6.4	5.6	5.8	69	24	33	27	12
12	14	14	b 9	b 5.5	b 5.5	*5.4	4.6	53	20	32	23	10
13	14	15	b 9	b 5.5	b 5	b 5.5	4.4	45	19	26	23	12
14	14	13	b 8	b 6	b 5	b 5.5	4.2	39	24	20	22	19
15	15	13	b 8	*6.0	5.0	5.4	4.4	34	26	19	22	22
16	19	11	b 8.5	6.4	5.0	b 5.5	4.4	42	36	*18	20	17
17	22	b 11	b 8.5	6.4	b 4.8	5.4	4.4	42	44	18	22	16
18	25	b 11	8.0	6.4	5.2	5.6	4.6	40	55	18	22	14
19	32	b 10	8.0	6.4	*5.6	5.6	4.6	39	40	18	20	13
20	28	b 11	8.0	6.8	5.6	5.8	4.4	39	33	18	22	13
21	23	b 11	b 8	6.8	5.6	6.0	4.2	38	23	17	22	14
22	22	b 12	b 8	6.8	5.6	6.4	4.2	38	18	18	*22	13
23	18	b 12	b 8	6.8	5.8	7.2	4.2	38	14	21	22	13
24	17	b 12	b 7.5	6.8	5.8	6.8	4.4	*40	*14	18	22	17
25	16	b 12	b 6	6.8	5.8	6.8	4.6	40	16	17	20	17
26	14	12	b 5	6.8	5.6	7.2	4.6	36	20	16	21	17
27	14	b 11	b 5.5	6.8	5.8	7.6	5.2	35	20	15	22	17
28	14	b 11	b 6	6.8	5.8	8.0	5.2	33	20	18	23	17
29	13	10	b 6.5	6.8	-	2.2	5.0	33	18	19	22	16
30	14	10	b 7	6.8	-----	8.4	15	34	18	22	19	16
31	14	-----	7.2	7.6	-----	8.4	-----	34	-----	20	19	-----
Total	529	361.6	242.3	199.2	168.5	193.0	178.4	1,762	848	613	676	443
Mean	17.1	12.1	7.82	6.43	6.02	6.23	5.95	56.8	28.3	19.8	21.8	14.8
Ac-ft	1,050	717	481	395	334	383	354	3,490	1,680	1,220	1,340	879

Calendar year 1962: Max 626 Min 5 Mean 73.7 Ac-ft 53,350  
Water year 1962-63: Max 183 Min 4.2 Mean 17.0 Ac-ft 12,320

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

9-968. Buzzard Creek below Owens Creek, near Heiberger, Colo.

Location.--Lat 39°14'10", long 107°38'00", 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, 4¼ miles southeast of Hightower ranger station, and 8½ miles southeast of Heiberger.

Drainage area.--52.2 sq mi.

Records available.--October 1955 to September 1963.

Gage.--Water-stage recorder. Altitude of gage is 8,206 ft, revised (from topographic map).

Average discharge.--8 years, 23.8 cfs (17,230 acre-ft per year).

Extremes.--Maximum discharge during year, 152 cfs May 6 (gage height, 3.52 ft); no flow for many days.  
1955-63: Maximum discharge, 636 cfs June 4, 1957 (gage height, 5.82 ft); no flow at times in 1956-63.

Remarks.--Records good except those for periods of ice effect, no gage-height record, 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, 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 Sept. 17-30)

1.5	0	2.4	26
1.6	1.0	2.7	48
1.7	2.2	3.0	77
1.9	5.5	3.5	152
2.1	11		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	e 0.7	1.1	b 0.8				36	33	5.0	0	0	0.6
2	e .8	*1.1	b .8				30	* 30	7.5	0	0	.5
3	* .8	1.2	b .8				18	40	3.0	0	0	.3
4	.7	1.2	b 1.0				16	70	14	0	.3	*.2
5	.6	1.0	b .8				*20	86	8.0	0	7.0	.3
6	.6	1.0	b .8				29	95	6.0	0	* 7.2	4.0
7	.7	.8	b .8				32	82	4.3	0	3.3	3.0
8	.9	.6	b .8				32	77	3.5	0	2.2	1.7
9	1.2	.6	b .8				30	83	3.2	0	1.8	1.2
10	.9	.6	(*)				25	68	3.0	.6	1.4	.7
11	.7	.7				2	23	58	*2.7	2.7	3.3	.6
12	.7	.6					26	39	2.2	1.7	3.8	.1
13	.8	.6					39	28	2.0	2.7	2.1	.3
14	.8	1.0					45	22	1.7	1.7	1.0	3.0
15	1.0	1.5		0.8	1.6		42	20	1.5	*.9	.5	3.2
16	1.8	1.6					28	24	3.2	.7	0	1.7
17	3.0	1.2					*30	16	6.0	.8	0	1.0
18	2.7	b 1.0					27	15	5.8	.5	0	.6
19	4.3	b .8			(*)		25	13	5.8	.1	0	.4
20	4.6	b 1.0					18	12	4.3	0	.1	.9
21	3.0	b 1.0	.8				17	11	3.6	0	.3	1.4
22	2.4	b 1.0					14	15	2.5	0	.4	.7
23	2.2	b 1.0					13	15	1.8	0	.5	.7
24	2.1	1.4					20	* 21	1.4	1.4	1.4	.6
25	1.7	1.4				40	34	15	.9	1.0	.7	.4
26	1.2	b 1.2					52	10	*.8	.3	.9	.4
27	1.1	b 1.0					54	8.0	.3	0	1.8	.4
28	1.1	b .8					32	7.2	.2	0	1.7	.3
29	1.1	b .8					25	6.5	0	0	1.2	.2
30	1.1	b .8					26	6.2	0	0	.7	.2
31	1.1	-----					-----	5.5	-----	0	.6	-----
Total	46.4	29.6	25.0	24.8	44.8	480	858	1,031.4	131.2	15.1	44.2	29.6
Mean	1.50	0.99	0.81	0.8	1.6	15.5	28.6	33.3	4.37	0.49	1.43	0.99
Ac-ft	92	59	50	49	89	952	1,700	2,050	260	30	88	59

Calendar year 1962: Max 440 Min 0 Mean 44.8 Ac-ft 32,460

Water year 1962-63: Max 95 Min 0 Mean 7.56 Ac-ft 5,480

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

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

e Stage-discharge relation indefinite.

Note.--No gage-height record Dec. 10 to Apr. 5 (stage-discharge relation affected by ice most of period).

## PLATEAU CREEK BASIN

9-975. Buzzard Creek near Colbran, 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 Colbran.

Drainage area.--139 sq mi.

Records available.--September 1921 to September 1963. 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.--42 years, 47.4 cfs (34,320 acre-ft per year).

Extremes.--Maximum discharge during year, 150 cfs May 7 (gage height, 2.70 ft); maximum gage height, 3.83 ft Mar. 23 (backwater from ice); no flow for many days.

1921-63: 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, 1963.

Remarks.--Records fair except those for periods of ice effect, no gage-height record, 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.

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.3	4.3					71	a 46	11	e 1.4	0.9	0.2
2	3.0	* 4.3					46	* a 44	13	e 1.2	1.2	.7
3	* 3.0	4.3			20		25	38	39	e 1.2	2.4	.5
4	2.6	4.5			(*)		22	63	38	e 1.2	3.4	.9
5	3.0	4.8					26	92	24	e 1.0	* 2.3	* 1.8
6	3.2	4.8					34	100	17	e 1.0	2.3	2.8
7	3.2	4.8					50	101	13	e 1.0	.3	2.3
8	3.4	4.5			7		60	79	10	e 1.0	1.2	3.0
9	3.2	4.5					* 44	98	9.7	e 1.2	1.5	2.4
10	3.4	5.1					42	85	* 10	1.3	.5	2.8
11	2.1	4.8				5	32	78	9.4	1.3	0	1.8
12	3.0	5.1				(*)	35	54	7.8	1.6	.1	.1
13	3.4	4.8					47	41	6.3	1.8	.8	.7
14	3.6	6.3	(*)				62	30	5.4	.6	0	1.3
15	3.7	7.2		(*)			57	23	4.3	2.6	0	3.2
16	5.7	7.5	3.2	3			36	26	4.5	* 1.6	0	3.2
17	5.4	6.9					36	25	4.1	8.1	e .4	3.4
18	6.0	6.9					32	22	4.1	7.2	e .2	e 2.6
19	6.9						a 30	16	6.0	e 6	e 0	e 1.0
20	7.2						a 28	14	6.3	e 4.4	e 0	e .4
21	6.3				4							
22	4.8					15	a 26	14	5.7	e 2.4	e .2	e .6
23	5.1					40	e 24	19	4.1	e 2.6	e .6	e .4
24	5.1					90	a 22	20	3.2	e 3.0	e 1.0	e .3
25	4.8					83	e 34	* 26	* 3.4	e 2.6	e .6	e .2
26		5.5				62	e 50	28	2.1	e 2.2	e .2	e .1
27	4.8					73	a 60	20	e 2.0	e 1.8	e .4	e 0
28	4.3					90	a 70	15	e 1.8	1.6	e .4	e 0
29	4.1					87	a 60	13	e 1.6	.6	e .1	e 0
30	3.9					97	a 50	11	e 1.4	.2	e .4	e .1
31	4.1					73	a 40	11	e 1.4	0	e .6	e .2
	4.1					73		11		.8	e .4	
Total	128.7	161.4	99.2	93	207	883	1,251	1,263	269.6	64.5	22.4	37.0
Mean	4.15	5.38	3.2	3	7.4	28.5	41.7	40.7	8.99	2.08	0.72	1.23
Ac-ft	255	320	197	184	411	1,750	2,480	2,510	535	128	44	73

Calendar year 1962: Max 713 Min 0.4 Mean 67.4 Ac-ft 48,810

Water year 1962-63: Max 101 Min 0 Mean 12.3 Ac-ft 8,890

Peak discharge (base, 350 cfs).--No peak above base.

\* Discharge measurement made on this day.

a No gage-height record.

e Stage-discharge relation indefinite.

Note.--Stage-discharge relation affected by ice Nov. 19 to Mar. 23.

PLATEAU CREEK BASIN

211

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.--9.57 sq mi (revised).

Records available.--October 1955 to September 1963.

Gage.--Water-stage recorder. Altitude of gage is 8,183 ft (from topographic map).

Average discharge.--8 years, 6.83 cfs (4,940 acre-ft per year).

Extremes.--Maximum discharge during year, 34 cfs May 4 (gage height, 2.84 ft); maximum gage height, 3.13 ft Apr. 3 (backwater from ice); minimum discharge not determined.

1955-63: Maximum discharge, 317 cfs June 7, 1957 (gage height, 4.35 ft); minimum daily determined, 0.1 cfs Apr. 1, 2, 1961.

Remarks.--Records fair 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 4 to June 6)

1.9	0.2	2.4	7.0
2.0	.9	2.7	21
2.2	3.3	3.0	38

Discharge, in cubic feet per second, water year October 1962 to September 1963

Discharge, in cubic feet per second, water year October 1902 to September 1903														
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.		
1	0.8	1.6					5.0	12	5.2	1.8	0.8	2.6		
2	.9	* 1.6					3.8	* 14	5.8	1.7	1.0	1.4		
3	* 1.3	1.6					b 3.6	20	6.2	1.7	1.1	1.2		
4	1.2	1.4					b 3.6	24	4.8	1.8	1.9	1.2		
5	1.1	1.3					b 3.4	24	5.0	1.8	1.7	* 1.2		
6	1.0	1.2				1	b 2.8	20	4.5	1.6	* 1.7	2.4		
7	.9	b 1.1					1.6	14	4.2	1.3	1.1	1.7		
8	.9	b 1.1					1.6	16	4.2	1.4	1.0	1.8		
9	.8	b 1.0					1.6	18	4.3	1.7	1.2	1.6		
10	.9	b 1.0					1.8	18	4.3	2.3	2.0	1.3		
11	.8	b 1.0					(*)	(*)	2.5	17	4.2	1.7	1.4	1.2
12	.7	b 1.0							5.4	18	* 4.3	1.8	1.2	1.1
13	.8	b 1.0							10	15	4.2	1.8	1.2	1.4
14	.7	1.2							10	12	4.3	1.6	.9	1.6
15	.7	1.2							9.4	11	4.0	1.4	.8	1.2
16	1.0	1.2	0.8	0.8	1	8.6	11	4.2	* 1.6	1.1	1.0			
17	1.0	b 1.0				8.2	10	4.0	1.4	1.3	.9			
18	1.0	b 1.0				6.8	9.8	4.0	1.3	1.3	.9			
19	.9	1.0				8.2	9.8	3.8	1.1	1.0	.9			
20	.9	1.0				9.4	10	3.5	1.1	1.6	1.1			
21	1.1	1.0							9.0	10	3.2	1.2	1.3	1.3
22	1.0	b 1.0	6.4	11	3.0				1.4	1.3	.9			
23	1.0	b 1.0	5.0	9.8	2.8				1.7	1.6	.8			
24	1.0	b .8	5.2	* 10	* 2.5				1.2	1.4	.8			
25	1.0	b .8	6.6	9.0	2.4				1.1	1.1	.8			
26	1.2	.8				8.6	7.8	2.4	1.1	1.1	.8			
27	1.2	b .8				6.8	7.0	2.1	.9	1.6	.8			
28	1.3	b .8				6.8	6.6	1.9	.9	1.6	.8			
29	1.3	b .8				3.0	8.6	6.0	1.9	.8	1.1	.8		
30	1.3	b .8				-----	5.0	7.8	5.8	1.8	1.1	.8		
31	1.6	-----			-----	4.3	-----	5.6	-----	1.6	-----			
Total	31.3	32.1	24.8	24.8	28	56.3	178.1	392.2	113.0	43.8	40.1	36.3		
Mean	1.01	1.07	0.8	0.8	1	1.82	5.94	12.7	3.77	1.41	1.29	1.21		
Ac-ft	62	64	49	49	56	112	353	778	224	87	80	72		

Calendar year 1962: Max 103 Min - Mean 9.26 Ac-ft 6,700  
Water year 1962-63: Max 24 Min - Mean 2.74 Ac-ft 1,990

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

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 6 to Mar. 28 (stage-discharge relation affected by ice during most of period), Apr. 8-10, June 11.

## PLATEAU CREEK BASIN

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 1963. 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.--28 years, 189 cfs (136,800 acre-ft per year).

Extremes.--Maximum discharge during year, 738 cfs Aug. 31 (gage height, 3.82 ft); maximum gage height, 4.95 ft Feb. 1 (ice jam); minimum daily discharge, 19 cfs July 30, 31.

1935-63: 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, which are poor. Natural flow of stream affected by storage reservoirs, diversions for irrigation of about 25,000 acres, return flow from irrigated areas, and for power development.

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

1.6	13	2.1	80
1.7	21	2.5	190
1.9	46	3.0	370

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	123	105	110	100	200	102	168	73	45	46	21	132
2	120	105	115	100	180	102	146	89	48	46	48	71
3	118	105	95	110	160	102	89	75	67	46	115	71
4	123	107	93	120	*150	105	95	91	89	49	48	67
5	*128	*105	93	120	140	105	93	146	80	51	*59	56
6	123	110	87	110	120	93	93	197	71	46	57	*82
7	118	107	91	120	112	87	115	270	66	46	54	73
8	115	105	84	120	112	95	128	222	57	46	51	60
9	112	100	82	120	105	95	*123	288	56	51	49	66
10	110	100	*90	110	98	98	125	*214	*57	54	57	62
11	110	102	84	100	95	91	112	239	59	52	52	67
12	105	100	87	90	60	91	100	120	54	54	43	64
13	105	98	87	80	*66	*89	100	112	54	59	40	56
14	105	100	87	100	100	67	115	93	56	56	40	64
15	107	102	87	110	105	75	131	78	56	46	33	67
16	105	118	105	*120	105	66	112	76	57	*26	36	62
17	118	110	125	120	105	69	89	80	64	28	32	62
18	143	110	123	120	105	95	80	78	67	26	36	62
19	125	100	123	120	105	93	75	73	73	20	33	56
20	131	110	123	120	105	87	66	67	64	20	46	108
21	143	115	123	110	105	98	57	67	64	20	43	75
22	131	107	120	110	102	123	54	66	57	22	54	56
23	128	107	125	110	102	211	49	67	51	66	82	52
24	125	107	125	110	102	228	46	71	46	33	60	56
25	120	102	120	110	102	158	54	76	*51	30	52	57
26	118	102	115	110	102	143	75	73	52	33	52	57
27	118	98	93	120	102	171	120	62	49	22	71	52
28	115	95	65	120	102	200	107	49	43	21	62	48
29	112	95	70	130	-	218	80	45	42	21	57	45
30	110	102	75	140	-----	168	66	33	43	19	56	43
31	105	-----	85	150	-----	164	-----	43	-----	19	106	-----
Total	3,669	3,129	3,077	3,530	3,147	3,689	2,863	3,333	1,738	1,174	1,645	1,949
Mean	118	104	99.3	114	112	119	95.4	108	57.9	37.9	53.2	65.0
Ac-ft	7,280	6,210	6,100	7,000	6,240	7,320	5,680	6,610	3,450	2,330	3,270	3,870

Calendar year 1962: Max 1,250 Min 53 Mean 225 Ac-ft 162,500  
Water year 1962-63: Max 288 Min 19 Mean 90.3 Ac-ft 65,360

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 28 to Feb. 5.

## 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 1963. 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, 108,300 acre-ft June 14-19 (elevation, 9,331.00 ft); minimum, 44,710 acre-ft Sept. 30 (elevation, 9,291.60 ft).

1937-63: 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. Figures given herein are usable contents.

Cooperation.--Records furnished by Uncompahgre Valley Water Users Association.

Month-end elevation and contents, water year October 1962 to September 1963

Date	Elevation (feet)†	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	9,302.30	58,110	-
Oct. 31.....	9,305.80	63,090	+4,980
Nov. 30.....	9,308.40	67,260	+4,170
Dec. 31.....	9,310.80	71,220	+3,960
Calendar year 1962.....	-	-	+830
Jan. 31.....	9,312.90	74,740	+3,520
Feb. 28.....	9,314.80	77,950	+3,210
Mar. 31.....	9,317.00	81,720	+3,770
Apr. 30.....	9,316.40	80,690	-1,030
May 31.....	9,329.60	105,400	+24,710
June 30.....	9,329.40	105,000	-400
July 31.....	9,313.70	76,090	-28,910
Aug. 31.....	9,297.60	52,130	-23,960
Sept. 30.....	9,291.60	44,710	-7,420
Water year 1962-63.....	-	-	-13,400

† Elevation at 0800.

## GUNNISON RIVER BASIN

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, 3½ miles upstream from Lottis Creek, and 16 miles northeast of Almont.

Drainage area.--254 sq mi (revised).

Records available.--June 1929 to September 1934 (monthly discharge only, published in WSP 1313), October 1938 to September 1963.

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.--30 years, 186 cfs (134,700 acre-ft per year).

Extremes.--Maximum discharge during year, 752 cfs July 31 (gage height, 5.27 ft); minimum daily, 6.0 cfs Apr. 16.  
1938-63: 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)

2.1	5.0	2.6	23	4.0	265
2.2	7.0	3.0	61	5.0	640
2.4	13	3.5	137	5.5	860

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	20	22	11	11	11	10	10	405	13	472	743	292
2	* 21	22	11	11	8.2	10	10	* 433	31	464	730	279
3	21	22	11	11	8.2	10	10	297	162	480	698	229
4	21	22	11	11	8.2	10	10	97	259	492	698	180
5	21	22	* 11	11	8.2	10	10	11	300	508	584	166
6	28	22	11	11	8.8	10	10	11	314	504	460	166
7	25	22	11	11	11	10	10	11	314	498	* 433	166
8	17	18	11	11	11	10	10	* 11	321	488	504	166
9	17	11	11	11	11	10	11	11	356	496	600	166
10	17	11	11	11	11	10	11	11	366	* 352	564	141
11	22	11	11	11	11	10	29	11	335	356	468	* 133
12	21	11	11	11	11	10	81	11	304	460	370	133
13	26	11	11	11	11	10	82	10	300	504	342	132
14	27	11	11	11	11	10	90	* 10	318	508	433	175
15	29	11	11	11	11	10	22	10	335	492	552	202
16	28	11	11	11	11	10	6.0	10	338	512	600	200
17	24	11	11	11	11	10	44	10	335	596	624	198
18	23	11	11	11	11	10	226	10	* 321	660	620	198
19	23	11	11	11	11	10	398	12	300	656	588	195
20	23	11	11	11	11	10	468	12	293	656	572	195
21	22	11	11	11	10	10	468	11	276	656	568	195
22	22	11	11	11	10	10	468	11	256	656	568	192
23	22	11	11	11	11	10	468	11	244	656	568	192
24	22	11	11	11	10	10	468	11	232	660	564	192
25	22	11	11	11	10	10	468	11	276	660	560	208
26	22	11	11	11	10	10	366	11	426	596	560	272
27	22	11	11	11	10	10	276	11	492	632	452	272
28	22	11	11	11	10	10	276	* 11	484	628	348	307
29	21	11	11	11	-	10	346	11	480	716	296	324
30	* 22	11	11	11	-----	10	380	12	472	743	276	363
31	22	-----	11	11	-----	10	-----	13	-----	743	292	-----
Total	695	414	341	341	287.6	310	5,532.0	1,528	9,253	17,490	16,226	6,219
Mean	22.4	13.8	11.0	11.0	10.3	10.0	184	49.3	308	564	523	207
Ac-ft	1,380	821	676	676	570	615	10,970	3,030	18,350	34,690	32,180	12,340

Calendar year 1962: Max 1,120 Min 11 Mean 262 Ac-ft 189,700  
Water year 1962-63: Max 743 Min 6.0 Mean 161 Ac-ft 116,300

\* Discharge measurement made on this day.

Note.--Discharge computed from once-daily chain-gege readings Oct. 30 to May 2.

## 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.--477 sq mi (revised).

Records available.--July 1910 to September 1963. 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.--53 years, 341 cfs (246,900 acre-ft per year).

Extremes.--Maximum discharge during year, 770 cfs Aug. 2 (gage height, 2.77 ft); minimum daily, 28 cfs Dec. 26.

1910-63: Maximum discharge observed, 3,760 cfs June 9, 1920, 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 period of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used May 7 to July 3, Sept. 22-30)

0.9	57	1.6	225
1.0	73	2.0	385
1.3	135	2.8	830

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	96	80	48	38	55	40	76	524	166	524	758	340
2	* 92	80	48	42	55	40	* 75	* 529	184	524	740	340
3	92	80	48	44	50	40	62	420	292	540	728	300
4	90	80	46	46	50	40	60	288	372	584	728	270
5	90	80	* 48	46	50	* 36	67	138	405	590	674	240
6	90	80	46	44	50	40	70	155	410	600	529	240
7	94	70	46	44	48	40	82	178	410	595	* 502	240
8	88	60	46	* 44	48	40	92	184	415	578	534	240
9	83	55	42	46	44	40	92	200	465	595	644	230
10	82	55	40	46	40	40	88	175	475	502	634	220
11	83	55	40	44	34	40	106	197	440	* 400	578	* 220
12	83	50	40	40	* 30	40	184	197	405	502	470	218
13	85	55	40	34	32	40	200	181	400	551	415	211
14	87	60	40	36	34	40	214	* 178	405	551	445	236
15	88	60	40	40	40	40	178	152	430	534	600	280
16	92	60	40	40	42	b 40	100	175	435	551	628	276
17	106	60	42	40	40	b 40	135	190	440	628	668	272
18	100	55	44	42	38	b 40	300	200	* 420	698	690	268
19	98	50	46	42	38	b 40	425	211	405	698	644	268
20	96	50	40	36	42	b 46	529	232	390	698	622	280
21	90	50	36	38	40	b 50	551	242	376	698	620	292
22	88	50	36	38	40	b 55	573	242	358	698	620	272
23	88	50	36	38	40	67	573	228	344	698	620	268
24	87	50	34	38	40	70	568	222	324	698	620	268
25	87	50	32	40	40	62	568	194	340	698	620	268
26	87	50	28	42	40	62	490	190	445	650	600	304
27	88	50	30	36	40	67	395	184	546	644	500	304
28	88	48	30	36	36	68	372	* 175	524	656	400	330
29	88	48	32	40	-	75	405	175	518	722	350	370
30	* 85	48	34	42	-----	76	475	178	524	758	340	400
31	85	-----	36	46	-----	76	-----	175	-----	758	340	-----
Total	2,776	1,769	1,234	1,268	1,176	1,530	8,105	6,909	12,063	19,121	17,851	8,265
Mean	89.5	59.0	39.8	40.9	42.0	49.4	270	223	402	617	576	276
Ac-ft	5,510	3,510	2,450	2,520	2,330	3,030	16,080	13,700	23,930	37,930	35,410	16,390

Calendar year 1962: Max 1,760 Min 28 Mean 439 Ac-ft 318,000  
Water year 1962-63: Max 758 Min 28 Mean 225 Ac-ft 162,800

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Oct. 30 to Mar. 15 (stage-discharge relation affected by ice most of period), Aug. 21 to Sept. 11, Sept. 28-30.



## GUNNISON RIVER BASIN

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 1963. 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.--41 years, 343 cfs (248,300 acre-ft per year).

Extremes.--Maximum discharge during year, 1,460 cfs May 21 (gage height, 4.60 ft); minimum daily, 32 cfs Dec. 27.

1905, 1910-22, 1934-63: 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, which are poor. Diversions for irrigation of about 7,400 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 Feb. 7-12, Feb. 20 to June 19, Sept. 8-30)

2.0	35	3.5	550
2.1	55	4.0	860
2.3	110	4.5	1,260
3.0	340	5.0	1,660

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	86	83	70	48	65	49	164	214	748	221	78	113
2	*83	80	62	50	70	51	*164	*214	811	210	75	110
3	83	80	62	55	65	51	128	260	660	235	75	101
4	83	80	68	60	65	51	122	368	560	242	83	98
5	83	80	* 60	55	65	* 47	134	431	555	232	110	98
6	80	80	58	55	60	51	149	636	525	210	107	101
7	75	72	60	55	60	51	185	825	510	200	* 113	125
8	72	70	62	* 55	60	51	214	804	515	200	137	116
9	70	72	53	55	60	49	194	1,150	555	200	143	104
10	70	72	51	60	55	51	200	956	486	* 207	140	92
11	70	72	51	55	55	49	197	1,040	411	182	167	* 89
12	68	70	58	44	* 49	49	207	853	399	176	161	86
13	68	68	55	40	44	49	238	818	443	164	140	86
14	68	78	53	48	48	47	284	*900	496	152	125	92
15	70	80	55	55	50	49	298	696	520	146	116	92
16	86	78	55	50	50	45	235	964	515	137	107	86
17	101	72	53	55	55	47	214	1,110	439	131	107	86
18	101	68	53	55	50	49	221	1,280	* 419	125	137	80
19	113	68	60	50	50	49	191	1,290	403	116	119	80
20	116	75	53	50	49	49	182	1,290	411	107	110	83
21	104	75	47	48	49	51	164	1,290	399	101	110	83
22	98	70	46	48	49	60	155	1,120	387	92	107	80
23	95	72	46	48	51	75	158	1,050	354	92	110	78
24	92	75	44	50	51	83	191	1,000	336	98	110	78
25	89	72	40	48	51	80	238	932	319	104	110	75
26	89	72	36	48	49	89	326	853	302	98	110	75
27	86	65	32	50	51	104	415	884	263	99	125	75
28	83	62	34	50	45	110	330	*908	238	86	122	72
29	83	62	36	50	-	149	270	839	221	86	110	70
30	*83	65	42	50	-----	146	228	790	214	83	104	72
31	83	-----	44	55	-----	146	-----	769	-----	78	101	-----
Total	2,631	2,188	1,599	1,595	1,521	2,077	6,396	26,534	13,414	4,600	3,569	2,676
Mean	84.9	72.9	51.6	51.5	54.3	67.0	213	856	447	148	115	89.2
Ac-ft	5,220	4,340	3,170	3,160	3,020	4,120	12,690	52,630	26,610	9,120	7,080	5,310

Calendar year 1962: Max 2,400 Min 32 Mean 415 Ac-ft 300,600  
Water year 1962-63: Max 1,290 Min 32 Mean 188 Ac-ft 136,500

Peak discharge (base, 1,600 cfs).--No peak above base.

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 22 to Feb. 6, Feb. 13-19.

9-1133. Ohio Creek at Baldwin, Colo.

Location (revised).--Lat 38°45'55", long 107°03'30", in NE¼ sec.12, T.15 S., R.87 W., on left bank three quarters of a mile northwest of Baldwin and 0.2 mile downstream from Castle Creek.

Drainage area.--48 sq mi, approximately.

Records available.--October 1958 to September 1963.

Gage.--Water-stage recorder. Altitude of gage is 8,600 ft, revised (from topographic map).

Average discharge.--5 years, 40.4 cfs (29,250 acre-ft per year).

Extremes.--Maximum discharge during year, 165 cfs May 6 (gage height, 2.74 ft); maximum gage height recorded, 3.54 ft Mar. 29 (backwater from ice); minimum daily discharge determined, 3.8 cfs July 29.

1958-63: Maximum discharge, about 550 cfs May 9, 1962; maximum gage height, 3.77 ft May 12, 1962; minimum daily discharge determined, 3.8 cfs July 29, 1963.

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 580 acres of hay meadows. Two diversions above station for irrigation of about 1,000 acres below station.

Rating table, except periods of ice effect (gage height, in feet,  
end discharge, in cubic feet per second)  
(Shifting-control method used May 2 to June 10)

1.1	2.5	2.2	85
1.3	6.0	2.5	135
1.5	12	2.6	155
1.8	36		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	10						b 30	59	69	9.4	4.4	15
2	* 9.7						* 24	* 71	71	9.7	28	13
3	9.4						b 18	92	66	10	15	12
4	9.4						b 16	101	60	10	17	11
5	9.4					(*)	17	110	60	9.7	24	14
6	10		(*)		6.5		24	129	55	9.4	22	23
7	9.7						33	123	55	8.7	*19	18
8	9.4			(*)			36	127	51	9.7	20	15
9	9.0						34	143	47	11	20	14
10	9.0						b 30	133	35	*13	23	13
11	9.0					5	32	131	34	9.0	20	* 13
12	8.7				(*)		b 36	117	38	7.5	17	12
13	9.0						b 50	104	43	6.0	15	12
14	9.0						b 55	*86	46	5.4	12	13
15	9.7						54	81	42	5.0	11	12
16	11		7.5	5.5	5		b 42	89	38	4.4	11	12
17	14						b 42	102	33	4.4	12	12
18	11						37	109	*38	6.3	14	11
19	12						32	112	34	7.5	11	11
20	12						27	117	32	7.5	12	11
21	10				5	6	24	109	33	8.4	12	11
22	10					7	24	101	30	8.1	12	11
23	9.7					8	b 26	105	27	7.2	14	10
24	9.0					9	b 36	93	24	9.0	15	10
25	9.0					10	b 50	82	20	7.8	14	9.0
26	8.7					14	68	81	15	8.7	13	9.0
27	8.4					20	69	82	14	5.4	20	9.0
28	8.7					30	52	*85	11	4.0	16	9.0
29	8.7					b 36	b 46	81	11	3.8	14	8.1
30	*8.5					b 34	52	77	10	4.0	14	6.6
31	8.5					b 32		71		4.0	15	
Total	299.6	225.0	170.5	155	155.0	306	1.116	3.103	1.142	234.0	486.4	359.7
Mean	9.66	7.5	5.5	5	5.5	9.87	37.2	100	38.1	7.55	15.7	12.0
Ac-ft	594	446	338	307	307	607	2,210	6,150	2,270	464	965	713

Calendar year 1962: Max 460 Min - Mean 66.9 Ac-ft 48,410  
Water year 1962-63: Max 143 Min - Mean 21.2 Ac-ft 15,370

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

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Oct. 30 to Mar. 28 (stage-discharge relation affected by ice during most of period).

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, 5½ 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 1963. 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.**--15 years, 88.7 cfs (64,220 acre-ft per year).

**Extremes.**--Maximum discharge during year, 225 cfs May 6 (gage height, 1.78 ft); maximum gage height, 2.99 ft Mar. 29 (backwater from ice); minimum daily discharge determined, 8.6 cfs July 31.  
1940-50, 1958-63: 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 or no gage-height record, which are poor. Diversions for irrigation of 3,850 acres above station.

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

Oct. 1 to Apr. 5

Apr. 6 to Sept. 30

0.4	14	0.1	8	1.0	72
.5	18	.3	15	1.5	162
.8	39	.5	26	1.7	204
		.7	42		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	17					10	b 65	94	126	23	9.5	27
2	*17					10	*b 60	*103	133	23	24	22
3	18					10	b 48	129	126	24	33	21
4	18					10	b 44	144	113	26	43	20
5	17					*10	b 44	152	114	24	58	24
6	18				14	10	65	174	105	20	40	37
7	18		(*)			10	82	168	103	18	*32	30
8	17			(*)		10	81	164	98	25	35	25
9	16					10	70	191	105	37	31	22
10	16					10	61	174	88	*36	40	21
11	16					10	59	176	78	30	36	*20
12	16				(*)	10	73	162	84	31	32	19
13	16					10	86	146	92	23	27	19
14	16					10	98	*133	95	18	23	20
15	17					10	92	119	94	17	20	16
16	20	12	10	10		10	74	140	97	16	21	15
17	28					10	69	162	86	16	22	14
18	22					10	66	172	*88	15	27	13
19	25					10	60	176	89	16	20	12
20	25					10	55	182	84	15	20	13
21	20				10	10	50	178	74	21	22	14
22	20					12	50	162	65	18	21	13
23	19					b16	53	170	59	20	24	13
24	18					b24	66	160	53	25	27	12
25	18					b26	79	148	45	16	25	11
26	17					b30	100	142	39	17	27	11
27	17					b40	116	152	35	13	39	11
28	17					b50	92	*156	30	9.5	31	11
29	17					b60	78	156	27	8.9	25	11
30	*16					b70	79	140	25	8.9	24	9.8
31	16					b65		133		8.6	26	
Total	568	360	310	310	320	603	2,115	4,758	2,450	618.9	884.5	526.8
Mean	18.3	12	10	10	11.4	19.5	70.5	153	81.7	20.0	28.5	17.6
Ac-ft	1,130	714	615	615	635	1,200	4,200	9,440	4,860	1,230	1,750	1,040

Calendar year 1962: Max 826 Min - Mean 116 Ac-ft 84,030

Water year 1962-63: Max 191 Min - Mean 37.9 Ac-ft 27,430

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

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

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

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 1963. 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.--37 years, 786 cfs (569,000 acre-ft per year).

Extremes.--Maximum discharge during year, 1,460 cfs May 21 (gage height, 3.26 ft); minimum daily, 80 cfs Dec. 27.

1910-28, 1944-63: 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, 80 cfs Dec. 27, 1962.

Remarks.--Records good except those for period of no gage-height record, 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 tables, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Mar. 27      Mar. 28 to Sept. 30

1.3	175	1.4	195
1.5	230	1.6	270
		2.0	500
		3.0	1,250
		3.2	1,410

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	227	190	150	120	200	130	342	633	1,010	801	922	514
2	221	180	150	130	190	130	* 332	661	1,090	794	938	479
3	*215	180	150	140	180	130	234	* 605	1,120	822	946	430
4	209	180	150	150	180	*130	223	647	1,080	866	954	370
5	209	180	150	150	170	130	242	479	1,070	874	978	332
6	209	180	*140	140	160	130	262	689	1,050	843	787	370
7	203	180	140	130	150	140	348	866	1,000	815	*738	400
8	195	170	150	140	150	130	444	822	994	801	752	370
9	188	170	150	*150	150	130	354	1,080	1,110	829	874	348
10	188	180	140	150	150	130	348	994	1,100	787	874	*315
11	188	180	130	140	140	130	342	1,060	970	*612	866	292
12	185	170	130	130	*140	130	458	962	890	710	745	279
13	185	170	130	120	140	130	556	*906	930	738	647	284
14	182	170	120	120	140	130	654	970	970	710	605	306
15	175	180	120	120	150	120	668	787	1,030	675	745	342
16	190	190	130	130	160	130	437	946	1,010	661	773	342
17	224	190	140	120	160	120	400	1,090	970	717	843	337
18	215	180	130	130	150	130	640	1,250	914	801	898	337
19	221	170	130	130	140	130	703	1,300	*874	794	836	332
20	236	170	140	130	130	130	815	1,320	890	801	787	348
21	218	170	140	130	130	140	801	1,390	836	808	787	370
22	209	160	130	120	130	160	773	1,310	787	815	773	348
23	206	160	130	130	130	200	717	1,240	745	808	773	342
24	203	160	130	120	130	210	731	1,230	710	836	780	342
25	200	160	110	130	130	210	766	1,170	675	874	773	342
26	200	160	90	120	130	240	773	1,110	710	822	787	394
27	200	160	80	120	130	300	780	1,100	794	780	815	412
28	198	150	85	120	120	310	682	1,130	766	794	661	412
29	198	150	90	130	-	444	619	*1,110	766	858	549	444
30	*200	150	100	130	-----	364	633	1,070	794	898	486	465
31	200	-----	110	150	-----	332	-----	1,040	-----	914	486	-----
Total	6,297	5,140	3,965	4,070	4,160	5,500	16,077	30,967	27,655	24,658	24,178	10,998
Mean	203	171	128	131	149	177	536	999	922	795	780	367
Ac-ft	12,490	10,200	7,860	8,070	8,250	10,910	31,890	61,420	54,850	48,910	47,960	21,810

Calendar year 1962: Max 5,000 Min 80 Mean 975 Ac-ft 705,700

Water year 1962-63: Max 1,390 Min 80 Mean 448 Ac-ft 324,600

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 30 to Mar. 27 (stage-discharge relation affected by ice during most of period).

## GUNNISON RIVER BASIN

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 1963. 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.--32 years, 63.6 (46,040 acre-ft per year).

Extremes.--Maximum discharge during year, 168 cfs Aug. 26 (gage height, 1.73 ft); maximum gage height, 3.74 ft Mar. 24 (backwater from ice); minimum daily discharge determined, 17 cfs July 3-5, 19, 20, 28, 29.  
1916-22, 1937-63: Maximum discharge, 804 cfs June 6, 1957 (gage height, 3.66 ft); maximum gage height, that of Mar. 24, 1963; minimum discharge 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
.8	18
1.0	38
1.3	78
1.6	146

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	30						* 95	67	56	20	18	30
2	28						75	65	68	18	18	26
3	* 28						58	* 72	76	17	20	24
4	27						61	78	61	17	30	23
5	27					(*)	58	82	54	17	26	27
6	27						62	98	50	20	22	27
7	27		(*)				72	105	47	29	20	35
8	27					22	78	115	47	46	* 19	29
9	27			(*)			73	124	70	37	21	26
10	26						70	124	68	* 42	22	* 25
11	27						67	127	57	32	31	27
12	26						72	129	49	31	26	29
13	25				(*)		76	112	46	32	24	26
14	25						88	108	45	27	22	25
15	26						90	* 98	42	22	21	24
16	27	24	20	20	24		78	103	42	22	21	23
17	37						72	100	42	21	22	22
18	35						67	103	41	19	24	22
19	37						62	100	* 40	17	21	22
20	37					40	62	96	39	17	20	30
21	32						59	98	34	19	21	36
22	30						58	90	30	19	23	27
23	30						59	92	30	22	28	25
24	30						62	98	26	19	26	23
25	30						65	88	23	18	23	22
26	28						68	80	23	20	40	22
27	28						75	68	22	18	37	22
28	28					80	65	* 68	22	17	36	22
29	28						59	70	22	17	27	21
30	26						64	68	20	18	27	21
31	* 24	-----			-----		-----	59	-----	18	28	-----
Total	890	720	620	620	672	1,210	2,070	2,885	1,292	708	764	763
Mean	28.7	24	20	20	24	39.0	69.0	93.1	43.1	22.8	24.6	25.4
Ac-ft	1,770	1,430	1,230	1,230	1,330	2,400	4,110	5,720	2,560	1,400	1,520	1,510

Calendar year 1962: Max 454 Min - Mean 72.8 Ac-ft 52,730

Water year 1962-63: Max 129 Min - Mean 36.2 Ac-ft 26,210

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

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 1-3, Oct. 21 to Mar. 14 (stage-discharge relation affected by ice part of period). Stage-discharge relation affected by ice Mar. 15 to Apr. 2.

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 1963. 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.--17 years, 53.2 cfs (38,520 acre-ft per year).

Extremes.--Maximum discharge during year, 156 cfs May 18 (gage height, 2.52 ft); maximum gage height, 3.01 ft Mar. 17 (backwater from ice); minimum discharge not determined.

1937-50, 1959-63: 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 tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to May 2      May 3 to Sept. 30

1.6	13	1.6	14
1.7	18	1.8	26
1.9	36	2.0	45
2.1	64	2.2	74
		2.5	150

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	26					16	* 39	40	78	25	18	35
2	28					18	32	40	94	24	19	32
3	* 29					18	29	* 43	89	24	24	31
4	29					18	26	57	78	25	27	29
5	29					* 18	26	63	69	26	27	29
6	28					18	29	78	68	26	26	35
7	28		(*)			18	37	101	64	24	24	38
8	28					20	40	110	66	32	* 25	33
9	28			(*)		20	37	120	76	32	37	32
10	27					20	36	108	69	* 33	40	* 32
11	23					18	37	129	63	28	52	32
12	22					16	43	126	60	28	45	32
13	22				(*)	16	47	115	60	25	44	31
14	22					14	53	120	60	24	37	30
15	23					b 16	53	* 98	60	23	35	29
16	24	20	14	12	16	b 16	44	113	58	21	35	25
17	35					b 16	42	126	58	21	36	22
18	30					16	36	132	55	21	38	18
19	32					16	35	132	* 53	20	33	24
20	30					17	33	126	52	21	32	32
21	29					* 18	33	118	49	21	33	36
22	28					20	33	110	45	24	36	30
23	28					23	32	110	41	21	36	28
24	27					25	35	110	38	21	34	25
25	28					24	36	96	37	19	32	25
26	27					26	42	92	35	19	34	24
27	29					30	46	87	32	18	42	23
28	30					32	39	* 85	29	18	36	23
29	29					36	36	85	28	18	33	24
30	28					37	39	85	26	19	31	22
31	* 28	-----			-----	40	-----	83	-----	18	32	-----
Total	854	600	434	372	448	656	1,125	3,038	1,690	719	1,033	861
Mean	27.5	20	14	12	16	21.2	37.5	98.0	56.3	23.2	33.3	28.7
Ac-ft	1,690	1,190	861	738	889	1,300	2,230	6,030	3,350	1,430	2,050	1,710

Calendar year 1962: Max 365 Min - Mean 65.1 Ac-ft 47,130

Water year 1962-63: Max 132 Min - Mean 32.4 Ac-ft 23,470

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

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Oct. 31 to Mar. 14 (stage-discharge relation affected by ice during part of period).

## GUNNISON RIVER BASIN

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 1963. 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.--26 years, 170 cfs (123,100 acre-ft per year).

Extremes.--Maximum discharge during year, 880 cfs Mar. 24 (gage height, 2.92 ft); minimum daily, 24 cfs Sept. 27. 1937-63: 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 period of no gage-height record, which are poor. Diversions for irrigation of about 24,000 acres above station. 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 Sept. 26-30)

0.7	22	1.5	170
.9	40	2.1	400
1.1	70	2.6	640

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	82					60	268	78	143	36	32	88
2	80					60	*252	72	170	35	40	78
3	*80					65	170	*74	222	32	58	74
4	78					*65	176	78	236	32	84	70
5	76					60	179	80	164	36	100	68
6	78		(*)			60	176	88	135	36	92	68
7	82					65	185	108	108	35	105	78
8	80			(*)		70	200	100	100	36	88	82
9	78					80	216	95	132	*37	90	86
10	80					80	216	112	167	39	125	*74
11	84					75	188	115	167	49	110	65
12	80				(*)	70	179	110	132	56	112	55
13	80					70	188	95	120	53	110	46
14	76					80	194	88	112	48	*98	56
15	76					82	212	*92	102	48	84	60
16	78	70	55	55	80	78	197	84	108	45	78	58
17	105					78	179	88	118	43	68	52
18	122					86	167	95	108	43	76	49
19	125					95	155	105	*88	43	72	44
20	135					110	155	118	86	41	68	48
21	135					149	146	122	82	43	68	58
22	115					212	140	149	72	44	70	55
23	105					336	122	164	65	70	78	52
24	95					605	92	191	60	34	82	50
25	90					525	86	188	55	68	78	43
26	88					392	55	179	53	56	70	35
27	86					328	52	*167	38	46	98	24
28	86					332	48	158	33	44	108	26
29	86					380	49	161	36	44	92	27
30	86					316	78	161	35	45	82	30
31	*82	-----			-----	304	-----	152	-----	43	82	-----
Total	2,809	2,100	1,705	1,705	2,240	5,368	4,720	3,667	3,317	1,410	2,605	1,699
Mean	90.6	70	55	55	80	173	157	118	111	45.5	84.0	56.6
Ac-ft	5,570	4,170	3,380	3,380	4,440	10,650	9,360	7,270	6,580	2,800	5,170	3,370

Calendar year 1962: Max 888 Min 24 Mean 184 Ac-ft 133,400  
 Water year 1962-63: Max 605 Min 24 Mean 91.4 Ac-ft 66,140

\* Discharge measurement made on this day.

Note.--No gage-height record Nov. 1 to Mar. 14 (stage-discharge relation affected by ice part of period).

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.--248 sq mi (revised).

Records available.--April 1960 to September 1963 (discontinued).

Gage.--Water-stage recorder. Datum of gage is 8,281.04 ft above mean sea level, datum of 1929.

Extremes.--Maximum discharge during year, 296 cfs May 4 (gage height, 3.05 ft); maximum gage height, 3.89 ft Mar. 28 (backwater from ice); minimum discharge, not determined.

1960-63: Maximum discharge, 589 cfs May 13, 1962 (gage height, 3.05 ft); maximum gage height, that of Mar. 28, 1963; minimum daily discharge, 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)

1.9	20
2.0	28
2.2	50
2.4	82
2.6	135
2.8	195

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	45						b 60	96	40	26	33	51
2	44						b 50	89	51	26	38	48
3	45						* 45	120	54	27	45	45
4	*44		(*)				44	171	49	31	64	45
5	45						57	174	45	29	61	44
6	44					(*)	53	139	43	28	* 54	54
7	43						98	186	43	30	50	69
8	43						120	* 177	43	32	45	69
9	42			(*)			96	144	54	* 46	46	54
10	42						71	114	51	61	51	51
11	42				(*)	26	57	114	48	54	63	53
12	40						75	100	44	53	60	* 49
13	40						89	* 89	43	49	57	46
14	39						103	97	39	42	57	48
15	40						96	66	34	37	53	43
16	44						63	63	42	36	50	39
17	60						57	66	* 43	38	50	38
18	54						45	69	45	40	51	39
19	56						45	66	48	31	48	40
20	56						45	64	48	31	50	45
21	50						44	66	44	37	51	53
22	48						43	63	37	42	50	48
23	45						46	57	33	40	48	46
24	44						60	58	32	43	50	45
25	44						73	50	32	43	48	44
26	40						68	45	31	40	50	44
27	39						94	45	32	35	52	43
28	40						61	44	30	32	66	42
29	40						49	* 44	27	35	57	39
30	42						63	44	26	35	54	38
31	*40							42		33	53	
Total	1,380	1,200	1,085	868	840	1,070	1,970	2,802	1,231	1,162	1,635	1,412
Mean	44.5	40	35	28	30	34.5	65.7	90.4	41.0	37.5	52.7	47.1
Ac-ft	2,740	2,380	2,150	1,720	1,670	2,120	3,910	5,560	2,440	2,300	3,240	2,800

Calendar year 1962: Max 505 Min - Mean 93.6 Ac-ft 67,740

Water year 1962-63: Max 189 Min - Mean 45.6 Ac-ft 33,030

Peak discharge (base, 350 cfs).--No peak above base.

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Oct. 31 to Mar. 28 (stage-discharge relation affected by ice during part of period).



## GUNNISON RIVER BASIN

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 6½ miles north of Sapinero.

Drainage area.--57.3 sq mi.

Records available.--August 1955 to September 1963.

Gage.--Water-stage recorder. Altitude of gage is 7,790 ft (from topographic map).

Average discharge.--8 years, 58.4 cfs (42,280 acre-ft per year).

Extremes.--Maximum discharge during year, 288 cfs May 8 (gage height, 3.08 ft); maximum gage height, 3.25 ft Nov. 30 (backwater from ice); minimum discharge not determined.

1955-63: Maximum discharge, about 1,000 cfs sometime during period June 4-6, 1957; maximum gage height, 6.07 ft Jun? 6, 1957; minimum daily discharge (revised), 2.4 cfs Sept. 18, 1962.

Revisions.--The minimum daily discharge and date for the water year 1962 have been revised to 2.4 cfs Sept. 18, 1962, superseding those previously published.

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.

Revisions.--Revised figures of discharge, in cubic feet per second, for the water year 1962, superseding figures previously published, are given herewith:

1962	1962-Con.	1962-Con.	1962-Con.	1962-Con.
Aug. 7..... 13	Aug. 18..... 8.1	Aug. 29..... 5.3	Sept. 9..... 5.4	Sept. 20..... 4.6
8..... 13	19..... 8.3	30..... 4.7	10..... 4.6	21..... 9.6
9..... 13	20..... 8.5	31..... 4.1	11..... 4.1	22..... 7.9
10..... 13	21..... 8.3	Sept. 1..... 3.8	12..... 3.5	23..... 6.0
11..... 11	22..... 9.2	2..... 3.5	13..... 3.1	24..... 5.3
12..... 10	23..... 9.6	3..... 3.2	14..... 3.0	25..... 5.4
13..... 10	24..... 7.9	4..... 3.1	15..... 2.8	26..... 4.8
14..... 9.2	25..... 7.1	5..... 2.8	16..... 2.6	27..... 4.8
15..... 8.5	26..... 6.2	6..... 2.4	17..... 2.6	28..... 6.5
16..... 8.1	27..... 5.9	7..... 6.9	18..... 2.4	29..... 6.9
17..... 8.1	28..... 6.0	8..... 6.5	19..... 2.6	30..... 6.0

Month	Cfs-days	Maximum	Minimum	Mean	Runoff in acre-feet
August 1962.....	319.1	22	4.1	10.3	658
September 1962.....	136.7	9.6	2.4	4.56	244
Water year 1961-62.....	-	436	2.4	69.7	50,490

## GUNNISON RIVER BASIN

225

9-1225. Soap Creek near Sapinero, Colo.--Continued

Rating tables, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Nov. 1-3, 14-17)

Oct. 1 to Mar. 31

Apr. 1 to Sept. 30

1.2	3.5	1.3	2.5	2.4	103
1.5	8.5	1.6	9.5	2.8	200
		1.8	20	3.0	260
		2.0	39		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6.0	* 4.6					83	98	95	15	3.3	8.0
2	4.8	4.0					60	105	95	14	5.2	7.5
3	5.0	3.5					42	140	95	14	14	6.8
4	*4.8	2.8	(*)				*47	182	78	15	12	6.2
5	5.0	2.8					47	195	76	13	12	6.5
6	5.2	2.6					71	239	71	13	13	14
7	4.8	2.8					90	* 242	69	13	10	14
8	4.4	2.6					89	236	65	13	* 9.0	10
9	4.1	2.6					75	254	65	12	10	8.8
10	3.8	3.0					66	221	58	13	14	8.2
11	3.5	3.0				5	63	221	52	* 13	12	8.0
12	3.5	3.2					82	203	48	13	10	* 7.8
13	3.5	3.6			(*)		105	178	49	12	9.0	7.5
14	3.5	4.0					123	160	49	10	8.5	7.5
15	3.8	5.8					114	* 140	48	9.5	7.8	7.5
16	5.0	5.9	4	3.5	5		99	155	48	9.5	7.8	6.8
17	8.1	4.8					75	168	44	8.8	9.0	6.5
18	7.7	4.2					68	172	44	8.2	10	6.2
19	8.1	3.8					57	175	42	8.0	8.0	5.8
20	8.3	3.8					48	175	* 37	7.8	8.2	5.8
21	7.3	4.4				5.5	44	165	35	9.0	8.5	6.0
22	6.4	4.4				6	43	150	31	8.8	8.0	5.8
23	5.8	4.6				7	49	150	28	8.2	8.0	5.5
24	5.4	4.6				15	63	135	26	8.8	7.8	5.5
25	5.0	5.0				25	87	116	22	8.0	7.5	5.2
26	4.6	4.8				50	123	99	21	8.0	7.8	5.0
27	4.2	4.8				80	142	* 96	20	6.2	9.5	5.0
28	4.4	4.6				100	99	94	19	4.3	10	5.0
29	4.4	4.8			-	120	85	92	17	3.9	8.0	5.0
30	4.6	5.0				100	87	92	16	3.7	7.8	5.0
31	4.7					90		97		3.3	8.0	
Total	159.7	120.4	124	108.5	140	698.5	2,316	4,935	1,432	307.0	283.7	212.4
Mean	5.15	4.01	4	3.5	5	22.5	77.2	159	47.7	9.90	9.15	7.08
Ac-ft	317	239	246	215	278	1,390	4,590	9,790	2,840	609	563	421

Calendar year 1962: Max 435 Min - Mean 67.4 Ac-ft 48,790  
 Water year 1962-63: Max 254 Min - Mean 29.7 Ac-ft 21,500

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

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 4-13, 18-30, Dec. 1-10. No gage-height record Dec. 11 to Mar. 31 (stage-discharge relation affected by ice part of period).

## 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 1963. 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.--26 years, 245 cfs (177,400 acre-ft per year).

Extremes.--Maximum discharge during year, 975 cfs May 19 (gage height, 2.62 ft); minimum not determined.

1937-63: 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 no gage-height record, which are poor. Diversions for irrigation of about 1,600 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 May 12-15, June 18 to July 16)

0.3	44	1.5	300
.5	69	2.0	510
.9	135	2.7	975

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	101						153	144	661	197	95	162
2	100						119	155	583	189	96	150
3	95						100	184	465	189	127	144
4	*94		(*)				95	300	428	244	133	133
5	92						98	391	428	262	137	131
6	90					(*)	95	490	399	235	*142	153
7	89						110	643	420	215	137	197
8	88						144	704	438	197	142	197
9	86			(*)			150	718	433	*218	157	174
10	84						137	619	363	250	157	164
11	80				(*)	45	123	601	318	250	210	164
12	79						129	577	318	262	225	*153
13	77						155	*554	399	339	217	146
14	75						189	613	442	310	186	153
15	76						224	495	470	262	174	144
16	79	70	45	40	50		194	577	433	232	164	135
17	96						169	764	*351	218	155	131
18	95						144	903	355	191	164	125
19	106						129	911	347	176	148	119
20	110						117	895	332	159	148	115
21	101					50	106	880	335	162	157	119
22	98					60	101	704	332	167	155	115
23	95					70	101	724	314	146	146	110
24	92					80	117	711	296	148	139	108
25	89					90	137	625	276	142	133	139
26	86					110	142	589	256	133	129	121
27	84					150	181	661	244	119	184	105
28	82					*186	155	643	229	112	194	98
29	80					181	131	*692	224	106	179	92
30	80					139	*123	661	210	101	167	88
31	*80					148		667		96	162	
Total	2,759	2,100	1,395	1,240	1,400	2,164	4,068	18,795	11,099	6,027	4,863	4,085
Mean	89.0	70	45	40	50	69.8	136	606	370	194	157	136
Ac-ft	5,470	4,170	2,770	2,460	2,780	4,290	8,070	37,280	22,010	11,950	9,650	8,100

Calendar year 1962: Max 1,340 Min - Mean 276 Ac-ft 199,600  
Water year 1962-63: Max 911 Min - Mean 164 Ac-ft 119,000

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

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 31 to Mar. 27 (stage-discharge relation affected by ice during part of period).

9-1247. Gunnison River below Blue Mesa Dam, Colo.

Location.--Lat 38°27'08", long 107°20'52", in NE¼NW¼ sec.5, T.48 N., R.4 W., on left bank 0.2 mile downstream from Pine Creek, 0.7 mile downstream from Blue Mesa Dam, and 11 miles east of Cimarron.

Drainage area.--3,453 sq mi.

Records available.--May to September 1963.

Gage.--Water-stage recorder. Datum of gage is 7,155.30 ft above mean sea level (Bureau of Reclamation bench mark).

Extremes.--Maximum discharge during water year, 3,120 cfs May 21 (gage height, 5.85 ft); minimum daily during period May to September, 580 cfs Sept. 13, 28.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Natural flow of stream affected by trans-mountain diversions, transbasin diversions, Taylor Park Reservoir (see elsewhere in this report), diversions for irrigation of about 56,000 acres, and return flow from irrigated areas.

Rating table, May 1 to Sept. 30, 1963 (gage height, in feet,  
and discharge, in cubic feet per second)

0.8	620
1.0	680
2.0	1,040
4.0	1,980
5.7	3,010

Discharge, in cubic feet per second, May to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1								1,000	2,100	1,140	1,140	908
2								1,100	2,180	* 1,150	1,150	860
3								1,250	2,320	1,120	1,290	812
4								1,400	2,160	1,250	1,350	731
5								1,600	2,040	1,330	1,450	674
6								1,800	1,940	1,260	* 1,270	722
7								2,100	* 1,870	1,210	1,150	844
8								2,350	1,850	1,160	1,100	836
9								2,520	2,000	1,230	1,250	767
10								2,500	2,020	1,360	1,400	* 720
11								2,400	1,820	1,110	1,380	680
12								2,350	1,660	1,190	1,340	640
13								* 2,200	1,730	1,360	1,180	580
14								2,100	1,840	1,290	1,070	620
15								1,850	1,920	1,180	1,110	640
16								* 1,920	1,860	1,080	1,140	640
17								2,320	* 1,800	1,090	1,200	620
18								2,710	1,700	1,100	1,300	600
19								2,860	1,640	1,130	1,240	600
20								2,940	1,600	1,090	1,130	600
21								* 2,980	1,560	1,130	1,150	620
22								2,780	1,440	1,170	1,140	640
23								2,720	1,360	1,190	1,120	620
24								2,670	1,270	1,260	1,140	600
25								2,470	1,190	1,270	1,110	600
26								2,320	1,110	1,240	1,090	600
27								2,330	1,210	1,070	1,280	600
28								2,320	1,140	1,090	1,210	580
29								2,340	1,150	1,060	1,010	600
30								2,270	1,160	1,150	900	620
31								2,240		1,140	876	
Total								68,710	50,640	36,580	36,666	20,174
Mean								2,216	1,688	1,180	1,183	672
Ac-ft								136,300	100,400	72,560	72,730	40,010

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 1-7, 10-13, Sept. 10-30.

## GUNNSION RIVER BASIN

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, 2½ miles upstream from mouth and 6 miles west of Sapinero.

Drainage area.--35.0 sq mi (revised).

Records available.--October 1945 to September 1963. 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.--18 years, 32.8 cfs (23,750 acre-ft per year).

Extremes.--Maximum discharge during year, 152 cfs May 8 (gage height, 3.55 ft); minimum daily determined, 3.0 cfs July 31, Aug. 15, Sept. 25, 28-30.  
1945-63: 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 May 11 to June 2)

2.1	3.0	2.6	21
2.2	5.0	3.0	63
2.3	7.5	3.5	160
2.5	15		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.2	(*)					b34	46	59	7.5	3.4	4.6
2	4.2						b28	49	59	7.2	3.6	4.4
3	4.2						*b20	63	66	7.8	5.0	3.8
4	*4.0						b18	90	62	7.5	5.2	3.4
5	4.2						19	99	61	7.0	7.2	3.4
6	4.2				7 (*)	(*)	26	117	55	6.8	8.6	8.9
7	4.2		(*)				39	*119	50	6.8	5.8	7.5
8	4.0						41	115	47	6.8	*4.6	5.2
9	4.0						34	125	46	7.2	4.6	4.4
10	4.4			(*)		5	31	115	39	7.8	5.8	4.0
11	4.2						29	113	33	*7.5	5.5	3.8
12	4.2						40	107	30	8.6	4.6	*3.8
13	4.2						55	92	29	7.8	3.8	3.8
14	4.2						62	81	31	6.0	3.4	4.6
15	4.4						57	*72	31	5.8	3.0	4.6
16	5.0	5	4.8	4.5			44	83	31	5.5	3.4	4.0
17	7.2						36	86	29	5.0	4.0	3.8
18	6.2						33	88	26	4.8	6.5	3.6
19	6.8						30	90	24	4.6	4.0	3.2
20	7.0				5		23	90	*20	4.0	3.8	3.4
21	6.0					5.5	20	88	19	4.4	4.6	3.4
22	5.2					7	20	88	16	5.2	4.0	3.4
23	5.0					8	27	90	15	4.8	4.6	3.2
24	4.8					9	46	85	13	4.8	4.8	3.2
25	5.0					9	61	75	12	4.4	4.8	3.0
26	4.8					10	75	70	11	4.2	5.0	3.2
27	4.6					15	76	*66	10	3.8	7.5	3.2
28	4.6					b20	52	63	9.2	3.6	6.0	3.0
29	4.8					b32	41	62	8.6	3.4	4.4	3.0
30	4.8					b30	39	62	7.8	3.2	3.8	3.0
31	4.8					b32		63		3.0	4.0	
Total	149.4	150	148.8	139.5	160	277.5	1,156	2,652	949.6	1,768	149.3	119.8
Mean	4.82	5	4.8	4.5	5.7	8.95	38.5	85.5	31.7	5.70	4.82	3.99
Ac-ft	296	298	295	277	317	550	2,290	5,260	1,880	351	296	238

Calendar year 1962: Max 250 Min - Mean 39.9 Ac-ft 28,900  
Water year 1962-63: Max 125 Min - Mean 17.1 Ac-ft 12,350

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

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 1 to Mar. 27 (stage-discharge relation affected by ice part of period).

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 1963.

**Gage.**--Water-stage recorder. Altitude of gage is 8,650 ft (from topographic map).

**Average discharge.**--9 years, 87.1 cfs (63,060 acre-ft per year).

**Extremes.**--Maximum discharge during year, 450 cfs May 8 (gage height, 5.50 ft); maximum gage height, 7.21 ft Mar. 27 (backwater from ice); minimum daily discharge, 8 cfs Dec. 27, 28, Jan. 13.

1954-63: Maximum discharge, 1,790 cfs June 28, 1957 (gage height, 8.32 ft); minimum daily, 8 cfs Dec. 27, 28, 1962, Jan. 13, 1963.

**Remarks.**--Records good except those for period 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 1963 is given below.

Month	Diversion in acre-feet	Month	Diversion in acre-feet
October.....	762	April.....	1,710
November.....	430	May.....	8,120
December.....	0	June.....	6,610
	- - - - -	July.....	3,380
Calendar year 1962....	23,690	August.....	2,640
	- - - - -	September.....	1,330
January.....	0		
February.....	0		
March.....	0	Water year 1962-63....	24,980

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

3.5	12	4.1	65	5.0	260
3.6	17	4.5	140	5.2	330
3.8	30				

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	27	18	20	10	14	13	60	92	192	59	22	66
2	26	17	18	10	17	12	55	114	178	61	31	57
3	26	17	* 20	11	16	13	45	156	156	61	40	50
4	25	18	20	12	15	14	40	202	160	108	39	50
5	* 25	17	19	11	14	15	* 41	220	154	72	46	50
6	24	17	19	11	13	16	50	263	152	62	* 68	78
7	24	14	18	* 11	13	16	61	272	170	62	54	72
8	22	14	18	11	13	16	57	* 314	166	* 74	57	51
9	22	18	17	11	13	16	58	281	142	103	66	* 43
10	21	17	15	11	12	16	57	248	110	122	99	38
11	21	16	14	10	11	15	59	263	114	108	124	36
12	19	15	14	9	10	15	90	251	138	124	72	35
13	19	16	14	8	10	15	120	239	154	140	59	34
14	19	19	13	9	10	15	132	220	180	98	52	38
15	19	18	13	10	11	16	114	195	148	78	48	34
16	21	18	14	11	12	17	90	* 260	132	70	48	30
17	29	18	14	12	13	16	77	281	* 116	58	49	29
18	25	18	15	12	14	15	65	290	132	52	55	28
19	28	19	15	11	15	16	52	287	128	48	46	27
20	35	19	14	9	15	18	47	290	124	48	48	29
21	29	18	12	10	15	16	51	263	130	64	46	29
22	26	19	10	11	14	15	58	230	120	49	43	26
23	24	21	11	10	13	17	65	248	110	41	47	24
24	22	19	10	9	13	16	77	233	100	36	46	23
25	21	18	9.5	10	14	20	84	198	92	34	43	23
26	21	18	8.5	11	16	40	112	198	84	31	49	22
27	20	18	8	10	15	60	120	* 215	80	29	104	22
28	19	18	8	9	14	80	76	215	74	27	72	21
29	* 19	22	9	9	-	90	70	222	66	26	57	21
30	19	30	9.5	10	-----	80	80	230	65	24	55	21
31	19	-----	10	12	-----	70	-----	215	-----	23	62	-----
Total	716	544	429.5	321	375	809	2,163	7,205	3,867	1,997	1,747	1,107
Mean	23.1	18.1	13.9	10.4	13.4	26.1	72.1	232	129	64.4	56.4	36.9
Ac-ft	1,420	1,080	852	637	744	1,600	4,290	14,290	7,670	3,960	3,470	2,200

Calendar year 1962: Max 534 Min 8 Mean 94.8 Ac-ft 68,670

Water year 1962-63: Max 314 Min 8 Mean 58.3 Ac-ft 42,210

Peak discharge (base, 400 cfs).--May 8 (1930) 450 cfs (5.50 ft); May 17 (2200) 414 cfs (5.44 ft).

\* Discharge measurement made on this day.

**Note.**--Stage-discharge relation affected by ice Nov. 28 to Apr. 4 (no gage-height record Dec. 3-6, 12-31, Jan. 1-7, 13-30, Feb. 18 to Mar. 21).

## GUNNISON RIVER BASIN

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 1962 to September 1963.

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 year, 435 cfs May 8 (gage height, 4.22 ft); minimum daily, 8 cfs Dec. 26, 27.  
1902-5, 1962-63: Maximum discharge, about 1,600 cfs May 12, 13, 1962; minimum daily, that of Dec. 26, 27, 1962.

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

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)

2.8	9.0	3.4	77
3.0	18	3.7	170
3.1	26	4.0	305
3.2	37		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	* 46	22	35			42	90	45	105	23	16	22
2	44	22	33			40	99	50	111	* 22	19	22
3	42	21	28			40	61	61	83	24	27	24
4	42	21	* 33			* 44	68	97	70	32	24	26
5	42	21	25		(*)	44	* 75	126	70	28	* 27	26
6		39	20		45	42	83	178	54	20	33	28
7	36	17	24	(*)		42	99	210	61	18	26	33
8	34	16	24			42	94	* 246	66	19	25	29
9	30	17	22			44	75	232	70	33	24	* 30
10	28	19	20			44	75	160	49	61	15	32
11	27	18	20			42	63	178	40	44	66	28
12	26	17	18			40	75	190	* 40	39	35	26
13	24	17	16			* 42	108	146	51	70	22	24
14	18	20	14			32	126	142	66	33	22	20
15	16	26	16			39	111	80	70	24	20	22
16	18	35	20	25		42	88	* 146	54	24	20	21
17	22	33	22			36	72	198	* 51	23	20	22
18	19	30	22			33	54	202	49	20	22	20
19	22	29	22			37	55	202	54	18	20	19
20	21	28	20			54	50	186	51	19	20	17
21	18	24	16		40	46	50	186	51	20	19	16
22	18	18	12			60	55	132	44	21	18	15
23	19	24	10			60	50	170	39	17	20	15
24	19	24	12			60	50	190	32	16	19	16
25	18	19	10			50	55	135	28	16	18	20
26	19	25	8			55	60	111	29	14	20	22
27	19	22	8			65	85	* 132	28	12	50	23
28	20	27	10			90	50	129	27	12	40	24
29	* 20	26	16			* 130	40	146	25	13	24	27
30	21	36	18			100	35	156	23	14	22	28
31	22	-----	18			90	-----	146	-----	14	22	-----
Total	809	694	596	775	1,170	1,627	2,151	4,708	1,591	763	775	697
Mean	26.1	23.1	19.2	25	42	52.5	71.7	152	53.0	24.6	25.0	23.2
Ac-ft	1,600	1,380	1,180	1,540	2,320	3,230	4,270	9,340	3,160	1,510	1,540	1,380

Calendar year 1962: Max - Min - Mean - Ac-ft -  
Water year 1962-63: Max 246 Min 8 Mean 44.8 Ac-ft 32,450

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 6-29. No gage-height record Dec. 30 to Mar. 13, Mar. 22 to Apr. 1 (stage-discharge relation affected by ice part of periods), Apr. 19 to May 2, Aug. 12 to Sept. 5.

## 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 downstream from private bridge, half a mile upstream from diversion dam for Cattleman's ditch, 0.7 mile downstream from Dyer Creek, 7 miles upstream from mouth, and 7 miles southeast of Maher.

Drainage area.--42.2 sq mi (revised).

Records available.--July 1945 to September 1954, October 1960 to September 1963.

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.--12 years, 27.7 cfs (20,050 acre-ft per year).

Extremes.--Maximum discharge during year, 121 cfs May 8 (gage height, 2.34 ft); maximum gage height, 3.04 ft Mar. 23 (backwater from ice); minimum daily discharge, 2.4 cfs Sept. 29.

1945-54, 1960-63: 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	1.4	16
1.0	3.0	1.6	29
1.1	5.0	1.9	61
1.2	8.0	2.2	106

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.6	*5.0	6.5	4.2	1.2	6.2	36	44	36	7.7	2.8	6.5
2	3.4	5.3	6.2	4.2	1.0	6.5	24	41	41	7.1	4.6	4.8
3	3.4	5.0	6	4.4	8.4	6.5	*22	54	44	8.4	5.0	4.0
4	3.4	5.0	5.9	4.6	8.0	6.2	18	67	39	7.4	7.1	3.6
5	3.4	4.8	5	4.4	8.0	6.2	20	72	37	6.5	9.2	3.6
6	3.6	4.8	4.6	4.2	8.0	6.2	28	84	34	6.2	7.4	7.7
7	3.6	4.2	4.6	4.2	8.0	*6.2	36	87	31	6.5	5.9	5.6
8	3.6	4.2	4.6	4.2	8.4	6.2	37	90	30	7.1	5.0	4.2
9	3.2	4.2	4.6	4.2	8.4	5.9	29	92	29	7.7	*4.8	3.8
10	3.2	4.4	4.6	*4.2	8.4	6.5	25	82	26	8.4	6.8	3.2
11	*3.2	4.8	*4.6	4.0	8.4	6.5	22	92	23	7.1	6.2	3.8
12	3.2	5.5	4.6	3.6	8.0	6.5	34	88	22	7.4	4.8	*3.4
13	3.2	6	4.6	3.6	*7.7	6.5	46	72	22	6.5	4.0	3.4
14	3.2	6.8	4.6	3.8	7.1	6.5	53	60	23	5.3	3.6	4.8
15	3.6	7.1	4.6	4.2	6.8	6.8	47	*51	22	5.0	2.8	4.0
16	4.2	6.5	4.6	4.4	6.8	6.8	36	60	22	4.8	2.8	3.4
17	5.6	6.2	4.8	4.6	6.5	6.5	29	67	20	*4.4	5.0	3.4
18	4.8	5.6	4.8	5.0	5.9	6.8	28	69	*19	4.6	6.5	3.0
19	6.8	5	4.6	4.6	5.9	6.8	24	67	18	4.6	4.0	3.0
20	8.4	5	4.4	4.6	5.9	7.4	21	67	16	4.0	4.6	3.0
21	6.8	5.5	4.2	4.8	5.9	10	19	59	15	4.6	4.8	3.2
22	6.2	6	4.0	4.8	5.9	30	20	53	14	4.6	4.8	3.2
23	5.6	6	4.0	4.8	5.9	50	29	49	13	4.8	7.7	3.0
24	5.3	6	4.0	4.8	5.9	90	44	44	11	4.8	6.5	3.0
25	5.3	6	4.0	5.5	5.9	80	51	41	11	4.0	6.5	3.0
26	5.3	6.8	3.6	5.5	5.9	75	54	47	10	3.8	7.1	2.8
27	5.0	6.5	3.2	6.2	6.2	70	55	46	9.2	3.6	1.2	2.7
28	5.0	6	3.4	5.9	5.9	60	41	*42	8.4	3.0	7.1	2.6
29	5.0	6	3.8	5.9	-	50	36	41	8.8	3.0	5.3	2.4
30	5.0	6	4.0	5.9	-----	40	*37	42	8.0	2.8	4.6	2.6
31	5.0	-----	4.0	6.2	-----	38	-----	40	-----	2.7	5.3	-----
Total	140.1	166.2	141.0	145.5	204.1	722.7	1,001	1,910	662.4	168.4	174.6	110.7
Mean	4.52	5.54	4.55	4.69	7.29	23.3	33.4	61.6	22.1	5.43	5.63	3.69
Ac-ft	278	330	280	289	405	1,430	1,990	3,790	1,310	334	346	220

Calendar year 1962: Max 268 Min 2.7 Mean 35.1 Ac-ft 25,390  
 Water year 1962-63: Max 92 Min 2.4 Mean 15.2 Ac-ft 11,000

Peak discharge (base, 160 cfs).--No peak above base.

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 7-13, 19-25, 27-30, Dec. 3, 5-31, Jan. 1-26, Mar. 21 to Apr. 5.



## GUNNISON RIVER BASIN

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 1963. 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.**--60 years, 1,463 cfs, unadjusted (1,060,000 acre-ft per year).

**Extremes.**--Maximum discharge during year, 2,510 cfs May 21 (gage height, 5.28 ft); minimum daily, 21 cfs Sept. 14, 17.

1903-63: 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 periods of ice effect or no gage-height record, 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 1963 is given below:

Month	Diversion in acre-feet	Month	Diversion in acre-feet
October.....	20,650	April.....	43,740
November.....	7,430	May.....	58,740
December.....	0	June.....	56,840
	- - - - -	July.....	58,810
Calendar year 1962....	346,200	August.....	57,390
	- - - - -	September.....	39,130
January.....	0		
February.....	0		
March.....	0	Water year 1962-63....	342,700

**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)  
(Shifting-control method used Dec. 2-23)

0.3	15	1.0	98	3.0	880
.5	30	1.5	240	4.0	1,500
.7	50	2.0	420	6.0	3,190

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*240	247	576	310	500	420	1,620	247	1,400	194	151	94
2	208	254	580	330	550	430	1,540	362	1,400	178	160	93
3	190	247	* 51.2	* 360	500	430	1,130	472	1,600	*157	292	113
4	175	233	508	380	480	420	880	745	1,420	258	373	90
5	160	230	480	360	460	400	685	952	1,290	390	* 490	74
6	145	222	388	340	450	390	656	1,300	1,190	310	366	71
7	154	212	404	340	450	420	750	1,760	1,100	254	205	205
8	190	172	444	330	440	430	964	* 1,890	1,110	190	151	216
9	187	169	432	320	450	450	802	2,030	1,190	258	264	* 107
10	178	202	370	300	450	460	648	1,940	1,210	448	448	95
11	181	212	324	250	420	470	392	1,810	1,010	250	516	63
12	169	190	334	230	390	450	359	1,800	796	226	440	33
13	166	175	388	260	360	*440	544	1,510	826	448	278	62
14	151	373	388	300	390	440	750	1,490	370	370	139	21
15	132	592	366	320	430	440	904	1,170	1,090	240	98	26
16	130	665	404	310	450	460	628	1,230	1,020	113	166	26
17	250	632	436	340	420	480	362	* 1,680	976	107	219	21
18	314	588	476	350	430	500	292	2,130	814	128	320	23
19	356	556	560	350	*440	500	300	2,300	794	163	300	23
20	460	536	512	340	430	550	350	2,390	*715	125	187	30
21	428	588	412	330	420	700	324	2,420	690	145	184	40
22	376	580	328	* 310	410	1,000	310	2,170	572	193	178	41
23	342	544	342	320	410	1,500	250	2,120	484	205	148	34
24	317	560	400	330	420	1,700	261	2,090	400	289	187	28
25	296	580	356	340	410	1,810	373	1,810	296	289	160	29
26	282	572	250	340	400	1,580	484	1,600	197	289	130	36
27	268	552	200	320	400	1,670	680	1,630	247	148	362	35
28	261	500	220	310	410	1,810	540	1,600	212	74	436	31
29	*254	444	240	310	-	*2,200	292	* 1,650	219	109	222	34
30	247	484	260	320	-----	1,980	236	1,600	190	145	122	35
31	247	-----	280	350	-----	1,740	-----	1,570	-----	148	90	-----
Total	7,454	12,111	12,170	10,000	12,170	26,670	18,376	49,459	25,358	6,821	7,771	1,809
Mean	240	404	393	323	435	860	613	1,595	845	220	251	60.3
Ac-ft	14,780	24,020	24,140	19,830	24,140	52,900	36,450	98,100	50,300	13,530	15,410	3,590

Calendar year 1962: Max 9,700 Min 109 Mean 1,575 Ac-ft 1,141,000  
 Water year 1962-63: Max 2,420 Min 21 Mean 521 Ac-ft 377,200

\* Discharge measurement made on this day.

**Note.**--Stage-discharge relation affected by ice Dec. 26 to Mar. 24 (no gage-height record Jan. 11-22). No gage-height record Apr. 19, 20.

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 1963. 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.--28 years, 42.4 cfs (30,700 acre-ft per year).

Extremes.--Maximum discharge during year, 203 cfs May 8 (gage height, 4.04 ft); minimum daily, 1.8 cfs July 30, 31, Aug. 1. 1935-63: 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)

Oct. 1 to Mar. 16

Mar. 17 to Sept. 30

2.3	4.0	2.3	1.5	3.5	80
2.6	15	2.5	7.0	3.8	130
		2.7	15	4.1	220
		3.0	33		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7.8	* 7.0	7.0	3.6	1.0	5	46	77	62	17	1.8	17
2	7.8	7.0	7.0	3.8	12	5.5	43	78	54	16	2.5	14
3	7.4	6.7	6.7	4.2	9	5.5	* 33	98	49	18	4.0	12
4	7.0	6.7	6.7	5	8	5.5	27	119	46	16	6.7	11
5	7.0	6.7	5.8	5	7	5.5	31	121	46	13	1.8	11
6	7.0	6.7	5.8	5	7	7	39	155	41	9.8	16	13
7	7.4	6.4	5.8	5	7.5	* 7.5	52	155	38	9.4	11	16
8	7.8	5.8	5.8	5	7.5	7.5	58	164	35	7.8	9.0	13
9	7.0	6.1	5.5	5	7.5	7.5	52	189	33	8.2	* 10	12
10	7.0	6.4	5.5	* 4.8	7	7.5	47	166	29	9.8	9.4	11
11	* 7.0	6.4	* 5.5	4.2	6.5	7.5	44	155	30	9.8	8.6	11
12	6.7	5.8	5.5	3.6	6	7	51	139	37	9.0	6.4	* 11
13	6.7	6.1	5.5	3.6	5.5	6.5	64	115	34	8.2	5.2	12
14	6.4	8.6	6	3.8	* 5	6	77	106	36	6.4	7.4	14
15	6.7	11	6	4.4	5	6	72	* 98	35	6.4	9.8	12
16	8.6	9.4	6	4.6	5.5	5	63	103	33	6.1	9.8	11
17	10	7.8	6.5	4.8	5.5	4.3	55	108	31	* 5.5	10	11
18	9.0	7.4	6.4	5.5	5.5	4.6	52	112	* 30	5.2	9.8	9.0
19	11	7.4	7.0	5	5.5	4.3	46	110	32	4.6	8.6	8.6
20	9.4	7.0	6.1	4.8	5.5	5	39	106	32	4.3	11	8.6
21	7.8	7.4	5.5	4.6	5.5	6	35	102	27	5.5	11	8.6
22	7.4	7.0	5.5	4.6	6	9	32	92	25	5.5	11	8.2
23	7.4	7.0	5.5	4.8	6	14	36	91	23	4.6	12	7.4
24	7.4	7.4	5.5	4.8	6	16	55	82	22	4.3	12	6.7
25	7.0	7.4	5	5	6	16	71	78	18	3.5	12	6.4
26	7.0	7.4	4.0	4.8	6	18	98	75	16	3.0	11	6.4
27	7.0	6.7	3.0	4.6	5.5	23	108	76	16	2.5	13	6.4
28	7.0	6.4	3.2	4.6	5	29	84	* 76	18	2.2	12	6.7
29	7.0	6.4	3.4	4.8	-	43	71	78	18	2.0	11	7.0
30	7.0	6.7	3.6	4.8	-----	40	* 70	78	18	1.8	11	6.4
31	7.0	-----	3.6	5	-----	44	-----	76	-----	1.8	13	-----
Total	233.7	212.2	169.9	143.1	194.0	378.2	1641	3,377	964	227.2	304.0	308.4
Mean	7.54	7.07	5.48	4.62	6.57	12.2	54.7	109	32.1	7.33	9.81	10.3
Ac-ft	464	421	337	284	365	750	3,250	6,700	1,910	451	603	612

Calendar year 1962: Max 410 Min 3.0 Mean 49.6 Ac-ft 35,900  
 Water year 1962-63: Max 189 Min 1.8 Mean 22.3 Ac-ft 16,150

Peak discharge (base, 260 cfs).--No peak above base.

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 9-17, Dec. 21 to Mar. 16, Mar. 20-22.

## GUNNISON RIVER BASIN

9-1306. West Muddy Creek near Ragged Mountain, Colo.

Location.--Lat 39°07'50", long 107°34'30", in NW¼ sec.5, T.11 S., R.91 W., on left bank 100 ft upstream from Gold Creek and 9½ miles northwest of Ragged Mountain.

Drainage area.--7.52 sq mi (revised).

Records available.--October 1955 to September 1963.

Gage.--Water-stage recorder. Altitude of gage is 8,658 ft (from topographic map).

Average discharge.--8 years, 4.69 cfs (3,400 acre-ft per year).

Extremes.--Maximum discharge during year, 26 cfs Apr. 11 (gage height, 3.20 ft); minimum daily, 0.1 cfs July 31, Aug. 1 1955-63; Maximum discharge, about 260 cfs May 10, 1962 (gage height, 5.80 ft, from floodmark); no flow at times in 1956, 1959-60.

Remarks.--Records good 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 Apr. 14-17, 21, Sept. 1-5)

1.9	0.1	2.3	0.7	2.6	3.9
2.0	.2	2.4	1.3	2.8	8.4
2.2	.4	2.5	2.4	3.0	14

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.6	0.8					11	7.4	3.6	0.7	0.1	0.7
2	.6	*.8					10	*6.5	8.4	.6	.2	.3
3	*.6	.7					9	6.7	10	.8	.5	.2
4	.5	.8					9.5	8.7	6.2	.8	1.5	*.2
5	.6	.7					11	9.2	5.2	.7	1.5	.2
6	.6	.6					12	8.4	4.3	.6	*1.6	1.2
7	.6	.6					13	8.7	3.6	.6	1.3	.8
8	.6	.7					16	8.9	3.3	.7	.9	.5
9	.6	.8					15	10	3.2	.9	.7	.4
10	.6	.9	(*)				*14	11	3.0	1.3	.8	.3
11	.6	.6				0.8	15	11	*3.0	1.5	.8	.2
12	.7	.5					18	9.7	2.7	1.6	.8	.2
13	.6	.5					15	8.4	2.6	1.4	.5	.4
14	.6	.9					13	7.9	2.3	1.2	.4	2.1
15	.8	.8					9.7	7.4	2.2	*.9	.3	1.4
16	1.3	.6	0.4	0.3	0.6		9.4	7.4	2.6	.8	.3	.7
17	1.5	.4					*7.4	7.4	2.3	.7	.4	.5
18	1.4	.4					7	7.2	2.4	.6	.4	.5
19	2.7	.4					6.5	7.0	2.2	.5	.2	.4
20	2.1	.4					6	6.7	2.0	.5	.4	.6
21	1.4	.5					5.6	7.0	1.7	.4	.4	.9
22	1.2	.6					5.5	8.2	1.4	.4	.3	.6
23	1.1	.6					5	7.9	1.2	1.1	.4	.6
24	1.0	.6					4.3	*7.9	1.1	.8	.6	.5
25	.9	.6					5.4	6.7	1.1	.6	.2	.4
26	.9	.6				10	6.2	5.6	*.9	.4	.3	.4
27	.8	.6					7.2	5.2	.9	.3	.6	.4
28	.8	.6					6.0	4.5	.8	.2	.4	.3
29	.8	.6					7	4.3	.7	.2	.3	.3
30	.8	.4					8.4	3.9	.7	.2	.2	.3
31	.8	-----					-----	3.6	-----	.1	.4	-----
Total	28.7	18.6	12.4	9.3	16.8	126	288.1	230.4	95.6	22.1	17.7	16.5
Mean	0.93	0.62	0.4	0.3	0.6	4.1	9.60	7.43	2.85	0.71	0.57	0.55
Ac-ft	57	37	25	18	33	250	571	457	170	44	35	33

Calendar year 1962: Max 126 Min - Mean 8.56 Ac-ft 6,200  
Water year 1962-63: Max 18 Min 0.1 Mean 2.39 Ac-ft 1,730

Peak discharge (base, 40 cfs).--No peak above base.

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 16 to Apr. 13 (no gage-height record Nov. 22 to Apr. 9), Apr. 18-20, 22, 23, 29.

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.--50.1 sq mi (revised).

Records available.--October 1961 to September 1963.

Gage.--Water-stage recorder. Altitude of gage is 8,020 ft (from topographic map).

Extremes.--Maximum discharge during year, 129 cfs Apr. 14 (gage height, 1.38 ft); minimum daily, 0.1 cfs Aug. 1. 1961-63: Maximum discharge, about 900 cfs May 11, 1962; minimum daily, 0.1 cfs Aug. 1, 1963.

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

Oct. 1 to June 11

June 12 to Sept. 30

0.1	0	0.8	25	0.0	0.1	0.3	2.9
.2	.5	.9	34	.1	.6	.4	5.5
.3	1.0	1.0	48	.2	1.6	.5	10
.4	3.5	1.2	87				
.6	13						

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7.6	4.4					55	55	10	1.4	0.1	5.0
2	6.6	* 4.4					48	45	18	1.3	.2	4.2
3	6.6	4.0					42	45	33	1.2	.9	3.9
4	6.2	4.4					40	59	21	1.9	3.9	* 3.4
5	6.6	4.4					46	59	17	1.6	6.0	4.2
6	4.0	4.4			5		55	55	14	1.4	* 3.4	8.6
7	2.5	3.2					65	50	11	1.2	4.2	5.5
8	1.5	3.2					75	* 41	9.0	1.4	2.5	5.0
9	1.2	4.4					70	52	8.5	2.1	2.0	4.7
10	* 1.5	4.8	(*)			3.5	* 65	41	7.6	5.0	1.7	4.7
11	1.5	4.8					55	32	* 7.1	5.5	2.1	3.9
12	1.2	4.4					66	29	6.4	6.4	2.1	3.9
13	4.0	4.8					79	21	5.0	6.0	1.6	3.9
14	9.0	4.8					81	18	4.7	4.5	1.1	9.6
15	9.5	4.6					74	17	4.2	* 3.7	1.1	8.6
16	1.2	4.0	3	2.5			* 59	18	5.5	2.2	1.0	6.0
17	1.2	3.6					55	16	7.8	2.8	1.3	5.0
18	1.0	3.0					47	15	9.1	2.2	2.4	4.5
19	1.3	3.0					35	15	8.2	1.7	1.6	4.2
20	1.3	3.0					26	15	6.8	1.3	1.6	4.5
21	1.0	3.0			3.5		24	17	5.5	.9	1.9	4.7
22	9.5	3.4					21	22	3.7	1.0	1.9	4.2
23	9.0	3.4					21	21	2.6	1.7	2.1	3.9
24	8.5	3.4					24	* 23	2.4	2.9	5.5	4.2
25	7.6	3.4					30	20	2.4	1.9	5.2	3.9
26	6.6	3.4					44	17	* 2.0	1.3	4.5	3.9
27	5.3	3.4					52	14	1.7	.9	5.2	3.2
28	4.4	3.4					37	13	1.6	.7	5.2	2.8
29	4.8	3.4					38	12	1.5	.4	4.2	2.2
30	4.8	3.0					52	11	1.5	.4	3.9	2.1
31	4.8	-----					-----	11	-----	.2	4.2	-----
Total	204.8	114.8	93	77.5	113.0	510.0	1,481	879	238.8	67.1	84.6	138.4
Mean	6.61	3.83	3	2.5	4.0	16.5	49.4	28.4	7.96	2.16	2.73	4.61
Ac-ft	406	228	184	154	224	1,010	2,940	1,740	474	133	168	275

Calendar year 1962: Max 660 Min 0.4 Mean 56.9 Ac-ft 41,160  
 Water year 1962-63: Max 81 Min 0.1 Mean 11.0 Ac-ft 7,940

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

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 15 to Dec. 9. No gage-height record Dec. 10 to Apr. 10 (stage-discharge relation affected by ice during most of period).

## GUNNISON RIVER BASIN

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 1963. 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.--30 years, 432 cfs (312,800 acre-ft per year).

Extremes.--Maximum discharge during year, 1,880 cfs May 8 (gage height, 3.28 ft); minimum daily, 24 cfs Dec. 26.

1933-63: 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 or no gage-height record, 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 1962 to September 1963

Date	Contents (acre-feet)	Date	Contents (acre-feet)
Sept. 30.....	7,880	Apr. 30.....	14,360
Oct. 31.....	4,340	May 31.....	18,600
Nov. 30.....	0	June 30.....	18,470
Dec. 31.....	0	July 31.....	13,320
Jan. 31.....	0	Aug. 31.....	7,790
Feb. 28.....	750	Sept. 30.....	1,500
Mar. 31.....	2,540		

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. 1-10, Feb. 6-17)

0.2	27	0.9	155	2.5	1,050
.3	37	1.5	390	3.0	1,550
.5	65	2.0	670	3.2	1,780
.6	80				

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	86	202	62	50	180	44	332	512	652	192	192	88
2	84	* 199	58	55	160	44	300	522	658	196	199	108
3	88	196	50	55	140	44	202	646	640	206	213	* 173
4	90	196	53	60	130	44	* 176	849	610	210	213	173
5	90	192	46	55	* 120	44	192	1,210	610	199	248	182
6		92	192	32	108	38	256	1,410	556	188	196	232
7	88	182	38	55	108	* 40	368	1,510	528	196	185	220
8	86	176	46	50	105	42	425	1,550	506	210	173	185
9	84	173	48	50	94	45	386	1,780	490	216	* 170	167
10	* 84	105	40	48	90	45	372	1,620	415	224	170	167
11	102	86	* 34	* 48	80	45	340	1,550	368	240	198	170
12	131	84	32	46	70	36	376	1,400	390	240	176	164
13	134	86	32	44	65	38	440	* 1,260	435	228	161	176
14	134	96	34	44	60	49	522	1,200	462	182	158	188
15	137	108	36	42	50	42	506	1,030	435	182	161	182
16	146	112	38	42	49	47	* 405	1,170	415	182	158	173
17	179	125	40	44	44	40	358	1,200	* 354	* 182	161	152
18	182	120	44	44	42	40	345	1,240	354	185	196	78
19	188	244	46	46	44	40	288	1,210	336	182	170	105
20	185	254	48	48	46	44	252	1,190	309	188	179	161
21	179	120	46	50	46	53	228	1,140	284	199	182	158
22	176	72	44	55	46	70	232	1,070	264	199	173	155
23	173	58	44	55	44	94	272	1,050	240	196	182	155
24	173	62	44	* 55	46	105	376	970	216	196	185	152
25	167	60	36	55	44	96	462	894	199	192	179	149
26	164	60	24	55	44	110	604	807	188	192	179	152
27	161	52	30	55	44	134	694	* 786	185	196	213	155
28	161	49	34	55	44	167	534	765	192	196	210	152
29	170	50	38	55	-	368	* 451	751	198	196	188	149
30	196	54	44	60	-----	292	478	737	198	196	179	152
31	206	-----	50	70	-----	314	-----	682	-----	188	185	-----
Total	4,316	3,775	1,291	1,601	2,143	2,654	11,172	33,711	11,667	6,174	5,722	4,773
Mean	139	126	41.6	51.6	76.5	85.6	372	1,087	389	199	185	159
Ac-ft	8,560	7,490	2,560	3,180	4,250	5,260	22,160	66,860	23,140	12,250	11,350	9,470

Calendar year 1962: Max 4,200 Min 24 Mean 612 Ac-ft 443,400  
Water year 1962-63: Max 1,780 Min 24 Mean 244 Ac-ft 176,500

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 7-31, Feb. 12-15, 17. No gage-height record Jan. 1 to Feb. 5, Feb. 18 to Mar. 5, Mar. 12, 17-19 (stage-discharge relation affected by ice during part of periods).

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 1963.

Gage.--Water-stage recorder. Altitude of gage is 9,710 ft (from topographic map).

Extremes.--Maximum discharge, 24 cfs May 6 (gage height, 3.36 ft); maximum gage height, 4.19 ft Apr. 27 (backwater from ice); minimum daily discharge determined, 0.1 Sept. 3-5, 12, 17-30.  
1960-63: Maximum discharge, that of May 6, 1963; maximum gage height, that of Apr. 27, 1963; minimum daily discharge determined, 0.1 cfs Oct. 1-8, 1961, Sept. 3-5, 12, 17-30, 1963.

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 Aug. 15 to Sept. 30)

2.2	0.1	2.7	1.7
2.3	.2	2.8	3.0
2.4	.3	3.0	8.5
2.5	.4	3.2	18
2.6	.9		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.3							1.6	6.6	0.7	0.2	0.2
2	.3							1.6	10	.7	.2	.2
3	.3							2.6	11	.7	.3	.1
4	.3							5.5	9.0	.7	.3	*.1
5	.3	(*)					0.3	12	*8.2	.7	.3	.1
6	.3				0.3			15	6.0	.5	.3	.2
7	.3							13	5.7	.4	.3	.2
8	.3							12	5.7	.4	.2	.2
9	.3							9.4	4.9	.8	.2	.2
10	*.2					0.2		9.4	4.2	1.4	.3	.2
11	.2						.4	9.8	3.7	1.6	.5	.2
12	.2		(*)				.5	7.9	3.7	1.2	.3	.1
13	.2						.8	7.9	4.4	.7	.2	.2
14	.2						1.0	5.2	4.9	.5	.2	.3
15	.2						1.2	7.0	3.7	.4	.2	.2
16	.3	0.3	0.2	0.2			1.0	*7.3	4.4	.4	.2	.2
17	.4						.9	7.0	5.7	*.4	.2	.1
18	.4						.9	7.9	8.2	.4	.2	.1
19	.5						.9	7.9	6.3	.4	.2	.1
20	.4				.2		.9	8.2	4.0	.3	.2	.1
21	.4						.8	7.9	2.9	.3	.2	.1
22	.4						.8	8.2	2.4	.4	.2	.1
23	.3						.9	8.2	2.0	.4	.2	.1
24	.3						1.2	8.5	1.6	.4	.2	.1
25	.3					.3	1.6	7.9	*1.5	.3	.2	.1
26	.3						2.0	7.6	1.3	.3	.2	.1
27	.3						2.8	6.6	1.1	.2	.2	.1
28	.3						2.6	7.3	1.0	.2	.2	.1
29	.3						2.0	7.9	.8	.2	.2	.1
30	.3						1.4	8.2	.8	.2	.2	.1
31	.3							7.0		.2	.2	
Total	9.1	9.0	6.2	6.2	6.6	7.3	27.6	243.5	135.7	16.4	7.2	4.3
Mean	0.29	0.3	0.2	0.2	0.24	0.24	0.92	7.85	4.52	0.53	0.23	0.14
Ac-ft	18	18	12	12	13	14	55	483	269	33	14	8.5

Calendar year 1962: Max 18 Min - Mean 2.43 Ac-ft 1,760  
Water year 1962-63: Max 15 Min - Mean 1.31 Ac-ft 950

Peak discharge (base, 20 cfs).--May 6 (2030) 24 cfs (3.36 ft)

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 23 to Nov. 4, Apr. 13-15, 26. No gage-height record Nov. 5 to Apr. 12, Apr. 16-25, Apr. 27 to May 5 (stage-discharge relation affected by ice during most of periods).

## GUNNISON RIVER BASIN

9-1328. Middle Hubbard Creek near Peonia, 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 Peonia.

Drainage area.--1.65 sq mi.

Records available.--October 1960 to September 1963.

Gage.--Water-stage recorder. Altitude of gage is 9,650 ft (from topographic map).

Extremes.--Maximum discharge during year, 27 cfs May 20 (gage height, 3.84 ft); minimum daily determined, 0.1 cfs for many days.  
1960-63: Maximum discharge, 36 cfs June 21, 1962 (gage height, 4.10 ft); minimum daily determined, 0.1 cfs for many days in 1963.

Remarks.--Records good except those for period of ice effect, 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 May 4 to June 7)

2.8	0.1	3.2	2.0
2.9	.3	3.3	3.1
3.0	.7	3.5	6.8
3.1	1.2	3.7	14

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.4							1.4	5.4	0.8	0.2	0.5
2	.4							1.4	8.1	.8	.3	.3
3	.4							1.8	9.4	.8	.4	.2
4	.4							3.1	7.4	.8	.5	*.2
5	.4							4.8	* 7.4	.8	.3	.2
6	.4	(*)			0.2		0.1	6.8	5.8	.8	.4	.5
7	.4							7.4	5.6	.7	.5	.3
8	.4							10	5.0	.7	.3	.3
9	.4						(*)	11	4.5	.9	.3	.3
10	*.4							11	3.8	1.2	.5	.3
11	.4					0.1	.2	12	3.6	1.2	.8	.3
12	.4		(*)				.3	11	3.6	1.2	.5	.2
13	.3						.5	11	3.8	1.0	.4	.3
14	.5						.9	8.1	4.3	.7	.3	.7
15	.4						1.4	9.4	3.4	.6	.2	.4
16	.5	0.3	0.2	0.1			1.3	* 10	3.6	.5	.2	.3
17	.6						1.0	12	4.8	*.6	.2	.2
18	.8						1.0	12	4.8	.4	.3	.2
19	.8						1.0	1.4	3.4	.4	.2	.2
20	.7						1.0	13	2.7	.3	.3	.1
21	.6				.1		.8	10	2.2	.3	.2	.2
22	.6						.8	10	1.8	.3	.2	.1
23	.5						1.0	11	1.6	.5	.4	.1
24	.5						1.8	11	1.4	.4	.4	.1
25	.4					.2	2.7	9.0	* 1.4	.4	.3	.1
26	.4						3.4	7.4	1.3	.3	.2	.1
27	.4						3.6	6.2	1.2	.3	.5	.1
28	.3						3.6	6.6	1.0	.3	.8	.1
29	.3						1.9	7.8	.9	.2	.5	.1
30	.3						1.3	7.8	.8	.2	.3	.1
31	.3							6.2		.2	.3	
Total	13.8	9.0	6.2	3.1	3.8	4.2	30.5	264.2	114.0	18.6	11.2	7.1
Mean	0.45	0.3	0.2	0.1	0.14	0.14	1.02	8.52	3.80	0.60	0.36	0.24
Ac-ft	27	18	12	6.1	7.5	8.3	60	524	226	37	22	14

Calendar year 1962: Max 25 Min - Mean 2.56 Ac-ft 1,850

Water year 1962-63: Max 14 Min - Mean 1.33 Ac-ft 962

Peak discharge (base, 20 cfs).--May 20 (1600) 27 cfs (3.84 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 25 to Apr. 15 (no gage-height record Nov. 5 to Apr. 9).

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 1963.

Gage.--Water-stage recorder. Altitude of gage is 9,640 ft (from topographic map).

Extremes.--Maximum discharge during year, 32 cfs May 20 (gage height, 3.94 ft); minimum daily determined, 0.3 cfs Sept. 12, 18-20, 22-30.

1960-63: Maximum discharge, 51 cfs June 12, 1962 (gage height, 4.27 ft); minimum daily determined, 0.3 cfs Sept. 12, 18-20, 22-30, 1963.

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

2.7	0.2	3.1	3.0
2.8	.5	3.2	4.8
2.9	1.0	3.4	11
3.0	1.8	3.7	23

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.8						0.5	1.8	9.6	1.9	0.8	1.0
2	.8						.5	1.9	15	1.9	.9	.9
3	.7						.5	2.4	17	1.9	1.0	.8
4	.7						.5	3.5	14	1.8	1.0	*.8
5	.7	(*)					.5	5.1	* 13	1.6	.9	.8
6	.7				0.5		.6	7.9	10	1.6	1.0	1.0
7	.7						.6	9.6	9.3	1.5	1.0	.8
8	.7						.6	15	8.3	1.5	.8	.7
9	.7						*.6	16	7.3	1.6	.8	.6
10	*.7						.5	15	6.5	1.9	1.2	.5
11	.6						.7	17	5.9	2.3	1.6	.4
12	.6		(*)				1.2	15	5.6	2.4	1.3	.3
13	.6						1.7	14	6.2	1.8	1.1	.5
14	.6						2.2	11	7.0	1.5	1.0	1.0
15	.6						2.4	13	5.9	1.3	.9	.7
16	.8	0.6	0.5	0.4			2.0	* 15	5.6	1.5	.9	.5
17	1.0						1.6	17	6.8	* 1.5	1.0	.4
18	1.1						1.6	18	6.5	1.3	.9	.3
19	1.2						1.3	19	5.1	1.2	.8	.3
20	1.1						1.2	20	4.4	1.2	.8	.3
21	.8				.4		1.1	17	4.3	1.2	.8	.4
22	.8						1.1	16	3.7	1.2	.8	.3
23	.8						1.6	17	3.7	1.3	.9	.3
24	.8						2.0	19	3.4	1.2	.9	.3
25	.7						2.5	15	* 3.0	1.1	.8	.3
26	.7					.5	3.5	13	2.8	1.0	.8	.3
27	.7						3.7	10	2.6	1.0	1.4	.3
28	.6						2.5	11	2.5	1.0	1.8	.3
29	.6						1.9	12	2.2	.9	1.4	.3
30	.6						1.7	13	2.0	.8	1.0	.3
31	.5							11		.8	1.0	
Total	23.0	18.0	15.5	12.4	12.2	13.5	42.9	391.2	199.2	44.7	31.3	15.7
Mean	0.74	0.6	0.5	0.4	0.44	0.44	1.43	12.6	6.64	1.44	1.01	0.52
Ac-ft	46	36	31	25	24	27	85	776	395	89	62	31

Calendar year 1962: Max 36 Min - Mean 5.04 Ac-ft 3,650  
Water year 1962-63: Max 20 Min - Mean 2.25 Ac-ft 1,630

Peak discharge (basa, 40 cfs)--No peak above base.

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 25 to Nov. 4. No gage-height record Nov. 5 to Apr. 9 (stage-discharge relation affected by ice during most of period), Sept. 4-30.



## GUNNISON RIVER BASIN

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.--35.1 sq mi (revised).

Records available.--October 1936 to September 1956, October 1960 to September 1963. 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.--23 years, 47.7 cfs (34,530 acre-ft per year).

Extremes.--Maximum discharge during year, 520 cfs May 8 (gage height, 3.56 ft); minimum daily, 4.0 cfs Dec. 26.

1936-56, 1960-63: 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, 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)  
(Shifting-control method used Feb. 13-18)

0.8	4	1.6	43
1.0	8	1.9	90
1.2	15	2.4	200
1.4	26	3.0	360

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	19	11	6	5	6.8	6.6	28	62	48	22	18	17
2	18	* 11	5.5	5	7.0	6.4	21	69	64	29	19	14
3	16	11	6	5.5	6.8	6.6	20	110	81	30	16	17
4	16	10	6.5	6	7.2	6.6	* 17	178	66	32	18	16
5	16	8.9	6.5	6	7.2	6.4	18	255	58	31	18	* 16
6	16	7.8	6.5	5.5	7.2	6.4	28	303	51	32	15	18
7	15	6	6.5	5	7.2	* 6.4	38	290	42	32	13	20
8	11	6.5	6.5	4.8	7.2	6.4	38	333	38	33	11	20
9	* 11	7	6.5	4.8	7.2	6.4	31	309	35	40	12	19
10	11	7	6.5	5	7.2	6.6	24	290	31	40	13	14
11	13	6.5	* 7	4.6	7.2	6.6	24	288	24	38	18	12
12	13	6.5	7	4.6	7.2	6.4	41	245	22	36	14	8.9
13	13	7	7	4.6	7.2	6.4	81	215	24	28	18	11
14	13	7.6	7	5	* 7.2	6.2	96	168	27	24	21	18
15	17	7.8	7	5.5	7.2	6.4	77	* 146	24	24	* 24	14
16	20	6.8	7	* 6.2	7.2	6.4	51	155	27	* 25	25	12
17	21	6.5	7	6.0	7.2	6.4	39	155	27	26	22	13
18	23	6.5	6.5	6.0	7.2	6.4	33	142	* 32	25	20	13
19	29	6	6.4	6.0	7.0	6.4	28	130	35	25	18	15
20	21	6.5	6.2	6.0	6.8	6.4	22	126	28	24	20	13
21	17	6.5	6	6.0	7.0	7.2	19	118	21	23	19	14
22	16	6.5	6	6.0	7.0	7.8	18	112	16	24	20	13
23	15	6	6	5.8	7.0	9.2	26	106	13	34	25	13
24	14	6	5.5	6.0	7.0	10	53	128	13	32	24	8.0
25	13	5.5	4.6	6.0	6.8	9.2	85	104	20	24	21	6.4
26	12	5.5	4.0	5.8	6.6	10	122	86	21	21	21	7.0
27	13	6	4.4	5.8	6.8	13	108	81	27	19	20	7.2
28	11	6.5	4.6	5.6	6.6	14	83	* 66	26	18	24	7.2
29	12	6.5	5	6.0	-	16	47	59	28	18	20	7.0
30	13	6.5	5	6.0	-----	19	* 47	62	25	21	17	6.8
31	12	-----	5	6.0	-----	26	-----	55	-----	21	14	-----
Total	480	215.4	187.2	172.1	197.2	270.2	1,363	4,946	994	851	578	390.5
Mean	15.5	7.18	6.04	5.55	7.04	8.72	45.4	160	33.1	27.5	18.6	13.0
Ac-ft	952	427	371	341	391	536	2,700	9,810	1,970	1,690	1,150	775

Calendar year 1962: Max 426 Min 4.0 Mean 63.6 Ac-ft 46,030  
Water year 1962-63: Max 333 Min 4.0 Mean 29.2 Ac-ft 21,110

Peak discharge (base, 600 cfs).--No peak above base.

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 7-13, 17-30, Dec. 1-18, 21, 31, Jan. 1-15.

## GUNNISON RIVER BASIN

241

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 1963.

Gage.--Water-stage recorder.

Extremes.--Maximum discharge during year, 151 cfs May 4 (gage height, 2.94 ft), from rating curve extended above 61 cfs; no flow for many days.

1960-63: Maximum discharge, 292 cfs May 8, 1962 (gage height, 3.43 ft), from rating curve extended above 61 cfs; no flow for many days in 1961-63.

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 2 to June 13, Aug. 14-16)

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	3.0	130

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.1					0	5.2	34	40	28	19	
2	.1	(*)				0	4.2	40	50	29	20	
3	.1					0	5.0	76	48	29	22	
4	0					0	*4.2	111	34	29	22	
5	0					0	3.9	95	36	28	21	(*)
6	0					0	6.6	81	31	28	21	
7	0					*0	15	33	24	28	19	
8	0					0	15	22	22	28	18	
9	*0					.1	13	59	21	28	17	
10	0					.1	15	52	21	29	18	
11	0		(*)			.1	16	44	18	27	18	
12	0					.1	28	32	17	28	14	
13	0					.1	40	21	17	26	2	
14	0				(*)	.2	38	23	27	23	1	
15	.1					.2	29	*18	31	22	*.6	
16	.2			(*)		.2	17	19	31	*22	.1	
17	.1					.2	12	16	33	22	0	
18	.1					.2	9.1	17	*39	21	0	
19	.2					2	7.3	23	34	19	0	
20	.2					2	6.0	38	33	18	0	
21	2					.2	5.4	39	31	18	0	
22	.1					.6	5.8	40	28	20	0	
23	.1					1.0	8.8	39	26	18	0	
24	0					2.4	17	66	24	17	0	
25	0					2.0	24	50	27	17	0	
26	0					2.2	30	39	27	16	0	
27	0					2.4	21	30	24	15	0	
28	0					2.7	12	*30	25	15	0	
29	0					4.0	11	36	27	17	0	
30	0				-----	4.8	*19	40	27	16	0	
31	0	-----			-----	5.2	-----	48	-----	15	0	-----
Total	1.6	0	0	0	0	29.4	443.5	1,311	873	696	232.7	0
Mean	0.05	0	0	0	0	0.95	14.8	42.3	29.1	22.5	7.51	0
Ac-ft	3.2	0	0	0	0	58	880	2,600	1,730	1,380	462	0

Calendar year 1962: Max 148 Min 0 Mean 15.6 Ac-ft 11,310  
Water year 1962-63: Max 111 Min 0 Mean 9.83 Ac-ft 7,110

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

Note.--No gage-height record Oct. 1-8, Nov. 2 to Mar. 7 (stage-discharge relation affected by ice during part of period), Aug. 13-15. Stage-discharge relation affected by ice Mar. 8-27.

## GUNNISON RIVER BASIN

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.

Drainage area.--5,260 sq mi, approximately.

Records available.--May 1962 to September 1963.

Gage.--Water-stage recorder. Altitude of gage is 5,090 ft (from topographic map).

Extremes.--Maximum discharge during year, 3,830 cfs May 9 (gage height, 3.61 ft); minimum daily, 127 cfs Sept. 30.  
1962-63: Maximum discharge, 14,800 cfs May 13, 1962 (gage height, 6.30 ft); minimum daily, 127 cfs Sept. 30, 1963.

Remarks.--Records good except those for period of ice effect, which are poor. 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 tables, except period of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)

Oct. 1 to Apr. 28

Apr. 29 to Sept. 30

1.2	310	0.7	100	2.0	960
1.4	410	1.0	200	3.0	2,460
2.0	1,000	1.4	410	3.6	3,800
3.1	2,600				

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	424	466	802	460	1,200	480	2,200	770	1,910	236	208	255
2	392	473	857	480	1,400	473	2,110	810	1,860	232	216	240
3	362	466	780	500	1,200	480	1,570	960	2,140	224	260	200
4	350	459	736	500	1,200	489	*1,320	1,380	1,960	220	386	228
5	342	445	736	500	1,150	473	1,080	2,040	1,760	380	536	180
6	330	*438	610	480	1,100	452	1,120	2,500	1,630	374	520	172
7	330	431	570	460	1,020	438	1,320	3,110	1,470	308	344	255
8	334	404	610	440	824	445	1,630	3,260	1,370	260	280	338
9	350	380	640	460	758	466	1,490	3,620	1,420	255	260	275
10	342	380	* 580	460	725	473	1,350	3,480	1,500	374	445	216
11	* 342	368	525	400	681	498	1,050	3,220	1,290	392	536	180
12	330	356	473	360	570	* 480	956	3,040	1,040	265	544	170
13	322	334	507	360	525	466	1,170	2,700	1,010	380	410	157
14	314	386	543	380	498	431	1,500	* 2,510	1,170	445	270	196
15	310	791	543	400	507	438	1,690	2,130	1,310	344	* 208	139
16	334	923	543	* 440	516	459	1,410	2,090	1,260	250	232	130
17	362	912	570	460	516	489	1,000	2,500	1,240	* 184	260	* 133
18	507	868	610	460	507	498	780	2,960	* 1,020	180	336	168
19	543	879	714	480	489	525	703	3,170	996	196	392	133
20	630	1,060	769	480	* 507	516	630	3,220	883	204	336	133
21	660	879	660	500	516	670	620	3,240	830	176	280	136
22	600	923	516	500	498	967	543	2,980	730	232	280	139
23	552	791	516	550	480	1,450	498	2,880	605	260	285	145
24	525	780	489	* 550	473	1,870	561	2,820	504	280	280	136
25	498	813	507	550	489	1,920	692	2,570	380	314	285	139
26	480	813	340	550	489	1,660	978	2,260	290	326	260	133
27	466	802	300	550	507	1,800	1,320	* 2,230	245	275	314	133
28	459	725	340	600	480	1,960	1,230	2,250	302	154	562	133
29	445	650	380	600	-	2,440	* 790	2,200	250	168	404	130
30	445	650	420	750	-----	2,420	700	2,160	240	145	265	127
31	466	-----	440	900	-----	2,240	-----	2,110	-----	212	220	-----
Total	13,146	19,045	17,626	15,560	19,825	28,866	34,001	77,170	32,615	8,245	10,425	5,249
Mean	424	635	569	502	708	931	1,133	2,489	1,087	266	336	175
Ac-ft	26,070	37,780	34,960	30,860	39,320	57,250	67,440	153,100	64,690	16,350	20,680	10,410

Calendar year 1962: Max - Min - Mean - Ac-ft -  
Water year 1962-63: Max 3,620 Min 127 Mean 772 Ac-ft 558,900

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 26 to Feb. 5 (no gage-height record Jan. 9-23).

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, ¾ miles upstream from confluence with Sare 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 1963.

Gage.--Water-stage recorder.

Average discharge.--6 years, 6.66 cfs (4,820 acre-ft per year).

Extremes.--Maximum discharge during year, 19 cfs May 6 (gage height, 0.94 ft); minimum daily, 1.0 cfs July 17.  
1957-63: 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 tables, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Sept. 1-10)

Oct. 1 to Mar. 26      Mar. 27 to Sept. 30

0.4	2.0	0.1	0.7
.5	3.5	.3	2.4
.6	5.5	.5	5.6
.7	8.5	.7	10
		.8	14

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6.4	2.8					7.0	7.5	6.5	2.8	3.4	3.8
2	6.1	2.6					3.8	6.1	6.5	1.3	4.0	3.8
3	5.8	2.6					3.8	6.1	6.5	2.0	4.0	3.7
4	6.1	2.6					3.5	8.5	* 6.5	2.2	4.3	2.8
5	7.0	2.4					4.5	10	6.3	2.3	4.2	* 3.0
6	7.3	(*)			4		6.1	14	7.0	2.7	3.5	3.1
7	7.0						7.3	14	7.0	2.8	3.2	3.4
8	7.0						6.6	13	6.1	1.8	3.0	3.4
9	6.7						5.1	14	6.1	2.4	2.7	3.1
10	6.7						4.5	14	6.1	3.0	3.2	3.4
11	* 6.4		(*)			3	4.7	13	5.4	3.1	3.5	3.4
12	6.4						6.1	12	5.4	2.2	3.4	3.1
13	6.1						8.0	10	5.2	2.0	3.1	3.2
14	5.8						8.0	9.5	5.4	2.3	3.4	3.2
15	6.1		3.5	3			6.8	* 8.8	5.2	2.1	3.2	3.1
16	7.9						* 5.4	8.0	5.6	* 1.4	3.1	2.8
17	7.6	3					4.5	9.5	5.2	1.0	2.7	3.1
18	7.0						4.2	9.5	4.7	1.3	2.8	3.4
19	6.7						3.8	9.0	5.1	1.4	2.8	1.5
20	6.4						3.5	9	4.9	1.9	2.7	1.3
21	6.4				3		2.5	8	4.5	2.0	3.0	1.4
22	6.4						2.7	8	4.3	2.0	3.2	1.9
23	6.4					4	3.2	8	4.3	2.4	3.2	2.0
24	6.1						3.8	8	* 4.7	2.0	3.4	1.9
25	5.8						5.2	8	4.5	2.2	3.1	1.8
26	5.5					5	6.3	7	4.3	3.8	3.1	2.3
27	5.5					* 6	4.5	7	4.2	3.7	3.5	2.1
28	5.3					5.2	4.3	7	3.4	3.8	3.2	2.3
29	6.1					5.1	4.9	7	3.5	* 3.5	3.0	2.5
30	7.6					5.8	7.0	7	3.5	3.2	3.0	3.0
31	4.7					7.5		7		3.1	2.5	
Total	198.3	88.0	108.5	93	94	114.6	151.6	287.5	157.9	73.7	100.4	82.8
Mean	6.40	2.93	3.5	3	3.4	3.70	5.05	9.27	5.26	2.38	3.24	2.76
Ac-ft	393	175	215	184	186	227	301	570	313	146	199	164

Calendar year 1962: Max 39      Min -      Mean 8.48      Ac-ft 6,130  
Water year 1962-63: Max 14      Min 1.0      Mean 4.25      Ac-ft 3,070

\* Discharge measurement made on this day.

Note.--No gage-height record Nov. 6 to Mar. 27 (stage-discharge relation affected by ice during most of period), May 20 to June 4.

## GUNNISON RIVER BASIN

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 1963.

Gage.--Water-stage recorder. Prior to June 4, 1958, at site half a mile upstream at different datum.

Average discharge.--6 years, 11.5 cfs (8,330 acre-ft per year).

Extremes.--Maximum discharge during year, 29 cfs May 5 (gage height, 2.32 ft); minimum not determined.

1957-63: 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)  
(Shifting-control method used Oct. 9-24, 27-29, Nov. 1-4, Mar. 22-30)

1.5	1.5	1.8	6.2
1.6	2.5	2.0	13
1.7	4.0	2.2	23

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	20	2.1					3.2	* 7.8	13	21	18	16
2	20	2.1					3.2	8.2	15	21	18	16
3	20	2.1					3.7	11	15	21	18	10
4	20	2.1					4.0	14	14	20	19	8.8
5	20	* 2.1					3.1	19	14	20	19	* 8.5
6	6.5				2		3.7	21	16	20	19	9.2
7	5.1						4.7	20	15	20	18	9.2
8	5.1						* 4.7	20	15	20	17	9.5
9	* 2.0						4.4	19	15	22	18	8.5
10	1.9		(*)				4.2	18	16	22	18	8.5
11	1.8					1.8	4.7	18	15	21	18	8.5
12	1.8						6.5	17	15	22	18	8.8
13	2.8						7.2	15	16	22	17	9.2
14	3.0						7.2	* 15	16	21	* 17	8.5
15	3.0						6.9	15	16	* 21	17	8.5
16	2.2		2	1.8			6.2	15	16	20	17	8.5
17	2.4						5.3	15	16	20	17	7.5
18	2.1	2					5.3	15	16	20	17	7.2
19	2.2						4.4	15	* 16	20	17	6.0
20	2.1					1.8	4.0	15	21	16	17	5.8
21	2.1											
22	1.9					* 1.9	4.2	15	21	16	17	5.1
23	1.8					2.0	4.9	16	21	17	17	5.1
24	1.8					2.1	6.9	15	20	17	17	5.1
25	5.3					2.1	7.5	15	20	17	17	11
						2.3	9.2	15	20	17	17	11
26	5.3						2.2	11	15	21	17	7.5
27	2.3						2.5	9.2	14	21	17	7.5
28	2.3						2.3	8.5	13	21	17	7.5
29	2.4						2.4	8.2	* 14	21	18	7.5
30	9.8						2.4	7.5	13	21	18	7.5
31	8.8						3.2		13		18	
Total	187.8	60.5	62	55.8	52.4	61.4	173.7	471.0	518	599	541	257.5
Mean	6.06	2.02	2	1.8	1.9	1.98	5.79	15.2	17.3	19.3	17.5	8.58
Ac-Ft	372	120	123	111	104	122	345	934	1,030	1,190	1,070	511

Calendar year 1962: Max 48 Min - Mean 12.9 Ac-ft 9,360  
Water year 1962-63: Max 22 Min - Mean 8.33 Ac-ft 6,030

\* Discharge measurement made on this day.

Note.--No gage-height record Nov. 5 to Mar. 21 (stage-discharge relation affected by ice during most of period).

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 1963.

Gage.--Water-stage recorder.

Average discharge.--6 years, 8.32 cfs (6,020 acre-ft per year).

Extremes.--Maximum discharge during year, 33 cfs July 19 (gage height, 3.08 ft); minimum not determined.

1957-63: 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 periods of ice effect or 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 Oct. 1 to Nov. 4, Mar. 26 to May 20, Sept. 24-30)

2.3	0.4	2.8	12
2.4	1.0	2.9	18
2.5	2.0	3.0	27
2.6	3.8	3.1	41
2.7	6.8		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.9	1.0					1.9	* 2.4	6.2	20	18	11
2	1.9	.9					1.6	2.4	6.2	14	18	10
3	1.8	.9					1.6	2.7	6.2	13	14	10
4	1.7	.9					b 1.6	3.3	5.9	18	14	10
5	1.6	* .8					1.8	3.8	5.9	19	14	* 10
6	1.8				0.8		1.9	4.4	5.9	3.4	13	9.9
7	1.7						2.2	3.6	5.9	9.4	13	3.6
8	1.7						* 2.2	3.8	5.6	9.9	24	2.9
9	* 1.6						2.0	3.3	5.6	14	24	2.5
10	1.6		(*)				1.9	2.9	5.9	16	22	2.7
11	1.5					0.5	1.9	2.7	8.9	20	22	2.5
12	1.5						2.4	2.2	10	21	22	2.5
13	1.5						3.1	2.2	9.9	15	25	2.9
14	1.5						3.3	* 2.4	10	14	* 26	2.7
15	1.4						3.1	2.9	6.2	* 14	27	2.7
16	1.2		0.6	0.4			2.5	11	5.9	26	27	2.7
17	1.1						2.0	13	6.2	30	16	2.7
18	1.1	.8					2.0	16	7.3	30	15	2.5
19	1.2				.4		b 2.0	17	* 9.9	31	14	2.5
20	1.0						1.6	17	7.8	23	6.8	2.5
21	.9					* .5	1.6	17	7.8	22	5.0	2.4
22	.9					.8	b 1.6	18	9.4	22	10	2.4
23	.9					1.1	b 1.6	18	7.8	26	12	2.4
24	.9					1.2	2.0	18	7.8	26	9.9	2.9
25	.9					1.3	2.5	15	8.9	23	9.9	3.1
26	.9					1.6	3.3	15	8.9	23	10	3.1
27	.9					1.8	2.9	15	17	13	19	3.1
28	.9					1.6	2.5	7.8	18	13	21	3.3
29	.9					1.7	2.7	* 7.3	20	13	19	3.3
30	1.0					1.9	2.4	6.2	20	17	19	3.1
31	.9					2.0		5.9		17	13	
Total	40.3	24.5	18.6	12.4	15.2	25.5	65.7	262.2	263.0	580.7	522.6	127.9
Mean	1.30	0.82	0.6	0.4	0.54	0.82	2.19	3.46	8.87	18.7	16.9	4.26
Ac-ft	80	49	37	25	30	51	130	520	528	1,150	1,040	254

Calendar year 1962: Max 51 Min - Mean 3.80 Ac-ft 6,370  
Water year 1962-63: Max 31 Min - Mean 5.37 Ac-ft 3,890

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 5 to Mar. 21 (stage-discharge relation affected by ice during most of period), July 21 to Aug. 14.

## GUNNISON RIVER BASIN

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 1963.

Gage.--Water-stage recorder and timber weir.

Average discharge.--6 years, 1.36 cfs (985 acre-ft per year).

Extremes.--Maximum discharge during year, 6.7 cfs May 23 (gage height, 1.11 ft); no flow for many days.

1957-63: Maximum discharge, about 35 cfs May 26, 1958; no flow for many days in 1949-63.

Remarks.--Records good except those for period of no gage-height record, which are poor. Flow regulated by numerous small storage reservoirs.

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

0.4	0	0.7	1.2
.5	.1	.8	2.3
.6	.2	1.1	6.2

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.1						1.5	* 1.9	5.3	0	0	0.1
2	.1						.9	1.6	5.7	0	0	0
3	.1						1.0	2.0	5.2	0	0	0
4	.1						1.3	2.3	4.9	0	0	0
5	.1	(*)					1.2	3.0	4.6	0	0	* 0
6	.1				0.1		1.5	3.5	3.5	0	0	0
7	.1						1.9	3.2	3.1	0	0	0
8	.1					0	* 2.0	2.8	2.6	0	0	0
9	* .1						1.5	2.3	2.6	0	0	.1
10	.1		(*)				1.3	1.9	2.6	.3	0	0
11	0						1.4	1.6	2.6	.8	0	0
12	0						1.6	1.3	2.7	.6	0	0
13	0						2.0	1.0	2.4	1.5	0	0
14	.1						2.1	* .9	2.2	.7	* 0	.1
15	.1						2.1	1.0	1.0	* .2	0	.1
16	.1					.1	1.9	1.0	.7	.1	0	0
17	.1					.1	1.2	1.1	.7	.1	0	.1
18	.2					.1	.7	1.0	.5	0	0	0
19	.5				0	.2	.9	.9	* .4	0	0	0
20	.3					.4	.6	.9	.2	0	0	0
21	.1					* .5	.5	4.6	.2	0	0	0
22	.1					.6	.4	5.7	.1	0	0	0
23	.1					1.2	.5	5.4	.1	.5	0	0
24	.1					1.3	.9	5.6	* .1	.1	0	0
25	.1					1.1	1.2	5.4	.1	0	0	0
26	.1					1.4	1.4	5.2	.1	0	0	0
27	.1					1.6	1.3	5.3	.1	0	.1	0
28	0					1.0	1.1	5.3	.1	0	.1	0
29	0					1.1	1.5	* 5.2	0	0	0	0
30	0					1.3	1.9	3.6	0	0	0	0
31	0	-----			-----	1.8	-----	3.3	-----	0	0	-----
Total	3.1	0	0	0	1.0	13.8	39.3	89.8	54.4	4.9	0.2	0.5
Mean	0.10	0	0	0	0.04	0.45	1.31	2.90	1.81	0.16	0.006	0.02
Ac-ft	6.1	0	0	0	2.0	27	78	178	108	9.7	0.4	1.0

Calendar year 1962: Max 16 Min 0 Mean 1.92 Ac-ft 1,390

Water year 1962-63: Max 5.7 Min 0 Mean 0.57 Ac-ft 410

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

Note.--No gage-height record Nov. 5 to Mar. 21.

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 1963.

Gage.--Water-stage recorder.

Average discharge.--6 years, 6.86 cfs (4,970 acre-ft per year).

Extremes.--Maximum discharge during year, 30 cfs May 6 (gage height, 1.95 ft); minimum not determined.  
1957-63: Maximum discharge, 86 cfs June 6, 1958 (gage height, 2.77 ft); minimum not determined.

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 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	1.4	5.6
1.0	1.5	1.6	11
1.2	3.0	2.0	30

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.9	1.5					4.5	* 8.9	8.9	11	4.0	2.7
2	2.1	1.5					2.8	8.3	8.0	12	4.8	3.0
3	1.9	1.4					2.8	9.8	9.8	12	4.6	3.1
4	1.7	1.4					2.6	15	7.5	12	5.1	3.1
5	1.8	* 1.4					3.2	17	6.1	9.5	5.3	3.0
6	1.9	1.4					4.5	20	5.4	8.9	5.4	2.1
7	1.7	1.2					6.1	19	5.0	8.6	4.6	1.9
8	1.5	1.2					* 6.8	19	4.5	7.0	3.4	1.9
9	* 1.5	1.2					4.8	16	4.5	8.0	3.9	2.1
10	1.6	1.2					4.0	14	5.8	11	4.6	2.1
11	1.6	1.2	(*)			1.6	4.2	12	7.3	13	4.6	* 1.9
12	1.7	1.2				(*)	6.8	11	8.9	11	5.1	1.4
13	1.7	1.6					9.5	9.2	9.8	10	4.6	2.4
14	1.7	1.6			(*)		10	* 7.8	7.3	9.8	* 5.4	4.2
15	1.9	1.6		(*)			8.3	7.3	5.4	* 6.8	5.4	3.1
16	2.3	1.6	1.8	1.4	1.6		6.1	11	5.6	5.8	5.3	5.3
17	2.0	1.4					5.0	13	4.8	5.1	5.3	6.1
18	2.6	1.2					4.0	13	* 6.6	4.8	5.3	3.8
19	3.7	1.0					3.9	13	10	5.0	2.2	3.3
20	2.6	1.0					3.7	13	11	4.8	1.5	3.3
21	2.0	1.0				2.3	3.4	13	9.8	4.8	1.5	3.3
22	1.9	1.0				2.9	3.1	15	9.2	5.4	1.4	3.1
23	1.7	1.2				3.5	3.3	16	8.9	6.3	1.4	1.6
24	1.6	1.2				3.3	5.4	18	9.5	5.6	1.2	1.0
25	1.6	1.2				3.4	8.3	15	9.2	5.3	.9	.9
26	1.6	1.6				3.7	11	14	12	4.5	2.5	.9
27	1.6	1.6				4.2	10	14	13	3.9	3.6	1.4
28	1.6	2.0				3.6	7.8	* 13	8.9	3.6	3.3	2.3
29	1.7	2.0				4.0	6.3	12	8.9	2.7	2.8	2.3
30	1.7	2.0				4.3	7.3	9.5	8.9	2.4	2.4	1.9
31	1.6	-----			-----	5.1	-----	9.5	-----	3.6	2.3	-----
Total	58.0	41.6	55.8	43.4	44.8	72.3	169.5	406.3	240.5	224.2	113.7	78.5
Mean	1.87	1.39	1.8	1.4	1.6	2.33	5.65	13.1	8.02	7.23	3.67	2.62
Ac-ft	115	83	111	86	89	143	336	806	477	445	226	156

Calendar year 1962: Max 53 Min - Mean 9.78 Ac-ft 7,080  
Water year 1962-63: Max 20 Min - Mean 4.24 Ac-ft 3,070

\* Discharge measurement made on this day.

Note.--No gage-height record Nov. 5 to Mar. 20 (stage-discharge relation affected by ice most of period).



## GUNNISON RIVER BASIN

9-1430. Surface Creek near Cedaredge, Colo.

Location.--Lat 38°59', long 107°51', in NW¼NW¼ 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.--26.7 sq mi (revised).

Records available.--June 1939 to September 1963. 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.--24 years, 41.9 cfs (30,330 acre-ft per year).

Extremes.--Maximum discharge during year, 145 cfs May 6 (gage height, 2.13 ft); minimum not determined.

1939-63: 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	1.4	32
.9	7.0	1.7	61
1.1	14	2.1	125

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	10	5.5	3.5				16	* 46	49	56	38	20
2	9.4	4.3	3.3				12	46	52	64	38	18
3	8.5	4.1	3.1				14	59	54	64	41	26
4	9.4		3.1				11	70	43	53	42	29
5	10	* 4.3	3.3				10	82	40	53	42	* 28
6	10	4.1	2.9				17	91	44	49	34	28
7	10	4.3	3.9				23	88	43	50	31	26
8	10	4.0	4.8				* 26	91	45	52	35	24
9	* 12	4.1	4.1				20	92	41	57	38	23
10	11	4.0	4.1				19	86	38	60	26	35
11	12	4.0	* 4.8			4	26	76	42	48	26	37
12	12	4.0	4.4				42	62	42	38	25	31
13	9.1	4.0	3.8				57	73	40	24	52	32
14	8.2	3.9	2.9				56	* 88	41	* 21	* 57	36
15	8.2	4.1	2.8				43	83	35	* 23	48	31
16	9.4	3.9		3	3.5		32	98	37	40	46	31
17	9.1	3.6					26	99	36	40	40	32
18	9.4	3.6					23	98	* 42	44	38	31
19	12	3.4					23	92	43	43	38	23
20	9.4	3.6					18	89	43	34	33	23
21	8.2	3.9				* 4.0	14	119	43	32	33	18
22	7.6	3.7				5.2	16	119	35	34	27	18
23	8.5	3.7	3			7.0	24	106	31	31	26	18
24	8.5	3.9				6.8	34	119	30	28	24	22
25	9.4	3.9				7.6	48	99	44	45	24	23
26	9.7	3.9				9.4	62	92	44	48	24	18
27	20	3.7				18	51	84	44	34	25	17
28	21	3.7				14	38	* 68	44	31	25	14
29	21	3.7				10	35	62	54	31	20	14
30	20	3.5				11	38	58	57	32	18	15
31	20	-----				16	-----	53	-----	34	18	-----
Total	353.0	118.5	102.8	93	98.0	189.0	874	2,588	1,276	1,293	1,032	741
Mean	11.4	3.95	3.32	3	3.5	6.10	29.1	83.5	42.5	41.7	33.3	24.7
Ac-ft	700	235	204	184	194	375	1,730	5,130	2,530	2,560	2,050	1,470

Calendar year 1962: Max 224 Min - Mean 48.2 Ac-ft 34,910  
Water year 1962-63: Max 119 Min - Mean 24.0 Ac-ft 17,360

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 8, 10-13, 17-20, Dec. 11-13. No gage-height record Dec. 15 to Mar. 21 (stage-discharge relation affected by ice during most of period).

## 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.--39.5 sq mi (revised).

Records available.--October 1916 to September 1963. 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.--47 years, 27.3 cfs (19,760 acre-ft per year).

Extremes.--Maximum discharge during year, 95 cfs May 21 (gage height, 1.29 ft); minimum daily, 1.4 cfs Dec. 26.

1916-63: 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 or no gage-height record, 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)

0.3	0.8	0.7	14
.4	1.7	1.0	47
.5	3.7	1.2	79
.6	8.0		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	11	6.0	3.0	2.4	2.0	3.2	24	47	38	27	15	14
2	10	4.4	3.2	2.3	1.0	3.4	10	50	40	34	16	13
3	9.3	4.4	3.2	2.3	7	3.5	11	56	48	35	19	20
4	9.3	4.4	3.5	3.2	* 5.5	3.2	* 3.0	60	39	27	18	23
5	10	* 4.1	3.4	3.2	5.5	3.2	6.5	60	37	24	17	21
6	10	3.7	3.2	2.3	5.5	3.0	13	62	35	26	17	21
7	9.3	2.0	3.2	2.0	5.5	3.0	23	64	32	30	19	18
8	8.6	1.6	3.4	1.6	5.1	* 3.0	28	70	31	31	22	14
9	* 10	2.3	3.4	2.0	5.1	3.4	18	77	26	31	25	13
10	8.6	2.2	* 3.4	2.0	5	3.8	15	67	23	33	19	14
11	9.3	1.9	3.6	2.3	5.5	3.8	20	64	28	35	19	* 13
12	9.3	2.2	3.6	2.3	4.4	3.6	35	60	31	31	18	15
13	8.0	2.2	3.6	1.7	3.4	3.4	48	65	31	18	15	18
14	8.0	4.1	3.6	1.7	5	3.4	56	* 65	33	13	* 13	24
15	8.6	3.7	3.6	* 2.3	5	3.6	46	65	32	13	12	19
16	12	3.5	3.8	3.7	4.6	3.6	32	69	33	* 13	12	17
17	12	3.0	3.4	4.4	4.0	3.2	30	70	33	11	20	16
18	12	3.0	2.8	4.8	3.6	3.7	23	69	22	10	22	13
19	15	3.2	2.5	4.8	3.7	3.7	20	69	* 19	10	21	11
20	12	5.1	2.0	4.8	3.7	4.8	16	69	18	8.0	18	11
21	9.3	4.8	2.4	4.8	3.6	6.0	14	76	17	8.6	16	8.0
22	8.0	4.1	2.6	5.1	3.8	8.0	13	74	17	9.3	14	6.0
23	7.5	4.1	2.8	5.1	3.8	11	18	69	16	9.3	13	6.0
24	6.5	4.1	3.0	5.1	3.8	12	33	74	14	7.0	14	8.6
25	4.8	4.1	2.2	5.1	3.8	11	44	64	17	20	13	11
26	4.1	3.7	1.4	5.1	3.6	14	54	59	17	25	13	11
27	6.0	3.5	1.6	5.1	3.5	17	54	54	20	22	15	13
28	7.0	2.7	1.8	6.0	3.2	20	40	47	21	20	16	11
29	7.0	2.5	2.0	7.5	-	16	32	* 44	25	20	14	10
30	7.5	2.7	2.2	8.6	-----	19	* 37	42	30	16	13	11
31	8.6	-----	2.4	10	-----	21	-----	37	-----	15	13	-----
Total	278.6	103.3	89.8	123.6	146.2	224.5	816.5	1,918	823	632.2	511	423.6
Mean	8.99	3.44	2.90	3.99	5.22	7.24	27.2	61.9	27.4	20.4	16.5	14.1
Ac-ft	553	205	178	245	290	445	1,620	3,800	1,630	1,250	1,010	840

Calendar year 1962: Max 175 Min 1.4 Mean 32.3 Ac-ft 23,400  
 Water year 1962-63: Max 77 Min 1.4 Mean 16.7 Ac-ft 12,070

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 5-18, 21-23, 25-31, Jan. 1, Feb. 10, 12-18, 21-26, 28, Mar. 2, 4-16. No gage-height record Jan. 31 to Feb. 5.

## GUNNISON RIVER BASIN

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 1963.

Gage.--Water-stage recorder.

Average discharge.--6 years, 29.0 cfs (21,000 acre-ft per year).

Extremes.--Maximum discharge during year, 418 cfs July 12 (gage height, 4.69 ft); minimum daily, 0.8 May 3, July 31, Aug. 1. 1957-63: Maximum discharge, 748 cfs June 7, 1958 (gage height, 5.32 ft); minimum daily, 0.8 cfs May 3, July 31, Aug. 1, 1963.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which ere 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.

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	43		30	22	150	22	30	1.4	2.8	2.3	0.8	2.1
2	44	*33	30	24	100	22	27	.9	3.0	2.0	.9	2.1
3	44	32	30	26	60	24	20	.8	2.4	2.0	.9	2.1
4	42	32	29	28	*50	22	*20	1.2	2.5	2.7	1.0	2.1
5	40	32	26	28	40	20	20	2.0	2.8	2.6	1.0	2.3
6	34	31	27	b 26	42	22	19	1.7	3.0	2.0	1.0	2.5
7	33	30	27	25	39	24	24	1.4	3.4	1.1	1.0	2.7
8	33	31	27	25	37	*24	32	1.3	3.4	.9	1.0	2.7
9	*31	32	27	25	35	24	16	1.6	3.6	.9	1.0	2.7
10	29	32	27	b 32	32	26	14	1.8	3.6	1.1	1.0	2.7
11	27	30	*27	*28	30	24	13	1.6	2.9	1.2	1.0	*2.5
12	27	30	27	26	28	20	14	1.7	2.4	4.6	1.0	2.4
13	28	31	27	22	26	22	20	1.8	2.4	6.2	1.0	2.6
14	28	31	27	22	28	21	16	*3.4	2.6	2.9	*1.0	4.4
15	29	35	27	24	28	22	10	2.7	2.4	2.1	1.1	3.2
16	55	34	27	26	28	21	7.1	3.0	2.5	*1.6	1.2	3.0
17	44	33	27	28	30	22	5.3	2.7	2.1	1.6	1.5	3.2
18	40	34	27	28	30	23	3.8	2.5	1.9	1.4	1.8	3.4
19	43	32	30	28	30	22	3.0	2.8	*2.2	1.1	1.8	3.4
20	40	35	30	26	32	20	2.8	2.5	2.4	1.0	1.8	3.4
21	39	35	27	24	32	22	2.7	2.8	2.3	1.0	1.7	3.0
22	38	32	25	24	30	23	2.0	2.8	2.3	1.2	1.7	3.0
23	37	32	26	*26	30	25	1.2	2.9	2.2	2.6	1.9	3.4
24	37	31	27	b 26	30	29	1.0	4.8	2.0	1.6	2.0	4.4
25	37	30	b20	b 28	30	25	1.0	4.4	2.3	1.4	1.8	5.0
26	38	31	b18	b 26	28	25	1.0	3.6	2.5	1.4	1.9	5.6
27	38	30	18	b 24	26	26	1.0	3.8	2.4	1.2	2.3	6.5
28	37	30	19	24	24	30	1.0	3.4	2.3	1.0	2.0	5.9
29	37	30	20	26	-	23	1.2	*3.4	2.3	1.0	1.7	5.9
30	36	30	20	30	-----	25	*1.4	2.9	2.2	.9	1.6	4.6
31	36	-----	22	60	-----	26	-----	2.8	-----	.8	1.9	-----
Total	1,144	955	798	837	1,105	726	330.5	76.4	77.1	96.8	43.3	102.8
Mean	36.9	31.8	25.7	27.0	39.5	23.4	11.0	2.46	2.57	3.12	1.40	3.43
Ac-ft	2,270	1,890	1,580	1,660	2,190	1,440	656	152	153	192	86	204

Calendar year 1962: Max 309 Min 5.6 Mean 35.4 Ac-ft 25,600

Water year 1962-63: Max 150 Min 0.8 Mean 17.2 Ac-ft 12,470

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 27 to Jan. 5, Jan. 11-23, Jan. 30 to Feb. 5 (stage-discharge relation effected by ice part of periods), Feb. 10 to Mar. 12, Apr. 24-30, Aug. 7-14.

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 1963.

Gage.--Water-stage recorder. Datum of gage is 6,877.58 ft above mean sea level (levels by Bureau of Reclamation).

Average discharge.--5 years, 147 cfs (106,400 acre-ft per year).

Extremes.--Maximum discharge during year, 1,240 cfs July 13 (gage height, 4.65 ft); minimum daily, 26 cfs Jan. 13.

1958-63: Maximum discharge, 1,270 cfs June 17, 1960 (gage height, 4.75 ft); minimum daily, 26 cfs Jan. 13, 1963.

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.

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

1.5	28
1.9	70
2.3	130
3.0	325
4.0	780

Discharge, in cubic feet per second, water year October 1962 to September 1963.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	104	* 78	66	39	226	48	125	78	376	165	97	108
2	102	74	65	b40	93	47	100	80	392	158	89	103
3	98	70	65	44	64	48	82	96	* 315	163	94	96
4	97	70	65	47	59	47	83	158	280	178	112	87
5	94	69	59	48	60	47	84	202	280	163	* 114	86
6	91	68	56	b44	60	46	89	292	268	153	130	117
7	89	63	57	b44	60	b 42	112	* 350	289	145	143	143
8	86	59	57	b44	59	48	* 136	368	308	140	117	114
9	83	60	55	b46	58	51	121	360	312	* 175	125	* 108
10	83	60	54	47	58	54	104	274	250	226	123	106
11	* 82	59	51	b42	* 57	* 49	102	280	208	268	138	104
12	79	58	* 54	b32	51	48	121	283	235	277	126	104
13	78	59	54	b26	b 42	48	153	* 308	318	435	112	104
14	76	64	52	b30	b 44	48	183	308	404	250	96	110
15	76	73	52	b32	46	49	175	262	420	199	79	103
16	83	71	54	* b34	47	48	136	332	328	175	73	94
17	119	68	54	34	45	49	112	416	280	153	76	93
18	94	69	56	34	47	50	100	464	305	138	76	89
19	116	66	57	b32	49	50	91	452	332	128	74	84
20	175	70	56	b34	50	52	83	424	308	123	93	86
21	123	71	51	b36	59	65	78	392	312	134	98	87
22	108	66	50	37	54	78	79	364	312	163	96	82
23	100	66	47	b38	50	87	86	380	295	158	97	79
24	96	68	50	b40	50	96	103	376	250	140	96	73
25	93	66	47	42	a 48	87	114	332	220	126	97	68
26	90	66	b38	43	a 48	100	112	318	208	112	103	65
27	86	65	b32	b40	a 46	119	114	342	197	104	163	63
28	84	63	b34	44	a 48	128	97	322	193	97	125	62
29	82	63	b36	46	-	130	83	353	183	94	110	62
30	79	65	b36	47	-----	112	76	400	163	93	108	59
31	79	-----	b38	83	-----	126	-----	388	-----	91	109	-----
Total	2,925	1,987	1,598	1,269	1,678	2,097	3,234	9,754	8,531	5,124	3,269	2,739
Mean	94.4	66.2	51.5	40.9	59.9	67.6	108	315	284	165	105	91.3
Ac-ft	5,800	3,940	3,170	2,520	3,330	4,160	6,410	19,350	16,920	10,160	6,480	5,430

Calendar year 1962: Max 816 Min 32 Mean 171 Ac-ft 124,100  
 Water year 1962-63: Max 464 Min 26 Mean 121 Ac-ft 87,670

Peak discharge (base, 1,000 cfs)--July 13 (0200) 1,240 cfs (4.65 ft).

\* Discharge measurement made on this day.

a No gage-height record.

b Stage-discharge relation affected by ice.

## GUNNISON RIVER BASIN

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 1963.

Gage.--Water-stage recorder. Altitude of gage is 8,400 ft (from topographic map).

Average discharge.--8 years, 12.3 cfs (8,900 acre-ft per year).

Extremes.--Maximum discharge during year, 40 cfs June 14 (gage height, 2.43 ft); maximum gage height, 3.33 ft Dec. 6 (ice jam); minimum daily discharge, 3.0 cfs Dec. 26.

1955-63: 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 (ice jam); minimum daily discharge, 2.4 cfs Jan. 14, 1961.

Remarks.--Records fair 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 June 14-29, Sept. 18-30)

1.9	2.2	2.2	11
2.0	4.4	2.4	24
2.1	7.2	2.6	44

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9.1	5.2	5.0	b 3.8	4.2	3.5	9	7.5	21	18	9.5	9.9
2	8.7	*5.2	5.0	b 3.8	4.0	3.5	8	7.5	21	18	9.9	9.5
3	8.0	5.2	b 4.6	b 4.0	3.7	3.7	7.5	8	18	18	10	8.7
4	8.0	5.2	b 4.6	b 4.0	3.7	3.5	b 6.5	9	*17	18	9.9	8.3
5	8.0	5.2	b 5.0	4.2	3.7	b 3.2	6.6	10	18	15	11	8.7
6	8.3	5.2	b 5.0	4.0	3.7	b 3.2	8.3	13	13	16	15	9.1
7	8.0	b 5.0	b 5.0	4.0	3.7	b 3.5	10	*15	15	17	*18	9.5
8	7.6	b 5.0	5.2	4.4	3.7	3.5	11	18	18	16	14	8.7
9	7.6	5.8	b 5.0	5.2	3.7	b 3.5	*10	20	16	19	13	8.0
10	*7.6	5.2	*b 5.0	4.7	3.7	3.5	8.7	18	14	*22	13	*8.3
11	7.6	b 5.0	b 5.0	4.0	3.7	3.5	b 7.5	18	16	20	13	8.7
12	7.2	b 5.0	5.2	4.0	b 3.6	3.5	b 8	16	19	20	13	8.0
13	7.6	b 5.0	5.0	4.2	b 3.4	b 3.5	8.5	15	23	26	12	8.3
14	6.9	5.2	b 4.6	b 4.0	b 3.6	b 3.5	9	16	*28	23	11	8.7
15	6.9	5.2	5.0	b 4.0	b 3.6	3.5	9	13	25	20	9.9	8.0
16	8.0	5.2	5.0	4.4	b 3.6	b 3.4	8.5	19	19	16	9.5	7.6
17	9.1	5.2	5.0	4.4	3.7	3.5	8	21	15	15	9.5	7.6
18	7.6	6.1	5.0	4.0	3.7	3.5	7	21	19	14	9.1	7.2
19	7.6	7.6	5.0	4.0	3.7	*3.7	6.5	21	20	13	9.1	7.2
20	7.6	5.8	5.0	3.7	3.7	4.0	6.5	23	20	12	10	6.9
21	6.9	6.1	4.7	3.7	3.7	4.7	7	25	20	15	11	6.9
22	6.6	b 5.5	4.4	3.7	3.5	5.0	6.5	*24	22	13	10	6.6
23	6.4	b 5.5	5.0	3.7	b 3.4	5.8	7	21	21	15	10	6.6
24	6.4	5.2	4.7	3.7	3.5	6.1	8	20	20	16	10	6.4
25	5.8	5.2	4.4	3.5	3.5	b 6.0	8	17	17	15	10	6.4
26	5.8	b 5.0	b 3.0	3.5	b 3.4	6.6	8.5	18	18	13	11	6.1
27	5.8	b 5.0	b 3.2	4.0	3.5	7	8	20	20	12	14	6.1
28	5.5	b 5.0	b 3.4	4.0	3.5	8	7.5	20	18	11	11	6.1
29	5.5	5.2	b 3.4	3.5	-	9	7.5	22	17	11	10	5.8
30	5.2	5.0	b 3.6	3.5	-----	10	7.5	21	18	10	9.9	5.8
31	5.2	-----	b 3.6	3.5	-----	10	-----	21	-----	9.9	9.9	-----
Total	222.1	160.2	142.6	123.1	102.1	148.4	239.6	538.0	565	496.9	346.2	229.7
Mean	7.16	5.34	4.60	3.97	3.65	4.79	7.99	17.4	18.8	16.0	11.2	7.66
Ac-ft	441	318	283	244	203	294	475	1,070	1,120	986	687	456

Calendar year 1962: Max 50 Min 3.0 Mean 12.2 Ac-ft 8,860  
Water year 1962-63: Max 28 Min 3.0 Mean 9.08 Ac-ft 6,580

Peak discharge (base, 30 cfs).--June 14 (2230) 40 cfs (2.43 ft); July 12 (2230) 31 cfs (2.44 ft).

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Mar. 27 to Apr. 3, Apr. 13 to May 6 (stage-discharge relation affected by ice and backwater from trash during part of period).

9-1465. East Fork Dallas Creek near Ridgway, Colo.

Location.--Lat 38°05'40", long 107°48'40", in SE 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 1963.

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.--9 years, 23.5 cfs (17,010 acre-ft per year).

Extremes.--Maximum discharge during year, 100 cfs June 15 (gage height, 2.95 ft), from rating curve extended above 96 cfs; maximum gage height, 4.05 ft Dec. 29 (ice jam); minimum discharge not determined.

1947-53, 1960-63: 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, 4.28 ft Dec. 13, 1961 (ice jam); minimum daily discharge determined, 3.6 cfs Mar. 11-13, 1962.

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

2.0	6.0	2.7	57
2.1	9.5	3.0	110
2.4	26		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	21	11	9.5	6.5			11	9.2	45	57	28	32
2	20	*11	9.2	7			9.5	8.8	46	53	28	30
3	20	11		7.5			9	9.5	34	53	30	28
4	19	11	8.4	7.8			7.5	10	*32	53	32	27
5	19	10	8	7			8.4	11	36	50	*38	26
6	18	10	8	6			9.5	*14	32	51	47	31
7	17	9	8	6			12	16	34	49	58	34
8	17	10	8	6.5			12	19	44	49	45	30
9	16	10	8	6.5			*12	23	43	*60	43	*27
10	*15	10	*8	6.7			11	21	32	69	38	25
11	14	9	8.5	6.7	(*)	(*)	10	20	30	68	40	24
12	13	9	8.5	6.0			10	21	36	57	40	23
13	13	9	9				11	21	52	72	36	23
14	13	10	9	(*)			11	22	69	56	33	25
15	13	10	9.5		7		11	21	76	50	31	23
16	14	10	9				10	27	60	44	29	22
17	15	10	9				9.5	37	49	42	28	21
18	13	9.5	9.5				9	49	53	42	28	21
19	13	8	8.8			(*)	8	55	52	41	28	21
20	13	8.5	8.4			5.5	8.1	55	55	38	32	21
21	12	9	7			6	8.1	57	66	45	33	21
22	11	9	6.5	6.5		7.4	8	*51	70	43	33	20
23	12	9	7			8.1	9.5	52	72	41	33	19
24	12	10	7			8.4	10	46	70	38	35	19
25	12	10	6			7.5	9.5	38	68	36	32	18
26	12	9	5			8.4	10	35	68	35	33	18
27	12	9	5.5			9.5	10	38	68	32	40	18
28	11	9	5.5			11	10	38	68	31	37	18
29	11	9	5.5			12	8.8	42	63	28	32	17
30	11	9	6			12	8.8	44	58	28	31	16
31	11	-----	6			12	-----	49	-----	28	31	-----
Total	443	288.0	240.3	203.7	196	221.8	291.2	359.5	1581	1439	1082	698
Mean	14.3	9.60	7.75	6.57	7	7.15	9.71	31.0	52.7	46.4	34.9	23.3
Ac-ft	879	571	477	404	389	440	578	1,900	3,140	2,850	2,150	1,380

Calendar year 1962: Max 189 Min 3.6 Mean 27.4 Ac-ft 19,800

Water year 1962-63: Max 76 Min - Mean 20.9 Ac-ft 15,160

Peak discharge (base, 120 cfs).--No peak above base.

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 7, 8, 11-13, 18-23, 26-30, Dec. 3, 5-17, 21-29, Jan. 5-9, Mar. 20, 21, 25, Apr. 3, 4, 18, 19, 22, 23. No gage-height record Dec. 30 to Jan. 3, Jan. 13 to Mar. 19 (stage-discharge relation affected by ice during part of periods).

## GUNNISON RIVER BASIN

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 1963.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 7,680 ft (from topographic map).

Extremes.--Maximum discharge during year, 11 cfs July 21 (gage height, 2.58 ft), maximum gage height, 2.76 ft Mar. 16 (backwater from ice); minimum daily discharge, 0.6 cfs May 20.

1960-63: Maximum discharge, 23 cfs Aug. 17, 1961 (gage height, 2.87 ft) from rating curve extended above 10 cfs; minimum daily, that of May 20, 1963.

Remarks.--Records good 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)

2.1	0.4
2.3	3.6
2.4	5.8
2.6	12

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.2	3.4	3.4			b 2.6	4.7	4.3	3.0	4.5	3.3	3.6
2	3.4	* 3.3	3.3			b 2.8	4.5	4.3	3.3	3.6	3.6	3.3
3	3.4	3.3	3.3			b 2.6	b 4.0	4.0	3.1	3.8	3.6	3.3
4	3.8	3.3	3.1			2.8	4.3	4.0	* 2.6	4.9	3.6	2.5
5	4.0	3.3	b 2.2			2.6	4.5	4.3	3.1	4.5	* 3.8	2.5
6	4.0	3.1	b 2.2			2.6	4.5	* 4.5	2.8	4.3	4.7	3.1
7	4.0	2.8	b 2.2			2.6	4.7	4.3	2.3	3.1	4.5	2.8
8	4.0	2.6	b 2.4			2.8	4.9	4.3	2.2	3.3	4.2	2.6
9	3.8	2.8	b 2.2			2.8	* 4.7	4.3	2.0	* 3.8	4.0	* 2.5
10	* 3.8	2.8	*b 2.0			3.0	4.5	4.5	2.0	3.8	3.8	2.6
11	3.8	2.8	b 2.6		3.0	* 3.0	4.5	4.3	1.4	3.8	3.8	2.6
12	3.6	3.0	b 2.2		(*)	b 2.8	4.3	4.3	1.5	4.5	3.6	2.5
13	3.3	3.0	b 2.0			b 2.8	4.5	4.3	2.0	4.7	3.4	2.5
14	3.4	3.3	b 2.2	(*)		b 2.8	4.3	3.4	2.2	3.4	3.1	2.6
15	3.3	3.6	b 2.2			3.0	1.8	3.1	2.0	3.4	3.0	2.5
16	3.8	3.4		2.8		b 3.0	1.5	2.8	1.5	3.3	2.8	2.3
17	4.3	3.1				3.1	1.0	2.5	1.4	3.3	3.3	2.3
18	3.4	3.0				* 3.1	1.0	1.4	2.0	3.0	3.1	2.3
19	3.8	2.8				3.1	1.0	.9	2.8	3.0	3.1	2.3
20	4.3	2.8				b 3.4	1.2	.6	2.8	3.0	3.6	2.5
21	3.6	2.8			2.5	b 4.0	1.5	1.2	2.8	3.6	4.0	2.5
22	3.3	2.8			b 2.2	5.1	3.1	* 1.4	2.8	4.0	3.3	2.3
23	3.3	b 2.8	2.5		b 2.6	5.6	3.1	1.5	2.6	3.6	2.8	2.3
24	3.3	3.0			b 2.2	4.9	* 3.4	1.8	2.2	3.0	2.8	2.2
25	3.3	3.3			b 2.4	b 4.0	3.6	1.8	3.0	2.8	2.5	2.2
26	3.3	3.4			b 2.8	4.5	3.6	2.5	3.0	2.8	3.1	2.2
27	3.3	3.1			2.6	4.5	3.3	2.5	3.1	3.0	3.3	2.0
28	3.4	b 2.8			b 2.8	5.1	3.1	2.5	3.8	3.0	2.6	2.0
29	3.3	3.0			-	5.4	3.3	2.8	4.7	3.0	3.4	2.0
30	3.4	3.1			-----	4.9	4.0	3.0	4.5	3.1	3.4	2.0
31	3.4	-----			-----	4.9	-----	3.1	-----	3.1	3.6	-----
Total	110.3	91.6	77.5	86.8	80.1	110.2	102.4	94.5	78.5	110.0	106.7	74.9
Mean	3.56	3.05	2.50	2.8	2.86	3.55	3.41	3.05	2.62	3.55	3.44	2.50
Ac-ft	219	182	154	172	159	219	203	187	156	218	212	149

Calendar year 1962: Max 9.4 Min - Mean 3.88 Ac-ft 2,010  
 Water year 1962-63: Max 5.6 Min 0.6 Mean 3.08 Ac-ft 2,230

Peak discharge (base, 15 cfs).--No peak above base.

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 16 to Feb. 20, Mar. 4-10 (stage-discharge relation affected by ice most of periods), Aug. 8-13.

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 1963.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 8,680 ft (from topographic map).

Average discharge.--8 years, 2.41 cfs (1,740 acre-ft per year).

Extremes.--Maximum discharge during year, 141 cfs Mar. 30 (gage height, 3.18 ft); minimum daily, 0.1 cfs for many days.

1955-63: 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 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)

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	2.8	67

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.1	0.1	0.1				3.3	0.6	0.1	0.1	0.1	0.1
2	.1	*.1	.1				b 6.2	.5	.1	.1	.1	.1
3	.1	.1	.1		1		b 6.5	.5	.1	.1	.1	.1
4	.1	.1	.1				b 7	.5	*.1	.1	.1	.1
5	.1	.1	.1				12	.4	.1	.1	.1	.1
6	.1	.1	.1				13	.3	.1	.1	*.3	.2
7	.1	.1	.1				12	*.3	.1	.1	.1	.1
8	.1	.1	.1				7.8	.4	.1	.1	.1	.1
9	.1	.1	.1				* 5.7	.3	.1	.1	2.7	.1
10	*.1	.1	.1			0.1	3.2	.3	.1	*.1	.1	*.1
11	.1	.1	.1				3.2	.3	.1	.1	.1	.1
12	.1	.1	.1				3.3	.2	.1	.1	.1	.1
13	.1	.1	.1				3.0	.2	.1	.1	.1	.1
14	.1	.1	.1				3.2	.2	.1	.1	.1	.1
15	.1	.1	.1				2.0	.1	.1	.1	.1	.1
16	.1	.1	.1	0.1			1.1	.1	.1	.1	.1	.1
17	.1	.1	.1		.1		1.1	.1	.1	.1	.2	.1
18	.1	.1	.1				1.4	.1	.1	.1	.2	.1
19	.1	.1	.1			(*)	1.5	.1	.1	.1	.1	.1
20	.1	.1	.1			b 2	1.1	.1	.1	.1	.1	.1
21	.1	.1	.1				.5	.8	.1	.1	.2	.1
22	.1	.1	.1				1.1	.9	.1	.1	.1	.1
23	.1	.1	.1	.1			8.8	.7	.2	.1	.1	.1
24	.1	.1	.1				14	*.7	.5	.1	.1	.1
25	.1	.1	.1				16	.7	.1	.1	.1	.1
26	.1	.1	.1				27	.8	.1	.1	.1	.1
27	.1	.1	.1				44	1.0	.1	.1	.1	.1
28	.1	.1	.1				50	.6	.1	.1	.1	.1
29	.1	.1	.1				52	.5	.1	.1	.1	.1
30	.1	.1	.1				55	.5	.1	.1	.1	.1
31	.1						60		.1	.1	.1	
Total	3.1	3.0	3.1	3.1	7.3	330.5	134.5	7.2	3.0	3.1	6.2	3.9
Mean	0.10	0.10	0.10	0.1	0.26	10.7	4.48	0.23	0.10	0.10	0.20	0.13
Ac-ft	6.1	6.0	6.1	6.1	14	656	267	14	6.0	6.1	12	7.7

Calendar year 1962: Max 80 Min 0.1 Mean 1.94 Ac-ft 1,410  
 Water year 1962-63: Max 60 Min 0.1 Mean 1.39 Ac-ft 1,010

Peak discharge (base, 50 cfs).--Mar. 30 (1530) 141 cfs (3.18 ft); Aug. 9 (1315) 74 cfs (2.84 ft).

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 16 to Mar. 19 (stage-discharge relation affected by ice during most of period), Aug. 14-19.



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.--96.2 sq mi (revised).

Records available.--March 1922 to October 1927, October 1955 to September 1963. 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.--13 years, 39.1 cfs (28,310 acre-ft per year).

Extremes.--Maximum discharge during year, about 550 cfs Jan. 31 (gage height, 5.14 ft, backwater from ice); minimum daily, 0.9 cfs Apr. 29, May 6, June 11.

1922-27, 1955-63: 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; maximum gage height, 5.14 ft Jan. 31, 1963 (backwater from ice); minimum daily discharge, 0.8 cfs Oct. 14, 1955, May 10-13, 18, 1956.

Remarks.--Records good except those for periods of ice effect and those below 5 cfs, 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 table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Sept. 26-30)

1.9	0.9	2.6	23
2.0	1.4	2.8	44
2.2	5.2	3.0	80
2.4	12	3.5	195

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	32	* 23	19	14	128	16	34	1.2	1.2	6.6	16	42
2	34	23	19	15	43	16	42	1.0	4.8	5.8	21	36
3	33	22	19	16	24	16	26	1.0	* 3.0	5.0	25	33
4	32	22	18	16	20	16	26	1.0	1.4	12	27	30
5	33	22	18	15	21	16	31	1.0	1.4	12	* 38	29
6	36	22	17	15	20	16	33	* 9	1.1	9.0	94	36
7	36	21	17	16	18	15	42	1.0	1.1	10	110	40
8	30	20	17	15	18	14	* 32	1.1	1.2	18	68	36
9	26	22	16	15	18	16	28	1.4	1.8	* 40	60	* 36
10	* 26	22	16	15	18	17	25	2.3	1.1	46	54	37
11	23	21	15	14	* 18	* 17	17	2.8	9	44	55	37
12	22	20	* 16	13	17	17	13	2.3	1.0	55	49	31
13	22	21	16	11	15	17	12	* 2.3	1.0	98	38	32
14	22	22	16	12	14	16	9.8	1.4	11	55	33	37
15	22	26	17	* 12	15	16	7.7	1.6	12	47	31	33
16	24	24	17	13	15	17	1.8	2.1	11	38	28	30
17	28	22	17	13	15	17	1.6	3.8	7.2	29	31	28
18	24	22	21	13	16	17	1.4	4.4	6.9	28	30	23
19	26	20	21	13	17	18	1.2	2.5	14	25	28	20
20	28	22	21	13	17	20	1.0	3.2	12	20	33	16
21	22	22	14	13	20	26	1.0	3.8	13	31	40	14
22	22	20	13	14	18	33	1.4	2.7	17	42	37	12
23	22	21	16	15	18	42	1.4	1.4	16	33	33	12
24	22	22	17	14	18	50	1.4	2.7	16	27	34	9.8
25	22	21	13	14	18	47	1.2	1.3	11	20	31	6.0
26	22	20	10	12	19	66	1.0	1.2	9.0	18	39	3.6
27	22	19	11	12	17	84	1.0	1.2	9.8	18	54	3.0
28	22	18	11	13	16	100	1.0	1.2	9.4	23	47	2.8
29	21	18	12	13	-	148	9	1.4	8.7	21	43	2.8
30	22	19	12	14	-----	98	1.2	1.9	8.0	16	40	2.8
31	22	-----	13	250	-----	110	-----	2.3	-----	14	40	-----
Total	800	639	495	663	631	1,134	447.0	59.4	213.0	866.4	1,307	710.8
Mean	25.8	21.3	16.0	21.4	22.5	36.6	14.9	1.92	7.10	27.9	42.2	23.7
Ac-ft	1,590	1,270	982	1,320	1,250	2,250	887	118	422	1,720	2,590	1,410

Calendar year 1962: Max 155 Min 1.0 Mean 27.9 Ac-ft 20,210  
Water year 1962-63: Max 250 Min 0.9 Mean 21.8 Ac-ft 15,810

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 8, 12, 22, 28, 29, Dec. 5-17, Dec. 21 to Jan. 31 (no gage-height record Jan. 1-15), Feb. 3, 4, 6-8, 12-18, 20, 22-26, 28, Mar. 2-17, 20, 21, Apr. 3, 4.

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 1963.

Gage.--Water-stage recorder. Altitude of gage is 7,900 ft (from topographic map).

Average discharge.--8 years, 62.0 cfs (44,890 acre-ft per year).

Extremes.--Maximum discharge during year, 330 cfs July 21 (gage height, 4.19 ft); maximum gage height, 4.35 ft Dec. 12 (backwater from ice); minimum discharge not determined.

1955-63: 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 or no gage-height record, which are poor. No divers'on above station.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used July 22 to Aug. 5, Sept. 15-30)

2.2	12	3.0	87
2.3	16	3.5	185
2.5	30	4.0	300
2.7	48		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	16	* 10	8.1				32	48	147	46	26	24
2	16	10	7.8				20	55	129	45	28	21
3	15	9.9	8				17	84	* 113	62	30	19
4	15	9.9	8				15	121	121	61	32	19
5	15	9.6	8				17	143	117	48	* 36	24
6	14	9.3	8				19	171	123	45	40	48
7	14	7.5	8				28	177	125	49	29	39
8	13	8	8				* 33	201	117	56	28	31
9	13	8	8				30	193	100	78	28	* 28
10	13	8.7	* 7.5				23	179	92	* 70	34	26
11	* 12	7.5	7.5		(*)	9	21	189	96	74	36	24
12	11	8.5	7.5			(*)	33	175	105	90	28	22
13	11	8.5	8				43	* 173	111	98	24	22
14	11	8.7	7.5				48	157	131	64	22	25
15	12	9.0	7.5				44	151	107	54	21	19
16	13	9.0	7.5	6	8.5		32	191	97	49	21	17
17	21	9.0	8	(*)			29	213	86	44	22	17
18	15	9.6	6.9				23	213	99	40	22	16
19	23	10	6.6				19	209	87	36	20	15
20	35	11	6			(*)	17	207	84	36	22	16
21	18	11	6			14	17	177	92	52	20	16
22	14	12	6.5			26	18	* 165	80	50	20	14
23	13	11	6.5			36	22	171	74	48	24	14
24	12	9.9	6.5			31	37	163	68	44	20	14
25	11	9	6.5			32	41	143	65	40	18	14
26	11	9.3	4.5			36	49	149	62	36	24	13
27	11	9	5.0			40	53	153	58	32	43	13
28	10	9	5.0			42	56	155	55	30	28	13
29	10	9	5.5			36	* 32	165	52	28	24	13
30	10	8.7	5.5			33	39	173	49	28	24	12
31	10	-----	6		-----	37	-----	157	-----	26	25	-----
Total	438	279.6	215.9	196	238.0	543	897	5,021	2,792	1,549	819	608
Mean	14.1	9.32	6.96	6	8.5	17.5	29.6	162	93.1	50.0	26.4	20.3
Ac-ft	869	555	428	369	472	1,080	1,760	9,960	5,540	3,070	1,620	1,210

Calendar year 1962: Max 356 Min - Mean 63.8 Ac-ft 46,170  
Water year 1962-63: Max 213 Min - Mean 37.2 Ac-ft 26,930

Peak discharge (base, 500 cfs).--No peak above base.

Note.--Stage-discharge relation affected by ice Nov. 7-9, 11-13, 22-23, 25, 27-29, Dec. 3-17, 20-24, Mar. 21-23, Apr. 3, 4, 22, 23. No gage-height record Dec. 25 to Mar. 20 (stage-discharge relation affected by ice most of period), July 22 to Aug. 5.

## GUNNISON RIVER BASIN

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 1963. 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.--53 years (1903-5, 1912-63), 271 cfs (196,200 acre-ft per year).

Extremes.--Maximum discharge recorded during year, 988 cfs July 13 (gage height, 4.80 ft), but may have been higher Jan. 31; maximum gage height, 5.04 ft Jan. 31 (ice jam); minimum daily discharge, 30 cfs Jan. 12.  
1903-5, 1912-63: Maximum daily discharge, 4,080 cfs June 13, 14, 1921; minimum daily, 12 cfs Sept. 19, 1956.

Remarks.--Records fair except those for periods of ice effect or indefinite stage-discharge relation, which are poor. 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.

Rating table, except periods of ice effect or indefinite stage-discharge relation  
(gage height, in feet, and discharge, in cubic feet per second)

3.0	28	3.8	210
3.2	45	4.0	320
3.4	80	4.3	540
3.6	135		

Discharge, in cubic feet per second, water year October 1962 to September 1963												
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*123	111	95	75	*334	68	*272	68	383	*135	120	152
2	126	108	98	75	142	62	225	64	369	132	78	138
3	117	100	*92	70	108	66	170	70	266	149	114	129
4	114	100	95	65	100	*62	166	210	245	178	142	117
5	111	100	78	65	98	60	166	250	240	174	*196	111
6	111	98	74	60	98	60	170	327	220	152	198	156
7	111	88	88	*60	95	54	198	e 380	*255	146	240	190
8	105	80	88	60	95	70	215	e 380	250	152	196	156
9	100	85	82	60	92	72	202	e 360	250	206	190	135
10	100	88	76	50	90	85	182	296	210	302	192	135
11	100	82	70	36	*90	76	149	290	186	327	198	146
12	95	78	76	30	80	68	160	296	194	327	186	*142
13	92	80	80	40	75	68	190	*308	250	468	163	132
14	90	92	76	50	75	64	206	320	302	327	138	142
15	85	114	78	55	80	82	206	260	314	260	111	135
16	92	114	80	55	80	68	*160	327	296	215	92	120
17	163	105	80	55	72	80	135	e 440	*272	182	95	111
18	149	105	82	60	80	80	108	e 480	272	152	114	105
19	163	98	88	60	78	80	92	e 460	296	138	98	90
20	225	102	82	60	80	88	80	e 440	260	126	120	80
21	186	111	68	60	95	132	72	e 400	272	149	160	78
22	160	102	66	65	92	182	72	e 380	278	220	146	72
23	149	102	58	*65	78	215	80	e 390	250	186	138	68
24	138	102	70	65	76	230	114	397	240	160	138	58
25	129	102	56	65	70	206	138	362	202	132	126	51
26	126	100	45	65	68	225	123	334	194	114	138	42
27	123	95	42	70	66	255	149	*355	178	100	215	39
28	117	85	48	70	57	284	102	348	163	95	178	38
29	*117	85	57	75	-	290	*78	348	152	90	160	36
30	114	88	70	80	-----	260	68	383	132	80	145	34
31	114	-----	75	300	-----	250	-----	390	-----	70	145	-----
Total	3,845	2,900	2,313	2,121	2,634	3,942	4,448	10,113	7,391	5,644	4,648	3,138
Mean	124	96.7	74.6	68.4	94.1	127	148	326	246	182	150	105
Ac-ft	7,630	5,750	4,590	4,210	5,220	7,820	8,820	20,060	14,660	11,190	9,220	6,220

Calendar year 1962: Max 1,120 Min 42 Mean 248 Ac-ft 179,400  
Water year 1962-63: Max 480 Min 30 Mean 146 Ac-ft 105,400

\* Discharge measurement made on this day.

e Stage-discharge relation indefinite.

Note.--Stage-discharge relation affected by ice Dec. 30 to Jan. 30. No gage-height record Jan. 13-22, Feb. 10, 12-15.

9-1495. Uncompahgre River at Delta, Colo.

Location.--Lat 38°44'20", long 108°05'10", in NE¼ sec. 23, T.15 S., R.96 W., on left bank 340 ft upstream from The Denver and Rio Grande Western Railroad Co. bridge at west edge of Delta and 1.3 miles upstream from mouth. Prior to Mar. 27, 1963, at site 300 ft downstream.

Drainage area.--1,110 sq mi, approximately.

Records available.--April 1903 to October 1931 (no winter records in most years), September 1938 to September 1963. Monthly discharge only for some periods, published in WSP 1313. Published as "near Delta" 1907-24.

Gage.--Water-stage recorder. Datum of gage is 4,932.57 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 250 ft downstream at different datum. Sept. 1, 1938, to May 5, 1941, water-stage recorder at site 630 ft downstream at datum 2.65 ft lower. May 9, 1941, to Apr. 25, 1946, chain gage at site 550 ft downstream at datum 2.65 ft lower. Apr. 26, 1946, to Feb. 17, 1960, water-stage recorder at site 450 ft downstream at datum 2.65 ft lower. Feb. 18, 1960, to Mar. 26, 1963, water-stage recorder at site 300 ft downstream at datum 2.65 ft lower.

Average discharge.--27 years (1907-8, 1920-21, 1938-63), 272 cfs (196,900 acre-ft per year).

Extremes.--Maximum discharge recorded during year, 1,190 cfs Aug. 28 (gage height, 6.08 ft), but may have been higher Feb. 1; maximum gage height, 7.30 ft Feb. 1 (backwater from ice); minimum daily discharge, 20 cfs Dec. 26. 1903-31, 1938-63: 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 good except those for periods of ice effect or no gage-height record, which are poor. 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 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	366	370	161	60	800	100	250	64	172	107	121	598
2	366	356	155	50	500	91	165	74	218	107	132	602
3	352	345	* 155	40	300	97	105	73	224	105	130	578
4	352	342	164	50	* 240	103	105	84	170	111	153	462
5	345	345	161	50	194	88	113	111	158	123	170	414
6	342	* 348	164	48	190	* 81	123	180	147	111	194	426
7	345	352	152	46	187	76	136	160	153	107	294	534
8	370	356	139	46	184	74	* 215	158	168	105	229	478
9	* 328	359	139	46	174	69	165	188	212	113	402	434
10	317	356	136	46	171	81	130	132	222	240	215	382
11	310	356	142	44	158	78	132	99	175	212	212	338
12	303	348	142	38	145	69	109	109	168	203	240	* 286
13	272	345	136	50	142	67	191	* 101	194	431	180	270
14	289	359	123	90	145	63	158	113	258	362	136	258
15	282	352	123	* 110	142	69	172	107	240	232	* 132	290
16	334	296	126	130	139	76	* 153	103	220	* 165	142	282
17	400	217	132	140	136	74	78	142	* 215	134	140	274
18	408	210	126	150	132	78	62	165	182	123	165	246
19	432	214	184	150	* 129	67	97	158	203	119	151	222
20	448	200	174	150	132	63	82	153	172	115	153	212
21	452	200	158	150	136	69	65	180	156	115	185	209
22	420	198	126	150	136	71	84	168	138	140	215	212
23	392	190	110	160	113	132	103	165	136	222	286	203
24	388	181	107	* 170	110	217	76	209	128	222	342	180
25	388	174	40	170	116	240	105	149	115	160	290	178
26	404	181	20	170	129	303	111	136	115	136	290	175
27	404	168	24	180	103	* 322	95	* 158	107	132	566	170
28	404	161	40	190	100	306	71	142	101	132	820	165
29	396	148	55	200	-	398	64	178	21	134	626	165
30	388	152	70	300	-----	318	* 55	209	103	128	538	160
31	362	-----	70	500	-----	250	-----	212	-----	117	526	-----
Total	11,359	8,179	3,754	3,874	5,283	4,190	3,570	4,380	5,131	4,963	8,375	9,403
Mean	366	273	121	125	189	135	119	141	171	160	270	313
Ac-ft	22,530	16,220	7,450	7,680	10,480	8,310	7,080	8,690	10,180	9,840	16,610	18,650

Calendar year 1962: Max 1,340 Min 20 Mean 265 Ac-ft 191,900  
 Water year 1962-63: Max 820 Min 20 Mean 199 Ac-ft 143,700

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 26 to Jan. 17. No gage-height record Jan. 18 to Feb. 4 (stage-discharge relation affected by ice during most of period), June 15, 16.

## GUNNISON RIVER BASIN

9-1520. Kannah Creek near Whitewater, Colo.

(Formerly published as Kahnah Creek near Whitewater)

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.--61.9 sq mi (revised).

Records available.--October 1917 to September 1921, September 1922 to September 1963. Monthly discharge only for some periods, published in WSP 1313. Prior to October 1962, published as Kahnah Creek near Whitewater.

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).--45 years, 39.7 cfs (28,740 acre-ft per year).

Extremes (combined flow).--Maximum discharge during year, 356 cfs May 8; minimum daily, 6.5 cfs Mar. 5.

1917-21, 1922-63: 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	1.7	180
.7	9.5		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.5	* 4.6	1.9	0.6	* 1.2	0.4	7.1	17	18	5.9	2.5	2.4
2	3.7	4.6	1.6	.6	1.4	.4	5.2	18	20	6.3	2.8	4.0
3	3.1	4.0	1.6	.6	1.4	.4	1.3	28	27	6.7	3.7	4.0
4	2.8	2.5	1.4	.6	1.4	.2	1.2	70	25	5.5	4.3	3.7
5	4.0	2.4	1.4	.6	1.4	.2	1.2	125	24	4.6	5.2	4.0
6	4.3	2.4	1.2	.6	1.2	.4	1.9	145	15	4.0	4.6	6.7
7	4.3	2.4	1.0	.6	1.0	.4	2.4	150	13	3.7	4.3	5.5
8	4.3	2.4	.8	.6	1.0	.4	2.5	* 180	10	9.1	4.9	4.6
9	4.0	2.4	.8	.6	1.0	.6	2.0	153	9.5	13	4.6	1.4
10	* 3.7	2.2	.6	.4	1.0	.6	1.9	118	* 15	14	4.9	1.4
11	8.7	2.0	* .6	.2	.8	* .4	* 1.4	94	13	15	5.2	1.0
12	9.1	2.0	.6	.2	.6	.4	1.9	64	11	15	4.0	1.0
13	9.1	2.0	.8	.4	.6	.4	3.1	50	14	13	4.3	.9
14	8.7	2.4	.6	.4	.8	.4	4.6	34	15	12	6.7	1.0
15	7.9	2.8	.6	.4	.8	.4	4.3	28	13	13	* 5.9	1.0
16	9.5	2.4	.6	.4	.8	.4	3.4	30	13	14	5.9	1.0
17	8.7	2.0	.8	.4	.8	.4	2.8	25	8.3	* 15	7.9	* .9
18	8.3	1.8	.8	* .4	.8	.4	2.5	19	6.7	15	7.5	.9
19	9.1	1.6	1.0	.4	1.0	* .5	2.2	18	5.9	13	4.9	.9
20	8.7	1.8	.8	.4	1.0	.6	1.9	19	6.7	13	4.0	.9
21	7.9	2.0	.6	.4	.8	.8	1.8	18	6.3	18	3.4	.9
22	5.9	2.0	.6	.4	.6	1.2	1.3	18	5.9	17	2.5	.9
23	5.5	2.0	.6	.4	.6	1.8	1.2	16	5.9	17	2.8	.9
24	5.2	2.0	.4	.4	.6	1.6	1.6	19	14	15	2.5	.9
25	5.2	2.0	.2	.6	* .6	1.2	2.5	19	* 16	7.5	2.4	1.0
26	5.2	2.0	.2	.6	.4	2.0	9.5	15	16	4.6	7.1	2.5
27	4.9	1.9	.4	.6	.4	3.1	21	12	7.1	4.3	7.9	2.5
28	4.9	1.8	.4	.6	.4	3.4	17	17	4.9	4.3	6.7	2.5
29	4.9	1.8	.4	.6	-	3.7	14	16	4.6	5.5	2.0	2.8
30	4.6	1.9	.4	.8	-----	4.0	16	14	4.0	9.1	2.0	1.4
31	4.6	-----	.6	1.0	-----	4.3	-----	16	-----	2.8	2.4	-----
Total	186.3	70.1	24.3	15.8	24.4	35.4	140.7	1,565	367.8	315.9	139.8	63.5
Mean	6.01	2.34	0.78	0.51	0.87	1.14	4.69	50.5	12.3	10.2	4.51	2.12
Ac-ft	270	139	48	31	48	70	279	3,100	730	627	277	126

Adjusted for diversions

Mean	13.8	10.1	8.20	8.14	8.24	8.51	12.1	59.9	20.4	19.8	14.2	9.69
Ac-ft	847	601	504	500	457	523	718	3,680	1,210	1,210	870	576

Observed

Calendar year 1962:	Max	385	Min	0.2	Mean	29.4	Ac-ft	21,330
Water year 1962-63:	Max	180	Min	0.2	Mean	8.08	Ac-ft	5,840

Adjusted

Calendar year 1962:	Mean	38.1	Ac-ft	27,610
Water year 1962-63:	Mean	16.2	Ac-ft	11,700

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 18-22, Dec. 6-10. No gage-height record Dec. 11 to Mar. 18 (stage-discharge affected by ice during most of period).

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 1963. 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, 1959, water-stage recorder, at site 11½ miles downstream at datum 72.98 ft lower.

Average discharge.--55 years (1896-99, 1901-6, 1916-63), 2,606 cfs (1,887,000 acre-ft per year).

Extremes.--Maximum discharge during year, 4,940 cfs May 9 (gage height, 5.61 ft); maximum gage height, 6.00 ft Feb. 2 (backwater from ice); minimum daily discharge, 390 cfs July 31.

1896-99, 1901-6, 1916-63: 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, 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.

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.350	*1.150	1.070	700	1.500	850	*3.110	*1.180	2.490	428	396	1.180
2	1.290	1.130	1.190	750	2.500	860	3.000	1.300	2.330	408	428	1.210
3	1.240	1.110	1.190	800	2.000	860	2.570	1.380	2.620	396	468	1.170
4	1.180	1.080	1.130	800	*1.900	870	1.970	1.640	2.570	408	540	999
5	1.150	1.070	1.070	800	1.800	840	1.650	2.320	2.290	444	830	977
6	1.110	1.060	1.050	750	1.800	800	1.510	2.990	2.170	560	1.050	1.020
7	1.080	1.030	955	750	1.800	770	1.730	3.730	1.960	550	*1.020	1.050
8	1.060	1.010	922	750	1.600	750	2.180	4.070	1.850	*484	890	988
9	1.060	988	955	700	1.400	750	2.400	*4.450	1.810	620	1.030	999
10	*988	966	966	700	1.290	750	2.110	4.730	*2.070	580	790	*977
11	911	955	*900	650	1.250	*750	1.930	4.150	1.910	770	922	1.020
12	900	933	820	600	1.170	780	1.590	3.850	1.590	820	999	860
13	880	900	800	550	1.020	780	1.650	3.470	1.390	710	1.010	710
14	840	880	820	550	955	750	2.150	3.070	1.510	1.080	800	730
15	820	1.050	850	600	977	720	2.470	2.960	1.780	977	600	850
16	911	1.380	840	650	988	750	2.530	*2.450	1.910	790	492	770
17	1.200	1.350	860	650	999	770	*1.890	2.680	1.820	570	484	740
18	1.150	1.330	900	*700	1.010	830	1.390	3.210	1.680	444	560	720
19	1.290	1.290	1.010	750	999	830	1.180	3.640	1.510	408	690	710
20	1.370	1.340	1.130	750	988	830	1.130	3.750	1.480	408	690	910
21	1.440	1.440	1.110	800	1.010	840	999	3.730	1.290	452	700	650
22	1.410	1.300	966	800	1.010	1.050	933	3.750	1.230	420	790	730
23	1.330	1.280	800	850	977	1.510	820	3.360	1.110	1.210	740	750
24	1.250	1.190	750	850	933	2.210	770	3.450	955	760	870	760
25	1.230	1.190	700	900	*922	2.460	870	3.300	*780	740	890	760
26	1.200	1.210	600	980	922	2.430	1.060	2.900	610	720	922	750
27	1.190	1.210	450	980	900	2.460	1.470	2.690	520	680	1.030	700
28	1.170	1.180	500	980	890	2.540	1.860	2.720	420	570	1.550	650
29	1.140	1.090	550	980	-	3.040	1.520	2.630	444	460	1.450	630
30	1.130	1.020	600	1.000	-----	3.560	1.140	2.660	408	428	1.350	620
31	1.120	-----	650	1.200	-----	3.150	-----	2.620	-----	390	1.150	-----
Total	35.390	34.112	27.104	24.270	35.510	41.140	51.582	94.830	46.507	19.675	26.111	25.490
Mean	1,142	1,137	874	783	1,268	1,327	1,719	3,059	1,550	602	842	850
Ac-ft	70,200	67,660	53,760	48,140	70,430	81,600	102,300	188,100	92,250	37,040	51,790	50,560

Calendar year 1962: Max 16,500 Min 450 Mean 2,950 Ac-ft 2,135,000  
 Water year 1962-63: Max 4,730 Min 390 Mean 1,262 Ac-ft 913,800

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 24 to Feb. 9.

## COLORADO RIVER MAIN STEM

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 7½ miles upstream from Colorado-Utah State line.

**Drainage area.**--17,900 sq mi, approximately.

**Records available.**--May 1951 to September 1963.

**Gage.**--Water-stage recorder. Altitude of gage is 4,370 ft (from river-profile map).

**Average discharge.**--12 years, 5,770 cfs (4,177,000 acre-ft per year).

**Extremes.**--Maximum discharge during year, 11,300 cfs May 20 (gage height, 7.11 ft); minimum daily, 1,020 cfs Aug. 1. 1951-63: Maximum discharge, 56,800 cfs June 9, 1957 (gage height, 16.40 ft); minimum daily, 960 Sept. 7, 1956.

**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, power developments, and diversions for irrigation. (Records include all return flow from irrigated areas.)

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

2.5	1,010	5.0	5,140
3.0	1,570	7.0	11,000
4.0	3,060		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3,710	4,320	3,280	2,600	4,400	2,430	5,500	2,220	7,630	1,960	* 1,020	4,240
2	3,630	4,810	3,390	2,800	5,000	2,520	5,500	2,160	6,850	1,770	1,060	3,490
3	3,570	4,450	3,450	3,000	4,600	2,560	5,210	2,130	7,270	1,700	1,240	3,430
4	* 3,910	4,390	3,500	3,200	4,000	2,540	4,390	2,190	* 7,600	1,630	1,460	3,240
5	4,070	4,220	3,390	3,200	4,000	2,510	3,530	2,740	6,970	1,720	1,780	2,800
6	3,890	* 4,200	3,350	3,200	4,000	2,480	3,240	4,160	6,640	1,830	2,280	* 2,740
7	3,850	4,160	3,370	3,200	4,000	2,360	3,300	5,740	6,140	1,880	2,880	3,260
8	3,870	3,930	3,280	3,000	4,000	2,440	3,630	7,390	5,770	1,860	3,150	3,300
9	3,890	3,830	3,370	*b 2,600	3,600	2,360	4,140	* 8,350	5,700	1,740	2,970	3,390
10	3,690	3,770	* 3,430	b 2,400	3,400	2,340	4,180	10,100	5,920	1,980	2,860	3,400
11	3,910	3,830	3,170	2,400	3,400	2,380	3,950	9,850	5,770	2,060	2,690	3,200
12	3,950	3,830	3,040	2,200	3,400	2,380	3,430	9,620	5,020	2,430	2,900	3,000
13	3,910	3,790	2,950	2,000	3,000	2,400	3,060	9,270	4,370	2,360	3,130	2,800
14	3,850	3,730	2,970	1,800	b 2,600	2,400	3,280	8,390	4,560	2,280	3,040	2,600
15	4,010	3,830	2,800	2,200	b 2,600	2,320	3,830	8,350	5,210	2,430	2,570	2,600
16	3,990	4,320	2,570	2,200	b 2,800	2,440	4,260	7,240	5,820	2,030	2,060	2,600
17	4,810	4,490	2,600	2,200	b 2,600	2,290	3,890	9,110	5,940	1,810	1,760	2,600
18	4,430	4,450	2,800	2,400	2,490	2,300	3,110	8,990	6,240	1,560	1,730	2,400
19	4,830	4,280	3,000	2,400	2,490	2,400	* 2,660	10,400	5,840	1,350	1,780	2,400
20	5,170	3,790	3,200	2,400	2,610	* 2,400	2,460	11,000	5,970	1,310	2,050	2,600
21	5,040	3,890	3,200	2,400	2,360	2,340	2,130	10,700	5,360	1,260	2,090	3,400
22	5,000	3,790	3,200	2,400	2,340	2,430	1,960	10,700	4,900	1,310	2,150	2,600
23	4,760	3,790	3,000	2,600	2,300	2,970	1,790	9,590	4,520	1,850	2,510	2,400
24	4,050	3,650	2,800	2,600	2,320	3,770	1,620	9,110	4,050	1,740	2,390	2,400
25	4,050	3,550	2,600	2,600	* 2,410	4,320	1,530	9,240	3,670	1,580	2,540	2,200
26	4,390	3,550	2,200	2,600	2,570	4,410	1,590	9,680	3,200	1,610	2,520	2,200
27	4,490	3,550	1,800	2,600	2,490	4,280	2,020	7,960	* 2,860	1,500	2,710	2,000
28	4,300	3,510	1,800	2,600	2,460	4,260	2,830	7,660	2,540	1,490	3,320	2,000
29	4,280	3,470	1,800	2,800	-	4,760	3,100	7,630	2,280	1,320	3,650	2,000
30	4,200	3,410	2,000	3,400	-----	5,800	2,640	7,690	2,170	1,190	3,470	1,900
31	4,220	-----	2,200	3,800	-----	5,800	-----	7,600	-----	1,110	4,300	-----
Total	129,720	118,580	89,460	81,800	88,230	93,380	97,760	234,950	156,780	53,650	76,050	83,190
Mean	4,185	3,953	2,886	2,639	3,151	3,012	3,259	7,579	5,226	1,731	2,453	2,773
Ac-ft	257,300	235,200	177,400	162,200	175,000	185,200	193,900	466,000	311,000	106,400	150,800	165,000

Calendar year 1962: Max 39,200 Min 1,700 Mean 8,458 Ac-ft 6,123,000  
 Water year 1962-63: Max 11,000 Min 1,020 Mean 3,571 Ac-ft 2,585,000

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 17 to Jan. 8, Jan. 11 to Feb. 13 (stage-discharge relation affected by ice part of periods), Mar. 19, 20, Sept. 10-30.

9-1650. Dolores River below Rico, Colo.

Location.--Lat 37°38'20", long 108°03'35", 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 1963.

Gage.--Water-stage recorder. Datum of gage is 8,422.23 ft above mean sea level, datum of 1929.

Average discharge.--12 years, 130 cfs (94,120 acre-ft per year).

Extremes.--Maximum discharge during year, 867 cfs May 8 (gage height, 4.58 ft); minimum daily, 11 cfs Dec. 26.

1951-63: 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)

2.0	14	3.0	136
2.2	26	3.5	250
2.4	44	4.0	490
2.7	83	4.5	790

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	34	29	20	16	18	22	146	136	238	51	26	102
2	32	28	17	17	24	20	114	167	247	47	28	77
3	30	28	16	18	28	20	98	232	232	49	42	65
4	30	28	17	18	26	20	92	330	208	52	42	62
5	45	26	17	18	28	19	83	405	* 205	47	62	99
6	40	25	* 18	17	32	17	105	495	197	45	60	132
7	34	* 18	18	18	34	* 17	138	556	171	45	* 85	121
8	* 30	18	18	17	* 36	18	157	* 646	165	52	54	93
9	30	20	17	17	34	20	147	628	157	55	47	77
10	28	20	16	* 17	30	24	134	508	142	70	45	70
11	26	18	18	16	26	22	* 144	544	130	* 64	55	* 65
12	24	17	20	14	24	20	191	562	126	79	46	58
13	24	19	22	13	22	20	247	544	132	78	39	58
14	24	25	22	14	22	20	295	490	138	56	35	72
15	24	25	22	14	24	22	290	430	130	47	33	55
16	30	23	22	14	24	22	215	556	128	43	34	51
17	47	22	22	14	22	22	175	622	114	41	45	48
18	47	21	18	14	22	22	146	616	107	39	59	46
19	53	18	19	14	24	22	125	580	103	38	50	44
20	50	33	14	14	24	24	108	538	95	36	65	44
21	42	24	13	14	24	28	98	490	90	39	65	53
22	42	20	16	16	24	36	100	470	86	46	68	44
23	41	20	19	16	24	50	119	435	80	53	93	40
24	40	22	22	16	24	60	173	415	74	54	82	38
25	39	21	15	15	24	80	* 191	345	70	40	67	36
26	37	19	11	15	24	90	199	305	64	38	79	34
27	34	18	12	15	22	110	165	295	60	34	175	32
28	33	18	13	16	20	120	134	266	59	32	115	30
29	31	18	14	17	-	139	119	278	55	30	86	30
30	32	20	15	18	-----	126	128	286	52	28	76	29
31	31	-----	15	18	-----	132	-----	254	-----	26	95	-----
Total	1,094	661	538	490	710	1,383	4,546	13,404	3,845	1,452	1,952	1,794
Mean	35.0	22.0	17.4	15.8	25.4	44.6	152	432	128	46.8	63.0	59.8
Ac-ft	2,150	1,310	1,070	972	1,410	2,740	9,020	26,590	7,630	2,880	3,870	3,560

Calendar year 1962: Max 1,020 Min 11 Mean 140 Ac-ft 101,700

Water year 1962-63: Max 646 Min 11 Mean 87.3 Ac-ft 63,200

Peak discharge (base, 800 cfs).--May 8 (2000) 867 cfs (4.58 ft); May 16 (2030) 811 cfs (4.49 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 7-13, 19, 22, 23, 26-29, Dec. 2-17, 20-31. No gage-height record Jan. 1 to Mar. 28 (stage discharge relation affected by ice during most of period).



## DOLORES RIVER BASIN

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 1963. 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.**--52 years, 436 cfs (315,700 acre-ft per year).

**Extremes.**--Maximum discharge during year, 1,980 cfs May 9 (gage height, 7.27 ft); minimum daily, 28 cfs Dec. 26. 1895-1903, 1910-12, 1921-63: 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 periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 2,000 acres above station. Flow partly regulated by Ground Hog Reservoir (capacity, 21,710 acre-ft).

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

3.1	37	4.5	310
3.2	45	5.0	550
3.6	90	6.0	1,150
4.0	160	7.0	1,850

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	108	73	80	38	42	55	926	465	595	170	131	258
2	87	68	75	40	60	50	682	485	575	193	142	198
3	* 84	67	70	42	70	50	480	633	570	198	168	158
4	90	63	65	44	60	48	* 455	896	515	204	126	138
5	96	62	55	42	70	46	425	1,020	490	204	138	156
6	104	59	55	40	75	40	500	1,170	* 460	189	160	219
7	92	* 55	55	42	80	* 40	660	1,260	390	189	198	286
8	* 84	44	55	40	* 80	44	722	1,490	370	* 228	176	210
9	78	47	50	40	85	50	666	* 1,670	350	254	150	168
10	75	51	45	* 40	75	55	611	1,360	310	247	146	148
11	72	53	45	36	60	55	555	1,370	272	264	150	* 148
12	69	47	50	34	55	50	677	1,350	254	234	144	129
13	69	46	* 50	30	50	50	818	1,210	261	282	124	117
14	66	68	50	32	55	55	938	1,190	272	160	115	127
15	65	80	50	34	60	55	1,020	926	272	124	120	126
16	74	75	50	34	60	50	830	1,100	258	136	120	107
17	120	70	50	34	55	50	688	1,290	244	138	137	100
18	135	70	60	34	55	50	575	1,300	213	133	168	93
19	160	49	65	34	60	50	495	1,250	222	144	127	85
20	150	54	50	34	55	55	435	* 1,180	204	138	127	81
21	126	77	32	34	55	70	390	1,090	198	144	168	93
22	110	63	36	36	55	107	350	1,040	180	164	136	92
23	104	63	46	38	55	164	360	992	164	172	160	81
24	98	65	50	38	55	237	490	990	156	201	178	75
25	96	70	36	38	55	275	585	866	142	162	156	68
26	90	70	28	38	55	360	585	746	138	142	178	66
27	84	70	30	36	50	505	606	758	150	133	440	63
28	80	65	30	36	55	585	490	698	150	126	326	60
29	78	65	32	38	-	710	* 425	688	148	119	216	56
30	75	70	34	38	-----	782	450	677	158	114	174	54
31	74	-----	36	40	-----	232	-----	650	-----	* 117	189	-----
Total	2,872	1,879	1,515	1,154	1,697	5,725	17,889	31,770	8,681	5,413	5,188	3,760
Mean	92.6	62.6	48.9	37.2	60.6	185	596	1,025	289	175	167	125
Ac-ft	5,700	3,730	3,000	2,290	3,370	11,360	35,480	63,010	17,220	10,740	10,290	7,460

Calendar year 1962: Max 2,930 Min 28 Mean 419 Ac-ft 303,000  
 Water year 1962-63: Max 1,670 Min 28 Mean 240 Ac-ft 173,600

Peak discharge (base, 1,800 cfs)--May 9 (0330) 1,980 cfs (7.27 ft).

\* Discharge measurement made on this day.

Note.--No gage-height record Nov. 24 to Dec. 13 (stage-discharge relation affected by ice part of period). Stage-discharge relation affected by ice Dec. 14 to Mar. 21.

## 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.

Records available.--August 1957 to September 1963.

Gage.--Water-stage recorder.

Average discharge.--6 years, 15.0 cfs (10,860 acre-ft per year).

Extremes.--Maximum discharge during year, 1,060 cfs Aug. 5 (gage height, 8.44 ft), from rating curve extended above 250 cfs as explained below; no flow for many days.

1957-63: 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 1959-63.

Remarks.--Records fair 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 tables, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 1-16, Mar. 7-12)

Oct. 1 to Jan. 31

Feb. 1 to Sept. 30

1.1	0.1	2.2	27	0.9	0	2.0	21
1.2	.5	2.7	62	1.1	1.0	2.5	50
1.4	2.0	3.2	111	1.3	2.8	3.0	89
1.5	3.2	3.4	140	1.4	4.0	3.7	185
1.8	10			1.7	10		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.2	1.2	1.1			b 1.4	51	15	5.0	0.2	0	0
2	.4	1.2	1.1			b 1.2	31	17	4.6	.2	61	0
3	.4	*1.2	1.0		1	b 1.2	18	22	4.2	.6	65	0
4	.3	1.1	.8			b 1.0	25	29	3.8	.9	37	17
5	.2	1.1	.6			b 1.2	20	38	* 3.6	.8	176	2.0
6	.2	1.1	.6			b 1.0	21	44	3.6	.7	20	* 1.0
7	.3	.8	.7			b 1.2	28	49	3.4	.6	* 4.4	1.0
8	.2	.6	.6			1.6	28	49	3.4	1.0	27	1.0
9	*.2	.7	.8			3.2	25	50	3.5	29	7.0	1.0
10	.1	.8	.7			8.4	22	43	2.8	15	20	1.0
11	.1	.6	*.6			3.9	19	36	2.6	* 20	11	1.0
12	.1	.6	.4		(*)2.2	* 1.6	24	35	2.1	120	3.5	.8
13	.1	.8	.4			2.2	33	30	1.9	6.8	* 1.9	.8
14	.1	.9	.5			2.7	44	26	1.9	2.0	1.5	.7
15	.1	1.9	.6			2.7	53	22	1.8	1.0	1.2	.6
16	127	1.5	.6		0.3	2.3	42	19	1.6	.6	1.1	.5
17	6	1.5	b.6			2.2	30	19	1.5	0	11	.4
18	4.0	1.2	b.5			2.2	24	18	1.5	0	22	.4
19	2.0	1.1	b.4		b 2.0	2.4	20	17	1.4	0	4.0	.4
20	1.2	1.2	b.4		2.5	5.8	18	15	1.1	0	2.0	.2
21	1.6	1.1	b.4		6.2	34	12	13	1.0	0	1.0	.2
22	1.4	1.4			2.9	70	13	12	.9	18	0	.2
23	1.2	1.1			b 2.2	84	8.4	9.8	.8	9.0	0	.1
24	1.6	1.1			b 2.4	63	11	13	.8	1.0	0	0
25	2.0	1.1			b 2.2	42	21	10	.7	0	0	0
26	1.8	1.1			b 2.0	41	22	8.6	.6	0	13	0
27	1.5	1.0			b 2.0	45	26	7.8	.4	0	35	0
28	1.4	.8			b 1.6	51	22	7.6	.3	0	0	0
29	1.4	1.0			-	71	17	6.0	.2	0	0	0
30	1.4	1.1			-----	51	15	5.8	.2	0	0	0
31	1.3	-----			-----	50	-----	5.4	-----	0	0	-----
Total	159.8	31.9	16.4	9.3	59.6	651.4	743.4	692.0	61.2	227.4	525.6	30.3
Mean	5.15	1.06	0.53	0.3	2.13	21.0	24.8	22.3	2.04	7.34	17.0	1.01
Ac-ft	317	63	33	18	118	1,290	1,470	1,370	121	451	1,040	60

Calendar year 1962: Max 142 Min 0 Mean 14.4 Ac-ft 10,400  
Water year 1962-63: Max 176 Min 0 Mean 8.79 Ac-ft 6,350

Peak discharge (base, 400 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
10-16	1930	5.70	485	8-2	2000	6.21	562
7-12	1300	8.15	975	8-5	1930	8.44	1,060

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Oct. 1-8, Oct. 17 to Nov. 2, Dec. 11-16, Dec. 22 to Feb. 18 (stage-discharge relation affected by ice during parts of periods), May 30 to June 4, July 14-21, July 24 to Aug. 1, Aug. 6, 19-25, Aug. 28 to Sept. 3, Sept. 5-10.

## DOLORES RIVER BASIN

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 1963.

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, 272 cfs May 17 (gage height, 3.84 ft); minimum not determined.

1959-63: Maximum discharge, 605 cfs June 17, 1960 (gage height, 5.01 ft); minimum daily determined, 12 cfs Mar. 8, 1961.

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

2.1	20	3.0	110
2.2	25	3.5	190
2.5	48	4.0	310

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	35	26	20			17	38	36	158	73	29	57
2	33	*25	20			17	30	37	148	72	31	50
3	31	25	20			16	26	44	112	70	43	44
4	30	24	19			17	28	61	* 109	69	41	41
5	31	24	18			17	30	78	119	61	44	40
6	30	24	18			16	31	107	122	57	* 56	44
7	29	22	18		18	16	34	131	137	55	78	52
8	28	22	17			16	35	152	148	55	63	50
9	27	22	17			17	33	150	125	70	70	45
10	* 27	22	17			16	31	128	92	* 88	79	* 42
11	26	22	16			16	* 30	128	81	95	93	40
12	25	22	* 17			* 16	34	130	114	82	67	37
13	25	22	17		(*)	17	42	140	150	92	56	37
14	25	22	17		16	17	48	* 142	174	73	48	37
15	25	23	18	* 13	16	17	48	126	161	64	44	36
16	26	22	18		16	17	43	150	122	56	41	34
17	28	22	18		16	17	39	204	99	48	42	33
18	26	22	18		17	17	37	228	107	45	39	32
19	30	19	18		17	16	33	225	110	42	39	30
20	33	21	18		16	17	32	215	122	41	57	30
21	30	21			17	18	32	* 182	130	45	70	30
22	29	19			16	20	33	166	126	48	61	29
23	28	20			16	26	33	164	119	46	59	28
24	28	20			16	31	37	142	110	43	58	27
25	27	20	13		16	35	39	131	100	40	54	26
26	27	20			16	45	42	120	97	37	59	26
27	26	18			17	50	43	136	92	37	102	25
28	26	18			16	54	38	148	86	36	87	24
29	26	19			-	50	36	170	79	33	68	25
30	26	20			-----	40	35	180	77	31	58	24
31	26	-----			-----	40	-----	166	-----	30	57	-----
Total	869	648	502	403	478	741	1,070	4,317	3,526	1,734	1,784	1,075
Mean	28.0	21.6	16.2	13	17.1	23.9	35.7	139	118	55.9	57.5	35.8
Ac-ft	1,720	1,290	996	799	948	1,470	2,120	8,560	6,990	3,440	3,540	2,130

Calendar year 1962: Max 330 Min - Mean 62.3 Ac-ft 45,090  
Water year 1962-63: Max 228 Min - Mean 47.0 Ac-ft 34,000

Peak discharge (base, 500 cfs).--No peak above base.

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 19, 22, 27-29, Dec. 5-12, Feb. 14-17, 20, 22-26, 28, Mar. 2-16, 19-22, 25, 30-31, Apr. 3. No gage-height record Dec. 13, 14, Dec. 21 to Feb. 13 (stage-discharge relation affected by ice during most of period).

## DOLORES RIVER BASIN

267

9-1721. Leopard Creek at Noel, Colo.

Location.--Lat 38°06'10", long 107°55'10", in SE 1/4 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 1963 (discontinued).

Gage.--Water-stage recorder and concrete control since Sept. 24, 1962. Altitude of gage is 8,700 ft (from topographic map).

Average discharge.--8 years, 2.74 cfs (1,980 acre-ft per year).

Extremes.--Maximum discharge during year, 37 cfs Mar. 31 (gage height, 3.23 ft); maximum gage height, 3.55 ft Mar. 23 (ice jam); minimum daily discharge, 0.2 cfs for several days in July, August, and September.  
1955-63: 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 good 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)

2.2	0.1	2.5	3.0
2.3	.4	2.8	12
2.4	1.4	3.0	22

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.4	0.9	1.0	1.1	1.2	0.7	1.3	2.5	1.4	0.3	0.2	1.2
2	.4	*.9	1.0	1.1	1.6	.7	8.1	2.5	1.7	.3	.2	.9
3	.4	.9	.7	1.3	1.7	.7	6.5	2.5	1.9	.3	.3	.8
4	.5	.9	.6	1.2	1.7	.7	5.7	2.5	* 1.7	.3	.3	.8
5	.6	.9	.8	1.1	1.6	.7	6.6	2.4	1.9	.4	2.5	.8
6	.9	.9	.8	1.0	1.4	.7	9.4	2.7	1.7	.4	* 1.4	1.2
7	.7	.8	.9	1.0	1.3	.7	11	* 2.5	1.6	.6	1.1	1.1
8	.7	.7	1.0	1.1	1.2	.7	* 9.7	2.7	1.2	.7	.8	.8
9	.6	.9	1.0	.9	1.0	.7	7.8	1.9	1.0	.7	1.1	.7
10	*.8	1.0	1.0	1.1	.9	.7	* 6.6	2.2	.9	*.5	.9	*.7
11	.7	1.0	*.8	1.2	.8	.7	5.7	2.0	.7	.4	.8	.6
12	.8	1.0	1.0	1.1	.8	.7	6.0	2.5	.7	.6	*.6	.5
13	.8	1.0	1.2	1.1	*.7	*.7	6.0	2.8	.6	.7	.6	.6
14	.8	1.1	1.4	* 1.0	.6	.7	6.0	3.5	.6	.4	.5	.6
15	.8	1.2	1.6	1.1	.6	.7	5.4	3.8	.6	.3	.5	.6
16	1.1	1.2	1.6	1.2	.6	.6	4.6	3.3	.7	.3	.4	.5
17	1.3	1.0	1.4	1.2	.6	.6	4.1	2.7	.8	.3	1.0	.5
18	1.0	1.2	1.2	1.3	.6	.6	3.8	3.0	.9	.3	1.3	*.5
19	1.3	1.3	1.2	1.3	.6	.6	3.5	1.6	1.0	.3	1.1	.5
20	1.3	1.1	1.2	1.2	.6	.9	3.3	1.2	.9	.3	1.4	.4
21	1.0	1.0	1.2	1.1	.5	3.0	3.0	* 1.2	.8	.3	1.3	.4
22	.9	1.0	1.2	1.1	.5	8.0	3.0	1.2	.6	.6	1.2	.3
23	.8	1.0	1.2	1.1	.5	11	3.0	1.4	.6	.4	1.3	.3
24	.8	1.0	1.2	1.1	.5	13	* 3.0	2.0	.5	.6	1.1	.3
25	.8	.8	1.2	1.1	.5	16	2.8	1.4	.5	.4	1.1	2
26	.9	.6	1.1	1.0	.5	16	3.0	1.7	.5	.3	1.3	.2
27	.9	.8	1.1	.9	.5	16	3.3	1.9	.4	.3	2.0	.2
28	1.0	.9	1.1	.8	.5	18	3.0	2.0	.4	.3	1.2	.2
29	.9	.9	1.1	.8	-	17	2.7	2.2	.3	.2	.9	.2
30	.9	.8	1.2	.7	-----	15	2.7	1.9	.3	.2	.9	.2
31	.9	-----	1.1	.6	-----	18	-----	1.4	-----	.2	1.2	-----
Total	25.7	28.7	34.1	32.9	24.1	164.8	162.3	69.1	27.4	12.2	30.5	16.8
Mean	0.83	0.96	1.10	1.06	0.86	5.32	5.41	2.23	0.91	0.39	0.98	0.56
Ac-ft	51	57	68	65	48	327	322	137	54	24	60	33

Calendar year 1962: Max 30 Min 0.2 Mean 2.31 Ac-ft 1,670

Water year 1962-63: Max 18 Min 0.2 Mean 1.73 Ac-ft 1,250

Peak discharge (base, 15 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
3-31	1600	3.23	37	8-5	1600	3.20	35
4-7	1700	2.90	17				

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 8-13, 17, 21-23, 25-30, Dec. 3-25, Feb. 1, 2, Mar. 21-24, Apr. 3. No gage-height record Sept. 19-30.

## DOLORES RIVER BASIN

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 1963. 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.--27 years (1910-12, 1930-34, 1942-63), 229 cfs (165,800 acre-ft per year).

Extremes.--Maximum discharge during year, 916 cfs Mar. 28 (gage height, 4.77 ft); minimum not determined.

1909-12, 1930-34, 1942-63: 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 Saltao 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)

2.4	49	3.7	295
2.8	95	4.0	415
3.3	190	4.5	720

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	108	104	85			55	286	176	435	198	90	208
2	108	* 102	83			53	218	181	435	185	85	188
3	101	101	80			58	159	198	358	183	108	172
4	96	101	80			58	159	242	* 346	174	104	163
5	106	101	80			55	167	265	374	159	125	163
6	102	96	80			50	185	334	354	154	* 156	* 188
7	100	92	75			52	210	392	366	150	240	192
8	95	92	75			50	218	* 445	388	159	185	176
9	110	78	70			58	* 208	470	350	185	169	161
10	* 102	81	70			50	190	397	271	* 240	188	152
11	100	82	65			57	176	392	262	258	212	154
12	102	81	* 60		(*)	* 58	192	384	292	220	190	144
13	95	82	60		44	57	238	402	374	240	156	142
14	95	87	65	(*)	46	57	262	410	435	190	138	161
15	95	92	65		48	55	268	370	410	163	127	140
16	102	90	70	65	50	53	212	440	346	146	117	138
17	131	88	70		50	52	176	550	271	133	122	127
18	115	87	75		55	57	156	608	289	127	135	118
19	133	75	72		57	53	146	608	302	140	133	112
20	138	86	70		55	61	140	594	316	118	192	113
21	127	83			58	78	131	* 544	326	131	215	108
22	124	81			55	140	125	509	326	208	183	101
23	144	78			56	192	125	504	323	208	188	98
24	142	80			50	208	136	460	302	172	192	104
25	125	81			55	215	163	406	271	125	181	101
26	117	81	60		54	252	169	379	258	107	178	102
27	110	81			57	298	176	415	250	100	271	100
28	107	81			53	370	163	415	235	98	248	92
29	107	85			—	460	154	465	210	106	210	90
30	102	83			—	309	167	476	205	108	192	100
31	108	-----			-----	323	-----	465	-----	107	192	-----
Total	3,447	2,612	2,110	2,015	1,693	3,954	5,475	12,896	9,680	4,992	5,222	4,108
Mean	111	87.1	68.1	65	60.1	128	182	416	323	161	168	137
Ac-ft	6,840	5,180	4,190	4,000	3,340	7,840	10,860	25,580	19,200	9,900	10,360	8,150

Calendar year 1962: Max 898 Min - Mean 233 Ac-ft 168,500

Water year 1962-63: Max 608 Min - Mean 159 Ac-ft 115,400

Peak discharge (base, 900 cfs).--Mar. 28 (2245) 916 cfs (4.77 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 3-18, Feb. 13-18, 24 Mar. 6, 8. No gage-height record Dec. 21 to Feb. 12 (stage-discharge relation affected by ice during most of period).

9-1730. Beaver Creek near Norwood, Colo.

Location.--Lat 37°58'10", long 108°11'40", in sec.28, T.43 N., R.12 W., on left bank 20 ft downstream from county highway bridge, 805 ft upstream from Goat Creek and 13 miles southeast of Norwood.

Drainage area.--35.2 sq mi.

Records available.--October 1941 to September 1961, October 1962 to September 1963. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 8,016.81 ft above mean sea level (Bureau of Reclamation bench mark). Prior to Oct. 1, 1948, at site 335 ft downstream at datum 6.00 ft lower. Oct. 1, 1948, to July 16, 1952, at site 335 ft downstream at datum 8.00 ft lower. July 17, 1952, to Sept. 30, 1961, at site 285 ft downstream at datum 8.00 ft lower.

Average discharge.--21 years, 17.6 cfs (12,740 acre-ft per year).

Extremes.--Maximum discharge during year, 108 cfs May 4 (gage height, 2.97 ft), from rating curve extended above 30 cfs; no flow Aug. 1, 2.

1941-61, 1962-63: Maximum discharge, 750 cfs June 9 or 10, 1952 (gage height, 5.67 ft, from floodmarks, site and datum then in use), from rating curve extended above 370 cfs; no flow at times in 1946, 1950-51, 1954, 1956, 1959, 1963.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Gurley ditch diverts water above station to Gurley Reservoir (capacity, 8,800 acre-ft, 3,200 acre-ft prior to September 1948) for irrigation of about 12,000 acres in Naturita Creek drainage.

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

1.3	0	1.9	5.7
1.4	.1	2.1	13
1.6	.4	2.3	25
1.7	1.3	2.6	57
1.8	3.0		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.7	0.8					28	10	4.6	0.3	0	0.8
2	3.5	.8					26	10	3.8	.3	0	.7
3	2.2	*.8					19	11	3.5	.3	.1	.7
4	1.6	.8					19	24	2.7	.3	.3	.4
5	1.6	.8					20	51	*2.5	.6	1.6	.4
6	1.6	.8				1.6	22	21	2.3	.5	* 2.0	1.0
7	1.3	.5					26	* 18	2.3	.4	5.2	1.3
8	1.2	.4					29	16	2.0	.5	2.3	.9
9	* 1.1	.7					* 27	16	2.2	.8	1.8	.8
10	1.0	.7					* 21	14	2.2	2.0	2.8	*.7
11	.9	.7	(*)			5.0	18	12	2.0	* 2.0	2.5	.6
12	.9	.7				5.0	18	11	1.8	1.8	* 1.3	.5
13	.8	.8				* 5.3	20	10	1.8	1.6	.9	.4
14	.8	.8				5.3	22	10	2.0	.9	.7	.5
15	.8	.8				5.3	21	8.9	1.5	.6	.5	3.8
16	1.5	.7	1.0	0.6	1.0	3.3	16	8.6	1.5	.4	.4	4.9
17	4.1	.7				5.0	14	8.6	2.2	.4	.4	4.9
18	2.3	.6				5.0	13	8.6	1.6	.3	.7	4.4
19	3.3	.6				3.3	12	8.6	1.6	.3	1.3	4.4
20	4.1					4.1	12	8.2	1.2	.2	1.8	4.4
21	2.3					6	12	*7.9	1.1	.2	1.8	4.6
22	1.6					10	10	7.9	.9	.3	1.3	4.6
23	1.3					18	10	7.9	.8	.3	1.2	4.4
24	1.2					20	*11	9.7	.8	.3	1.1	4.1
25	1.1					22	12	7.5	.7	.3	.8	3.8
26	1.1	1.0				26	12	6.8	.7	.3	1.0	3.8
27	1.1					30	13	6.1	.6	.2	1.3	3.5
28	1.0					36	12	5.7	.5	.1	1.1	3.5
29	.9					50	11	5.7	.4	.1	.8	3.5
30	.8					32	10	5.2	.4	.1	.7	3.5
31	.8					32		4.9		.1	.7	
Total	53.5	24.5	31.0	18.6	28.0	330.6	516	360.8	52.2	16.8	38.4	75.8
Mean	1.73	0.82	1.0	0.6	1.0	10.7	17.2	11.6	1.74	0.54	1.24	2.53
Ac-ft	106	49	61	37	56	656	1,020	716	104	33	76	150

Calendar year 1962: Max - Min - Mean - Ac-ft -  
 Water year 1962-63: Max 51 Min 0 Mean 4.24 Ac-ft 3,060

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 7-19, Apr. 11-14, 19. No gage-height record Nov. 20 to Mar. 12, Mar. 21 to Apr. 9 (stage-discharge relation affected by ice during most of periods).

## DOLORES RIVER BASIN

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 1963. 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.--35 years, 354 cfs (256,300 acre-ft per year).

Extremes.--Maximum discharge during year, 2,000 cfs Mar. 29 (gage height, 5.05 ft); minimum daily, 23 cfs Feb. 14. 1917-29, 1940-63: 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 periods 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 table (gage height, in feet, and discharge, in cubic feet per second)

0.7	17	2.5	345
1.0	45	3.0	535
1.5	107	4.0	1,100
2.0	205	4.5	1,480

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	99	125	104	85	646	75	860	157	369	94	34	173
2	118	123	103	95	542	68	535	161	366	92	34	153
3	118	* 118	100	100	198	80	294	167	321	93	40	134
4	112	117	107	95	132	76	324	207	276	83	81	118
5	104	118	110	90	128	70	345	285	* 318	73	89	121
6	110	115	101	90	123	73	345	318	282	58	106	132
7	110	110	103	90	110	74	400	375	270	52	* 194	147
8	103	107	100	90	100	73	382	* 418	294	56	159	139
9	* 107	103	92	90	90	76	345	486	279	78	149	123
10	118	93	88	90	80	94	* 291	434	229	175	143	* 112
11	107	96	* 84	70	75	90	232	400	175	* 198	177	110
12	104	94	79	55	* 50	* 84	229	386	183	222	151	99
13	104	97	75	46	29	78	282	375	255	250	109	86
14	100	101	83	55	23	75	327	389	303	205	84	104
15	101	121	79	* 60	33	80	345	336	333	165	67	109
16	112	118	83	65	78	78	279	351	279	120	60	97
17	143	112	86	70	76	78	224	450	210	58	52	99
18	149	115	88	70	73	81	183	522	193	42	61	89
19	147	109	104	65	88	76	167	530	222	43	67	76
20	195	97	93	65	79	76	167	535	219	43	84	70
21	171	107	84	70	86	143	143	* 499	222	31	156	72
22	149	103	78	75	90	327	127	438	227	71	118	67
23	159	100	76	80	74	490	120	458	222	169	110	57
24	169	83	83	85	78	558	123	434	205	150	119	53
25	157	60	70	85	79	478	141	378	186	85	113	55
26	143	41	50	85	76	605	147	339	165	54	141	52
27	137	39	55	80	84	806	169	357	149	44	252	52
28	130	43	60	85	75	878	163	354	132	40	219	46
29	128	61	70	85	-	1,300	145	392	117	38	175	39
30	127	103	75	90	-----	950	149	396	101	36	149	27
31	127	-----	80	240	-----	920	-----	414	-----	34	149	-----
Total	3,958	2,929	2,643	2,596	3,385	9,010	7,983	11,741	7,102	2,952	3,641	2,811
Mean	128	97.6	85.3	83.7	121	291	266	379	237	95.2	117	93.7
Ac-ft	7,850	5,810	5,240	5,150	6,710	17,870	15,830	23,290	14,090	5,860	7,220	5,580

Calendar year 1962: Max 1,920 Min 15 Mean 293 Ac-ft 212,300  
 Water year 1962-63: Max 1,300 Min 23 Mean 166 Ac-ft 120,500

Peak discharge (base, 1,800 cfs).--Feb. 1 (2300) 1,980 cfs (5.03 ft); Mar. 29 (0500) 2,000 cfs (5.05 ft).

\* Discharge measurement made on this day.

Note.--No gage-height record Dec. 25 to Jan. 29 (stage-discharge relation affected by ice during part of period), Feb. 7-12, July 28 to Aug. 3.

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 1963.

**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.**--19 years, 3.43 cfs (2,480 acre-ft per year), unadjusted.

**Extremes.**--Maximum discharge during year, 349 cfs Aug. 10 (gage height, 4.83 ft), from rating curve extended above 180 cfs on basis of slope-area measurement of peak flow; minimum daily, 0.1 cfs for many days.

1944-63: 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 or indefinite stage-discharge relation, 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 1962 to September 1963

Month	Diversion	Month	Diversion
October.....	0	April.....	167
November.....	0	May.....	94
December.....	0	June.....	0
		July.....	0
Calendar year 1962.....	1,080	August.....	0
		September.....	0
January.....	0		
February.....	0	Water year 1962-63.....	348
March.....	87		

Rating table, except periods of ice effect or indefinite stage-discharge relation (gage height, in feet, and discharge, in cubic feet per second)

1.9	0.10	2.6	10
2.0	.70	2.8	19
2.2	2.5	3.0	33
2.4	5.2		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.2	0.2	0.3	0.3	2.2	0.5	* 5.6	2.1	2.1	0.1	0.1	0.4
2	.2	.2	.3	.3	7.4	.5	2.5	1.9	2.1	.1	.2	.4
3	.2	*.2	.2	.3	3.2	.6	2.3	1.7	3.1	.1	1.2	.4
4	.2	.2	.3	.3	1.9	.7	2.3	1.5	2.4	.1	1.2	.4
5	.3	.2	.2	.3	1.5	.7	2.1	1.5	2.1	.1	1.0	.4
6	.2	.2	.2	.3	1.4	.6	2.5	* 4.8	1.9	.1	.5	.4
7	.2	.2	.2	.2	1.6	.6	2.9	5.2	1.7	.1	*.3	.3
8	.2	.2	.2	.2	1.8	.6	2.6	5.0	1.6	.1	5.0	.3
9	.2	.2	.2	.2	1.7	.6	2.3	5.4	1.5	.5	.5	.2
10	.2	.2	.2	.2	1.0	.6	2.1	5.4	1.2	.5	* .23	*.2
11	*.2	.2	*.2	.2	.9	.6	1.8	5.2	* 1.0	.4	3.1	.2
12	.2	.2	.2	.2	.7	.7	1.9	5.4	.7	.5	1.6	.2
13	.2	.2	.2	.2	.7	.9	1.9	4.8	.6	.1	1.4	.2
14	.2	.2	.2	.2	.7	.9	2.0	4.6	.5	.1	1.2	.1
15	.2	.3	.3	.2	.6	.8	1.8	4.6	.5	.1	1.0	.1
16	.5	.3	.3	.2	.5	.5	1.6	3.0	.4	.1	1.0	.1
17	.5	.3	.2	.2	.5	.6	1.6	3.5	.2	*.1	.9	*.1
18	.5	.2	.2	.2	.5	.7	1.5	3.8	.2	.1	.8	.1
19	.5	.1	.3	.2	.5	.8	1.5	3.8	.1	.1	.7	.1
20	.4	.1	.3	.2	.5	1.1	1.6	3.0	.1	.1	.6	.1
21	.3	.2	.3	.2	.5	2.1	1.5	4.0	.1	.1	.5	.1
22	.2	.2	.3	.2	.5	3.3	1.7	3.6	.1	.3	.5	.1
23	.3	.2	.3	.2	.6	9.2	1.2	3.7	.1	.5	.5	.1
24	.3	.3	.2	.2	.5	21	1.4	4.2	.1	.3	.5	.1
25	.3	.3	.2	.2	.5	21	1.3	3.5	.1	.2	.5	.1
26	.3	.3	.2	.2	.6	27	1.8	3.7	.1	.1	.5	.1
27	.2	.3	.2	.4	.6	25	2.3	2.5	.1	.1	.4	.1
28	.2	.3	.2	.5	.6	27	2.3	2.5	.1	.1	.4	.1
29	.2	.3	.3	.3	-	18	2.3	2.5	.1	.1	.4	.1
30	.2	.3	.3	.3	-----	12	2.0	2.0	.1	.1	.4	.1
31	.2	-----	.3	.5	-----	8.4	-----	1.9	-----	.1	.4	-----
Total	8.0	6.8	7.5	7.8	34.2	187.6	62.2	110.3	25.0	5.5	50.3	5.7
Mean	0.26	0.23	0.24	0.25	1.22	6.05	2.07	3.56	0.83	0.18	1.62	0.19
Ac-ft	16	13	15	15	68	372	123	219	50	11	100	11

Calendar year 1962: Max 134 Min 0.1 Mean 5.28 Ac-ft 3,830  
 Water year 1962-63: Max 27 Min 0.1 Mean 1.40 Ac-ft 1,010

Peak discharge (base, 40 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
3-27	1630	3.59	120	8- 8	1200	3.45	91
8- 3	1300	3.27	66	8-10	1830	4.83	349

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 18-26, Dec. 2, 3, Dec. 24 to Jan. 26. Stage-discharge relation indefinite Aug. 15 to Sept. 30.



## 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 1963.

Gage.--Water-stage recorder. Altitude of gage is 9,710 ft (from river-profile map).

Average discharge.--11 years, 40.1 cfs (29,030 acre-ft per year).

Extremes.--Maximum discharge during year, 123 cfs May 25 (gage height, 4.17 ft); minimum not determined.

1952-63: Maximum discharge, 436 cfs July 2, 1957 (gage height, 6.39 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 Stillwater Reservoir (capacity, 6,200 acre-ft). 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 July 29 to Sept. 27)

2.9	15
3.2	26
3.5	45
4.0	99
4.2	126

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	46						16	23	90	91	26	20
2	* 41						15	* 24	94	96	26	18
3	43						15	30	92	90	28	18
4	42						14	33	89	88	26	18
5	42						15	35	88	84	26	18
6	41						17	38	80	88	* 28	19
7	35						18	39	66	77	28	23
8	33						18	46	76	74	26	20
9	33						19	60	79	* 68	25	* 20
10	33						19	64	78	57	25	19
11	33						19	65	74	52	25	19
12	33						21	59	73	58	25	18
13	29						23	* 54	73	47	28	18
14	22						24	55	73	46	28	20
15	22						23	81	72	56	28	19
16	23	20	18	16	16	14	24	89	85	59	29	18
17	23						21	90	* 81	57	30	19
18	23						20	98	91	52	29	18
19	24						20	98	85	52	25	18
20	23						20	96	87	50	25	19
21	23						20	79	74	46	25	21
22	22						19	76	74	46	24	20
23	22						19	81	85	45	22	19
24	22						20	78	90	40	20	19
25	22						22	86	66	39	19	19
26	22						25	114	69	37	19	19
27	22						25	* 105	72	32	20	19
28	21	(*)					22	99	88	32	19	19
29	21						21	96	88	30	18	20
30	21						22	96	107	28	19	21
31	* 21							94		27	20	
Total	883	600	558	496	449	434	596	2,181	2,429	1,744	761	575
Mean	28.5	20	18	16	16	14	19.9	70.4	81.0	56.3	24.5	19.2
Ac-ft	1,750	1,190	1,110	984	889	861	1,180	4,330	4,820	3,460	1,510	1,140

Calendar year 1962: Max 223 Min - Mean 47.5 Ac-ft 34,360  
 Water year 1962-63: Max 114 Min - Mean 32.1 Ac-ft 23,220

\* Discharge measurement made on this day.

Note.--No gage-height record Nov. 1 to Mar. 27 (stage-discharge relation affected by ice during most of period). Stage-discharge relation affected by ice Mar. 28 to Apr. 8.

## GREEN RIVER BASIN

273

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 1963. 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.--12 years, 83.4 cfs (60,380 acre-ft per year).

Extremes.--Maximum discharge during year, 253 cfs June 16 (gage height, 4.24 ft); maximum gage height, 4.97 ft Mar. 23 (ice jam); minimum daily discharge, 8.9 cfs May 22.  
1939-44, 1956-63: Maximum discharge, 1,400 cfs Apr. 16, 1962 (gage height, 7.56 ft), from rating curve extended above 540 cfs; minimum daily, 8.9 May 22, 1963.

Remarks.--Records good except those for periods 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 tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Apr. 10

Apr. 11 to Sept. 30

3.2	52	2.4	8.0	3.1	56
3.5	97	2.6	15	3.5	113
3.8	156	2.8	27	3.9	185

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	61	78	55	46	70	55	80	* 52	43	21	35	53
2	* 62	77	55	50	65	55	80	49	33	24	46	45
3	53	77	55	55	60	55	75	45	71	31	62	43
4	53	77	55	55	60	60	80	52	58	37	61	42
5	53	76	50	50	60	60	85	58	44	36	66	40
6	61	74	50	48	60	65	90	62	42	35	* 58	41
7	62	65	50	46	55	* 65	95	56	32	37	64	32
8	62	71	55	46	55	65	95	67	33	38	58	66
9	61	74	50	46	60	60	90	67	48	* 45	63	53
10	61	76	46	46	55	60	85	61	64	53	60	* 48
11	60	74	48	* 44	50	60	* 90	49	55	53	58	53
12	60	70	48	36	46	60	91	40	50	60	60	45
13	65	76	50	40	46	55	105	36	43	62	55	42
14	62	83	46	46	50	55	113	* 21	40	55	52	43
15	61	85	48	50	55	60	111	16	44	44	47	43
16	76	80	55	55	50	60	91	25	167	45	48	41
17	88	71	55	55	48	60	84	22	107	49	57	34
18	83	65	55	50	48	60	82	18	* 102	47	68	33
19	134	65	55	40	48	60	74	18	116	42	55	32
20	146	70	50	46	50	55	71	18	86	42	53	33
21	116	75	46	46	44	60	66	3.8	76	45	57	45
22	101	70	48	44	46	65	61	8.9	57	56	61	47
23	94	70	48	44	48	70	60	3.5	50	60	60	42
24	92	70	46	46	48	65	61	14	43	55	55	36
25	88	65	42	46	50	70	61	18	29	54	53	32
26	83	60	36	44	50	75	63	24	1.9	45	50	29
27	85	55	30	44	55	80	91	23	20	40	57	27
28	93	* 55	32	46	55	85	75	* 26	22	38	54	27
29	80	55	40	* 46	-	80	64	32	24	36	53	26
30	80	60	42	46	-----	80	55	27	23	37	44	26
31	* 80	-----	40	50	-----	80	-----	30	-----	33	47	-----
Total	2,406	2,119	1,481	1,452	1,437	1,995	2,414	1,054.2	1,641	1,355	1,724	1,249
Mean	77.6	70.6	47.8	46.8	53.1	64.4	80.5	34.0	54.7	43.7	55.6	41.6
Ac-ft	4,770	4,200	2,940	2,880	2,950	3,960	4,790	2,090	3,250	2,690	3,420	2,480

Calendar year 1962: Max 1,020 Min 30 Mean 126 Ac-ft 91,040  
Water year 1962-63: Max 167 Min 8.9 Mean 55.8 Ac-ft 40,420

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 18 to Mar. 23. No gage-height record Mar. 24 to Apr. 11 (stage-discharge affected by ice during most of period).

## 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 1963. 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.--56 years, 469 cfs (339,500 acre-ft per year).

Extremes.--Maximum discharge during year, 2,030 cfs May 24 (gage height, 4.08 ft); minimum daily, 42 cfs Dec. 26.

1904-6, 1909-63: 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	2.0	400
.9	63	3.0	1,030
1.2	113	4.0	1,910
1.5	195		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	103	124	105	75	110	83	480	* 332	1,120	76	53	117
2	* 101	128	103	85	150	83	400	346	1,260	73	60	120
3	86	128	103	95	140	81	310	375	1,780	101	107	103
4	84	128	107	100	130	84	277	512	1,410	103	107	91
5	90	128	105	90	130	75	332	656	1,210	109	124	83
6	109	128	95	85	* 130	70	475	817	1,020	97	* 111	81
7	113	113	90	80	120	* 91	704	950	936	84	126	109
8	122	99	107	80	110	66	894	1,160	866	79	113	126
9	122	107	113	75	100	72	656	1,330	831	88	111	111
10	115	122	78	75	90	76	524	1,530	734	* 111	105	* 95
11	109	124	83	* 70	80	76	* 395	1,660	692	109	107	93
12	105	115	90	60	70	78	380	1,660	662	120	128	90
13	105	117	90	65	65	73	440	1,330	668	122	120	81
14	105	135	90	70	70	84	480	* 1,320	626	115	105	84
15	105	147	91	75	75	64	485	1,270	626	107	88	86
16	120	147	90	85	81	78	410	1,480	1,120	95	84	83
17	144	120	95	85	99	72	341	1,580	866	95	93	75
18	159	122	97	80	86	71	341	1,680	* 680	86	120	70
19	189	117	97	75	90	72	285	1,630	662	73	111	67
20	273	124	107	75	93	72	273	1,480	548	63	95	71
21	223	133	90	80	93	75	258	1,560	500	63	113	111
22	189	122	90	80	90	88	223	1,630	390	71	126	109
23	174	124	99	75	81	144	209	1,670	314	86	159	90
24	162	113	84	70	91	415	206	1,720	262	84	138	78
25	156	113	60	75	* 95	395	202	1,520	223	78	117	71
26	144	115	42	65	93	* 289	244	1,330	192	72	109	66
27	135	109	46	65	79	340	380	1,380	153	63	109	63
28	133	* 105	* 50	65	84	400	370	* 1,380	126	58	113	58
29	133	105	60	65	-	550	318	1,330	113	53	107	55
30	131	111	65	* 65	-----	480	305	1,290	91	52	95	55
31	* 135	-----	70	80	-----	500	-----	1,170	-----	54	97	-----
Total	4,174	3,623	2,692	2,365	2,725	5,197	11,597	39,078	20,681	2,640	3,355	2,592
Mean	135	121	86.8	76.3	97.3	168	387	1,261	689	85.2	108	86.4
Ac-ft	8,280	7,190	5,340	4,690	5,400	10,310	23,000	77,510	41,020	5,240	6,650	5,140

Calendar year 1962: Max 4,160 Min 42 Mean 611 Ac-ft 442,600

Water year 1962-63: Max 1,780 Min 42 Mean 276 Ac-ft 199,800

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

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 7, Dec. 25 to Feb. 14 (no gage-height record Dec. 26-28, Jan. 15 to Feb. 6), Mar. 27 to Apr. 2.

9-2410. Elk River at Clark, Colo.

Location.--Lat 40°43'03", long 106°54'55", in NW¼NW¼ sec.27, T.9 N., R.85 W., on left bank 30 ft downstream from bridge on State Highway 129, 0.8 mile north of Clark, and 2 miles upstream from Cottonwood Gulch.

Drainage area.--206 sq mi.

Records available.--May 1910 to September 1922 (published as "near Clark"), April 1930 to September 1963. 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.--45 years, 341 cfs (246,900 acre-ft per year).

Extremes.--Maximum discharge during year, 1,670 cfs June 4 (gage height, 3.75 ft); minimum daily, 25 cfs Dec. 26. 1910-22, 1930-63: 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, 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)  
(Shifting-control method used July 10-17)

0.7	32	2.0	340
.9	53	2.5	590
1.2	100	3.0	930
1.5	168	4.0	1,900

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	63	52	45	40	70	45	185	* 312	1,080	304	58	91
2	58	51	45	40	60	45	168	400	1,210	304	68	74
3	* 53	51	40	45	60	45	120	470	1,530	300	79	63
4	51	51	40	50	50	45	98	550	1,380	280	96	60
5	53	51	40	50	50	40	95	638	1,300	268	122	53
6	82	51	* 35	45	* 45	45	108	710	1,060	240	* 100	53
7	82	* 32	40	45	45	* 50	147	829	1,080	217	95	68
8	82	45	40	45	45	45	185	938	1,070	220	89	82
9	79	52	40	40	45	45	171	1,070	986	223	99	66
10	74	58	40	40	40	45	145	1,240	773	* 208	89	* 66
11	66	53	40	* 35	40	45	* 127	1,280	808	193	104	58
12	61	56	45	30	35	40	124	1,050	914	179	112	53
13	58	61	45	35	40	* 40	176	882	970	168	104	51
14	57	66	45	40	40	38	250	* 922	962	152	82	60
15	56	66	45	40	45	41	257	954	954	147	71	66
16	58	60	45	45	45	37	193	1,040	930	135	65	56
17	60	45	50	45	50	37	174	1,030	822	135	68	51
18	58	40	50	45	45	37	158	1,180	* 808	127	82	47
19	62	35	50	40	45	37	133	1,190	738	114	65	47
20	62	40	50	45	45	35	120	1,150	704	104	60	51
21	60	50	45	45	45	35	112	1,240	724	96	82	124
22	66	45	45	45	40	40	104	1,240	668	96	129	87
23	62	45	45	45	40	45	98	1,220	614	108	129	66
24	56	45	40	45	45	55	112	1,340	570	102	93	60
25	53	45	35	45	45	50	152	1,170	525	98	82	56
26	52	45	25	40	50	50	280	1,080	470	86	71	53
27	52	45	30	40	45	50	324	1,090	430	77	66	47
28	52	40	30	40	45	60	220	* 1,130	415	72	63	42
29	53	45	35	40	-	75	208	1,090	375	69	62	40
30	52	45	35	40	-----	100	250	1,140	332	65	60	39
31	52	-----	40	50	-----	168	-----	1,110	-----	62	63	-----
Total	1,885	1,466	1,275	1,315	1,295	1,565	4,994	30,695	25,202	4,949	2,598	1,830
Mean	60.8	48.9	41.1	42.4	46.2	50.5	166	990	840	160	83.8	61.0
Ac-ft	3,740	2,910	2,530	2,610	2,570	3,100	9,910	60,860	49,990	9,820	5,150	3,630

Calendar year 1962: Max 2,580 Min 25 Mean 388 Ac-ft 280,600  
Water year 1962-63: Max 1,530 Min 25 Mean 217 Ac-ft 156,800

Peak discharge (base, 1,900 cfs).--No peak above base.

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 18 to Mar. 14 (no gage-height record Jan. 11 to Mar. 13), Mar. 20-30.

## 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 1963.

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.--8 years, 13.3 cfs (9,630 acre-ft per year).

Extremes.--Maximum discharge during year, 52 cfs May 9 (gage height, 4.08 ft); maximum gage height, 6.13 ft Feb. 1 (ice jam); minimum daily discharge, 1.0 cfs June 25-28.

1955-63: Maximum discharge, 255 cfs Mar. 27, 1960 (gage height, 5.63 ft), from rating curve extended above 110 cfs; maximum gage height, 6.13 ft Feb. 1, 1963 (ice jam); minimum daily discharge, 0.7 cfs Sept. 9, 1959, Aug. 21, 22, 28, 1960.

Remarks.--Records fair except those for periods of ice effect, which are poor. Diversions above station for irrigation.

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.1	3.2				4.6	16	20	2.0	1.1	2.1	2.8
2	2.9	3.2				4.6	14	*24	2.4	1.5	2.7	2.2
3	2.9	3.2				4.6	12	28	3.9	2.9	3.9	2.0
4	2.9	3.0				4.4	10	31	2.5	2.9	3.5	1.7
5	*3.2	3.0				4.4	11	31	3.2	3.2	3.2	1.8
6	3.7	2.8										
7	3.5	*2.6				5.5	12	30	2.4	3.5	2.7	2.9
8	3.4	2.4				*8	17	31	2.4	3.1	2.8	6.5
9	3.2	2.8				9	*26	29	2.8	3.2	*2.8	3.7
10	2.9	3.0				10	19	35	2.9	3.5	2.8	2.9
						9	18	32	3.7	*3.5	2.4	2.1
11	2.9	2.8				7	15	30	3.4	3.7	3.1	1.9
12	2.9	2.8				7	14	25	3.4	3.9	4.1	*1.8
13	3.1	3.0				6.5	19	14	2.4	3.7	2.8	1.8
14	3.4	3.7				6.5	23	12	2.0	3.2	1.9	1.9
15	3.5	4.3				7	23	*8.4	2.4	3.1	1.7	1.8
16	3.7	3.6	3.5	3.5		7	16	5.3	4.5	3.1	1.6	1.9
17	4.5	3.4				6.5	12	3.9	5.1	2.9	2.0	1.7
18	4.1	3.0				6	13	3.1	4.3	2.7	2.7	1.6
19	5.5	2.8				5.5	11	2.8	3.1	2.5	2.4	1.6
20	7.2	2.8				8	10	2.2	*2.0	2.5	2.1	2.1
21	5.3	3.2				9	8.8	1.9	1.6	2.5	2.9	3.2
22	5.3	3.4				12	8.0	2.2	1.3	2.8	3.2	2.9
23	4.3	3.2				16	8.4	3.2	1.2	2.8	3.4	2.5
24	4.1	3.4				14	8.8	3.9	1.1	2.7	2.9	2.0
25	3.9	3.4				12	11	4.5	1.0	2.5	2.5	2.0
26	3.7	3.4				10	20	3.5	1.0	2.4	2.1	1.9
27	3.5	*3.4				12	26	2.5	1.0	2.2	2.5	1.8
28	3.7	3.6				18	16	2.4	1.0	2.2	2.1	1.8
29	3.5	3.8				16	14	2.5	1.3	2.1	1.9	1.7
30	3.7	3.8				15	14	2.2	1.6	2.1	1.9	1.7
31	3.4					14		2.1		2.1	2.5	
Total	116.9	96.0	108.5	108.5	161.0	279.1	446.0	428.6	72.9	86.1	91.2	68.2
Mean	3.77	3.20	3.5	3.5	5.75	9.00	14.9	13.8	2.43	2.78	2.62	2.27
Ac-ft	232	190	215	215	319	554	885	850	145	171	161	135

Calendar year 1962: Max 166 Min 1.0 Mean 19.1 Ac-ft 13,840

Water year 1962-63: Max 35 Min 1.0 Mean 5.62 Ac-ft 4,070

Peak discharge (base, 180 cfs).--No peak above base.

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 4-13, Nov. 16 to Apr. 1 (no gage-height record Nov. 24-27, Dec. 21 to Jan. 10).

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 1963.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 6,580 ft (from topographic map).

Average discharge.--5 years, 1.44 cfs (1,040 acre-ft per year).

Extremes.--Maximum discharge during year, 12 cfs Apr. 8; maximum gage height, 1.71 ft Aug. 12; no flow for many days.  
1958-63: 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 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)

0.7	0	1.0	0.7	1.3	3.4
.8	.03	1.1	1.2	1.4	5.0
.9	.2	1.2	2.0	1.5	7.0

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.1	0.1					1.2	0.6	0		0	0
2	0	.1					1.0	*.6	0		0	0
3	0	.1					.8	.4	.1		0	0
4	0	.1					.8	.3	.1		0	0
5	*.1	.1					*1.0	.2	0		0	0
6	.2	.1	(*)		1.0		1.0	.2	0		0	0
7	.1	*.1			(*)		1.0	.2	0		0	0
8	.1	.1				(*)	.8	.1	0		*.0	0
9	.1	.1					*2.6	.1	0		0	0
10	0	.1		(*)			1.4	.1	0	(*)	0	0
11	0	.1				0.3	1.0	.1	0		0	0
12	0	.1					.8	.1	0		1.1	*.0
13	0	.1					.7	.1	0		0	0
14	.1	.1			0.5		.6	.1	0		0	0
15	.1	b.1					.6	*.0	0		0	0
16	.1	b.1	0.1	0.1			.7	0	0		0	0
17	.1						.6	0	0		0	0
18	.1						.7	0	0		0	0
19	.1						.8	0	0		0	0
20	.1						.8	0	*.0		0	.1
21	.1						.5	0	0		0	.1
22	.1					0.3	.4	0	0		0	0
23	.1	.1					.4	0	0		0	0
24	.1						.4	0	0		0	0
25	.1						.4	0	0		0	0
26	.1					0.6	.4	0	0		.1	0
27	.1						.6	0	0		0	0
28	.1						.8	0	0		0	0
29	.1						.8	0	0		0	0
30	.1						.6	0	0		0	0
31	.1							0			0	
Total	2.5	3.0	3.1	3.1	16.4	12.6	23.2	3.2	0.2	0	1.2	0.2
Mean	0.08	0.10	0.1	0.1	0.59	0.41	0.97	0.10	0.007	0	0.39	0.007
Ac-ft	5.0	6.0	6.1	6.1	33	25	58	6.3	0.4	0	2.4	0.4

Calendar year 1962: Max 83 Min 0 Mean 3.55 Ac-ft 2,570  
Water year 1962-63: Max 5.8 Min 0 Mean 0.20 Ac-ft 149

Peak discharge (base, 8.0 cfs).--Apr. 8 (1230) 12 cfs (1.69 ft); Aug. 12 (1700) 11 cfs (1.71 ft).

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 17 to Apr. 5 (stage-discharge relation affected by ice during 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 1963.

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.--6 years (1943-44, 1958-63), 29.8 cfs (21,570 acre-ft per year).

Extremes.--Maximum discharge during year, 728 cfs May 7 (gage height, 5.47 ft), from rating curve extended above 160 cfs; maximum gage height, 6.08 ft May 4 (ice jam); minimum daily discharge, 1.2 cfs July 31, Aug. 1.  
1942-44, 1958-63: Maximum discharge, 795 cfs May 6, 1962 (gage height, 5.78 ft), from rating curve extended above 140 cfs; maximum gage height, 6.08 May 4, 1963 (ice jam); minimum daily discharge, 0.3 cfs Aug. 23, 28, 29, 1961.

Remarks.--Records good 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)

Oct. 1 to May 5

May 6 to Sept. 30

1.5	0.8	1.4	1.0	2.0	29
1.6	2.2	1.5	2.0	2.3	64
1.7	4.2	1.6	4.0	3.0	180
1.8	8.5	1.7	7.5	4.2	420
		1.8	12		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.2	2.6	3.6				15	120	60	5.0	1.2	3.6
2	3.0	2.6	3.4				14	150	68	5.0	1.7	3.0
3	2.8	2.4	3.2				13	200	92	5.0	1.5	2.4
4	2.8	2.4	* 3.2				15	300	61	5.4	2.6	1.9
5	* 2.8	2.4	3.4				16	400	56	4.7	2.4	1.9
6	5.1	* 2.6	3.6				18	390	49	4.0	2.6	4.4
7	3.8	2.4	3.6				22	410	43	3.8	2.6	9.0
8	3.4	2.2	3.4				34	368	38	3.4	* 2.4	5.0
9	3.0	2.6	3.4				32	394	37	3.4	6.4	3.6
10	2.6	2.8	3.4	(*)			30	356	36	* 4.0	4.7	3.0
11	2.4	2.6	3.4			3	28	310	30	3.6	3.6	2.8
12	2.2	2.8	3.6				26	242	26	3.8	4.7	* 2.4
13	2.1	3.2	3.6				30	208	24	3.6	4.4	3.2
14	2.1	3.6	3.6				40	194	23	3.2	3.0	3.6
15	2.2	4.2	3.6				60	182	24	2.8	1.5	3.4
16	2.6	3.8	3.8	2	2.5		55	176	22	3.0	1.7	3.0
17	2.6	3.6	3.8				45	* 164	20	3.4	2.0	2.6
18	2.6	3.6	3.8				40	162	22	3.0	3.0	2.8
19	3.0	3.4	3.6				35	149	20	2.0	2.4	2.6
20	3.6	3.4	3.4				30	136	* 17	1.9	2.2	2.8
21	3.0	3.6	3.2				25	129	15	1.7	6.4	4.7
22	2.8	3.6	3.2				20	120	12	2.4	1.0	4.4
23	2.8	3.6	3.2				18	117	11	3.4	7.2	4.0
24	2.6	3.6	3.0				20	132	9.5	2.8	6.4	3.0
25	2.4	3.6	2.6				30	112	8.5	2.2	4.0	2.4
26	2.4	3.4	2.0			(*)	60	100	8.0	1.9	3.4	2.2
27	2.4	3.4	1.6				100	88	6.4	1.7	2.6	2.0
28	2.4	3.6	1.8				80	* 90	6.4	1.5	2.6	2.0
29	2.6	3.6	2.0				70	74	5.8	1.4	2.0	2.0
30	2.6	3.6	2.2				90	68	5.8	1.3	1.5	1.9
31	2.6	-----	2.2		-----		-----	64	-----	1.2	2.6	-----
Total	86.5	94.8	97.4	62	70.0	126	1,101	6,095	846.4	95.5	106.5	95.6
Mean	2.79	3.16	3.14	2	2.5	4.1	36.7	197	28.2	3.08	3.45	3.19
Ac-ft	172	188	193	123	139	250	2,180	12,090	1,680	189	217	190

Calendar year 1962: Max 518 Min 1.4 Mean 42.9 Ac-ft 31,070

Water year 1962-63: Max 410 Min 1.2 Mean 24.3 Ac-ft 17,610

Peak discharge (base, 300 cfs).--May 7 (1900) 728 cfs (5.47 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 11-13, Nov. 16 to Dec. 4, Dec. 11 to May 5 (no gage-height record Jan. 10 to Mar. 26).

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 1963.

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.--10 years (1953-63), 45.6 cfs (33,010 acre-ft per year).

Extremes.--Maximum discharge during year, 958 cfs May 7 (gage height, 6.27 ft); minimum daily, 0.4 cfs Aug. 1. 1910, 1920, 1953-63: 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 period of ice effect, 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 Oct. 1 to Nov. 9)

2.1	0.2	2.9	30
2.2	.6	3.1	52
2.3	2.0	3.5	111
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 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.4	2.6	4.4				24	152	76	6.5	0.4	2.4
2	2.4	2.4	4.2				24	208	76	6.0	.5	3.0
3	2.2	2.6	4.0				22	*305	97	6.0	1.0	2.2
4	2.0	2.4	*4.0				24	422	78	6.2	2.2	1.6
5	*2.4	2.4	4.0				26	545	68	5.7	2.6	1.2
6	4.8	*2.8	3.8		6	(*)	30	530	60	4.8	2.4	1.6
7	5.4	2.0	3.8		(*)	4	33	557	53	4.6	3.0	1.4
8	4.0	1.9	4.0				52	557	47	4.0	*3.2	6.8
9	3.8	1.9	3.6				*51	581	45	3.6	3.8	4.0
10	3.4	2.0	3.6	(*)			50	545	46	4.3	5.7	3.0
11	3.2	1.8	3.6				48	482	40	4.3	3.6	2.6
12	2.8	2.0	3.4			(*)	46	377	35	*3.6	4.0	*2.0
13	2.8	2.4	3.2			5.5	55	314	30	3.6	4.3	1.9
14	2.8	3.0	3.0			6	72	293	29	3.4	3.2	3.4
15	3.2	3.4	3.0			6	100	*270	29	3.0	2.0	3.2
16	3.2	3.2	3.2	2		6.5	82	258	28	2.8	1.2	2.8
17	3.6	2.8	3.2			7	62	230	26	3.0	1.0	2.2
18	3.6	2.6	3.2			7.5	52	222	27	3.2	1.6	2.0
19	3.4	2.4	3.0			8	50	202	26	2.6	2.0	2.0
20	4.6	2.6	2.8			9	44	175	*22	1.7	1.6	2.0
21	4.3	3.0	2.6		3.5	12	33	162	20	1.4	3.6	3.2
22	3.6	3.2	2.8			16	28	152	17	2.0	10	4.6
23	3.2	3.4	2.4			22	26	142	14	4.6	1.2	4.0
24	3.2	3.6	2.2			32	26	162	13	3.6	7.2	3.2
25	3.0	3.6	2.0			26	38	136	12	2.6	6.0	2.2
26	2.8	3.6	1.6			30	90	121	11	2.0	3.6	1.7
27	2.6	3.6	2.0			34	160	106	11	1.4	2.6	1.3
28	2.6	3.8	2.2			40	97	95	9.7	1.2	2.2	1.0
29	2.4	4.2	2.2		-	36	89	*90	7.6	.7	1.7	1.0
30	2.6	4.4	2.4			28	100	94	6.5	.6	1.4	1.0
31	2.6		2.4			26		78		.5	1.7	
Total	99.9	85.6	95.8	63	123.0	405.5	1,634	8,553	1,059.8	103.5	101.3	87.1
Mean	3.22	2.85	3.09	2	4.4	13.1	54.5	276	35.3	3.34	3.27	2.90
Ac-ft	198	170	190	125	244	804	3,240	16,960	2,100	205	201	173

Calendar year 1962: Max 766 Min 0.5 Mean 67.0 Ac-ft 48,500  
Water year 1962-63: Max 581 Min 0.4 Mean 34.0 Ac-ft 24,610

Peak discharge (base, 800 cfs).--May 7 (2100) 958 cfs (6.27 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 10 to Apr. 6 (no gage-height record Jan. 13 to Mar. 12).



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 1963.

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.

Average discharge.--5 years (1958-63), 13.2 cfs (9,560 acre-ft per year).

Extremes.--Maximum discharge during year, 222 cfs May 10 (gage height, 3.92 ft), from rating curve extended above 100 cfs; no flow for many days.

1910, 1920, 1958-63: Maximum daily discharge, 542 cfs May 19, 1920; maximum gage height, 4.45 ft Mar. 24, 1960; no flow at times in 1910, 1959-63.

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

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

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		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.8	1.0				2.6	18	66	29	1.3	0	1.8
2	.6	.9				2.6	16	77	30	1.2	0	1.2
3	.6	.9				2.6	14	*34	32	1.2	0	.8
4	*.6	1.0	(*)			2.6	12	102	27	1.5	0	.7
5	.8	1.0				2.4	13	120	26	1.2	.1	.4
6	2.2	*1.0			3	*2.4	14	124	21	.9	.1	2.2
7	1.8	.8				2.2	19	130	18	.8	.4	7.8
8	1.5	.6				2.2	43	121	16	.8	*.2	3.2
9	1.2	.6				2.2	*26	140	15	.7	1.2	1.9
10	.9	.8		(*)		2.4	21	137	14	.7	1.2	1.5
11	.8	.6				2.2	16	131	12	.6	1.1	1.5
12	.8	.8				2.2	21	104	10	*.5	1.0	*1.3
13	.8	.8				2.2	29	97	9.9	.3	1.3	1.2
14	.8	1.0				2.2	35	88	9.4	.2	.7	2.2
15	.8	1.2				2.4	32	*93	8.8	.2	.2	1.9
16	.8	1.0	1	0.8		2.6	21	91	7.8	.2	.1	1.2
17	.9	.6				2.6	17	87	7.2	.1	.2	1.0
18	.9	.6				2.6	17	90	7.8	.1	.3	.8
19	1.0	.4				2.6	13	80	*7.2	0	.2	.8
20	1.1	.6				2.6	11	75	5.9	0	.2	.9
21	1.0	.8			2.5	3.0	11	70	4.6	0	.8	1.8
22	.9	1.0				5	11	65	4.0	0	4.4	1.2
23	1.0	1.0				6	10	61	3.2	.1	3.2	1.0
24	1.0	1.0				7	12	79	3.2	.1	3.4	.8
25	.9	1.0				6	20	61	2.6	0	1.8	.8
26	.9	1.0				6	36	53	2.6	0	2.0	.8
27	.8	.8				8	40	44	2.2	0	3.6	.7
28	1.0	.8				18	23	41	2.2	0	1.9	.7
29	1.0	1.0			-	16	25	*39	1.9	0	1.1	.8
30	1.0	1.2				17	40	35	1.6	0	.8	.8
31	1.0	-----				18	-----	33	-----	0	1.2	-----
Total	30.2	25.8	31	24.8	75.0	158.4	636	2,618	342.1	12.7	32.7	43.7
Mean	0.97	0.86	1	0.8	2.7	5.11	21.2	84.5	11.4	0.41	1.05	1.46
Ac-ft	60	51	61	49	149	314	1,260	5,190	679	25	65	87

Calendar year 1962: Max 242 Min 0 Mean 19.8 Ac-ft 14,350

Water year 1962-63: Max 140 Min 0 Mean 11.0 Ac-ft 7,990

Peak discharge (base, 200 cfs).--May 10 (1730) 222 cfs (3.92 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 8 to Apr. 4 (no gage-height record Dec. 26 to Jan. 3, Jan. 10 to Mar. 6).

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 1963.

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

Average discharge.--7 years, 115 cfs (83,260 acre-ft per year).

Extremes.--Maximum discharge during year, 818 cfs May 9 (gage height, 6.04 ft); minimum daily, 19 cfs Dec. 27.

1956-63: 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 or no gage-height record, which are poor. Diversions for irrigation of about 800 acres above station.

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

3.6	20	4.8	185
3.8	33	5.2	315
4.0	51	5.6	510
4.4	100		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	34	34	34	28	44	32	68	102	165	41	22	38
2	35	34	36	30	50	32	59	105	195	38	25	34
3	34	32	* 35	32	40	30	52	142	208	50	37	31
4	34	32	33	32	34	* 28	50	200	175	47	31	29
5	36	34	32	30	30	28	58	258	152	40	30	27
6	* 41	34	34	28	28	30	66	319	147	36	31	47
7	38	24	34	* 26	* 24	30	85	355	136	36	36	104
8	39	* 26	34	28	24	28	* 100	405	124	37	33	58
9	36	32	32	30	24	28	83	504	130	40	* 31	44
10	35	32	30	30	24	28	75	474	118	39	30	38
11	34	32	30	24	22	28	71	440	104	37	36	37
12	33	30	30	20	22	28	77	368	97	* 37	38	34
13	32	32	30	26	24	26	97	315	96	39	34	* 32
14	32	37	28	30	26	28	120	* 303	97	34	28	39
15	34	38	30	32	28	30	124	303	100	34	27	36
16	38	36	32	32	28	30	91	319	132	32	29	31
17	43	34	32	28	26	30	77	315	109	32	39	30
18	41	32	30	26	26	30	68	343	* 145	29	40	28
19	56	30	30	24	28	28	65	335	116	29	31	27
20	49	34	32	28	28	30	62	323	96	27	29	32
21	44	37	30	28	26	32	59	319	96	29	27	51
22	42	37	28	28	26	36	56	291	79	32	30	35
23	39	36	26	28	26	55	53	307	73	30	32	30
24	39	36	26	30	28	50	59	291	68	28	32	28
25	36	34	24	30	28	* 42	73	250	62	26	29	27
26	36	36	20	28	26	41	114	216	60	25	27	27
27	35	34	19	28	26	51	147	210	56	25	27	26
28	35	35	20	30	28	61	107	* 195	53	24	27	25
29	34	36	22	30	-	56	96	198	51	24	27	24
30	34	37	24	30	-----	58	* 95	198	46	23	27	24
31	35	-----	26	32	-----	56	-----	195	-----	23	41	-----
Total	1,163	1,007	903	896	794	1,130	2,397	9,898	3,296	1,023	963	1,073
Mean	37.5	33.6	29.1	28.6	28.4	36.5	79.6	287	110	33.0	31.1	35.8
Ac-ft	2,310	2,000	1,790	1,760	1,570	2,240	4,730	17,630	6,520	2,030	1,910	2,130

Calendar year 1962: Max 1,150 Min 19 Mean 142 Ac-ft 102,900  
 Water year 1962-63: Max 504 Min 19 Mean 64.4 Ac-ft 46,620

Peak discharge (base, 450 cfs).--May 9 (2130) 818 cfs (6.04 ft); May 18 (2030) 552 cfs (5.66 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 7-13, 17-20, Dec. 5-27, Jan. 8, 9, Jan. 30 to Feb. 15, Mar. 5-8. No gage-height record Dec. 28 to Jan. 7, Jan. 10-29, Feb. 16 to Mar. 4, Mar. 9-25 (stage-discharge relation affected by ice during most of periods).

## 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, 1½ miles downstream from Willow Creek, and 5½ miles southeast of Pagoda.

Drainage area.--150 sq mi, approximately.

Records available.--October 1953 to September 1963.

Gage.--Water-stage recorder. Altitude of gage is 6,830 ft (from topographic map).

Average discharge.--10 years, 112 cfs (81,080 acre-ft per year).

Extremes.--Maximum discharge during year, 598 cfs May 9 (gage height, 3.20 ft), minimum daily, 20 cfs Dec. 26.

1953-63: 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, 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)  
(Shifting-control method used Sept. 19-30)

1.4	19	2.6	240
1.5	24	3.0	430
1.8	56	3.1	500
2.2	124		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	36	34	37	42	50	38	82	104	168	43	21	41
2	36	34	38	46	60	36	69	111	200	41	22	36
3	35	32	* 37	48	40	32	56	142	216	49	38	31
4	35	34	37	46	36	* 32	52	209	174	50	32	28
5	37	34	42	44	32	32	61	263	168	45	30	24
6	* 45	36	34	42	30	34	69	307	146	41	30	37
7	40	22	34	* 40	* 30	34	93	350	142	41	38	106
8	41	* 22	36	40	28	32	* 120	394	131	42	33	58
9	39	28	34	44	26	32	102	444	133	42	* 33	45
10	38	35	32	44	26	32	93	444	128	43	30	38
11	36	35	32	40	24	32	85	430	111	42	36	36
12	35	34	32	30	24	32	86	382	106	* 42	43	35
13	34	38	32	34	26	30	110	340	102	42	36	* 33
14	34	38	30	36	28	34	128	* 325	104	38	29	40
15	36	40	32	40	32	36	133	320	110	38	26	37
16	39	40	34	44	32	36	108	345	131	36	27	32
17	45	30	36	42	32	36	90	320	115	36	37	29
18	43	30	34	38	30	34	90	350	* 142	33	45	28
19	54	32	34	34	32	34	74	340	124	30	31	26
20	49	34	36	34	32	36	70	320	102	29	28	29
21	45	36	34	36	30	38	67	307	95	29	27	50
22	43	36	32	34	30	46	62	286	85	35	30	36
23	41	36	30	34	32	67	61	303	75	31	32	30
24	40	35	30	34	32	66	64	299	67	29	33	27
25	37	34	28	34	34	* 48	77	259	62	27	30	26
26	37	36	20	34	32	50	110	220	62	25	26	24
27	35	35	22	32	34	59	146	209	55	24	26	24
28	37	34	24	32	36	78	113	* 196	55	22	26	23
29	35	34	28	32	-	75	95	206	51	22	26	22
30	36	36	32	34	-----	69	* 92	206	46	21	24	22
31	36	-----	36	36	-----	90	-----	193	-----	21	43	-----
Total	1,209	1,014	1,009	1,180	910	1,350	2,648	8,924	3,406	1,089	968	1,053
Mean	39.0	33.8	32.5	38.1	32.5	43.5	88.3	288	114	35.1	31.2	35.1
Ac-ft	2,400	2,010	2,000	2,340	1,800	2,680	5,250	17,700	6,760	2,160	1,920	2,090

Calendar year 1962: Max 1,000 Min 20 Mean 147 Ac-ft 106,400

Water year 1962-63: Max 444 Min 20 Mean 67.8 Ac-ft 49,110

Peak discharge (base, 500 cfs).--May 9 (2200) 598 cfs (3.20 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 7-9, 17-22, 28-30, Dec. 6 to Mar. 22.

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 1963.

Gage.--Water-stage recorder. Altitude of gage is 6,450 ft (by barometer).

Average discharge.--11 years, 21.1 cfs (15,280 acre-ft per year).

Extremes.--Maximum discharge during year, 113 cfs May 10 (gage height, 3.30 ft); minimum daily, 0.2 cfs Aug. 10, 11.

1952-63: 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, Aug. 10, 11, 1963.

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

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

1.8	0.1	2.3	8.0
1.9	.4	2.6	27
2.0	1.0	2.9	57
2.1	2.1	3.1	85
2.2	4.2		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.8	2.7	3.4	2.8	7	4.2	12	*28	17	2.7	0.3	0.6
2	1.9	2.7	3.4	2.8	6	4.2	12	29	17	2.7	.3	.7
3	1.8	2.9	3.4	2.6	5.5	4.0	*8.6	32	24	3.2	.4	.9
4	1.8	2.9	3.4	2.6	5.0	4.0	8.6	45	*17	3.8	.4	.7
5	1.8	2.9	3.0	2.4	4.8	*4.0	7.6	61	14	3.4	.4	.6
6	1.8	2.9	*3.0	2.4	4.6	4.0	9.1	69	12	2.9	.6	.9
7	1.9	2.9	3.2	2.4	4.4	4.0	11	73	10	2.7	*.4	17
8	1.9	*2.9	3.2	2.4	4.2	4.0	22	79	9.6	2.5	.4	2.5
9	*1.7	2.7	3.0	*2.4	4.2	4.0	24	80	9.6	2.3	.3	1.7
10	1.4	2.7	3.0	2.4	4.0	4.2	21	79	12	*2.7	.2	*1.1
11	1.3	3.2	2.8	2.0	3.8	4.0	20	73	11	3.2	.2	.9
12	1.4	3.4	2.8	1.8	3.8	3.8	19	61	10	2.3	.3	.8
13	1.3	2.9	3.0	2.2	4.0	3.8	22	42	7.2	1.9	.3	.7
14	1.4	3.4	2.8	2.4	*4.0	4.0	23	41	7.2	2.0	.3	.8
15	1.4	5.0	2.8	2.6	4.0	4.0	27	34	7.6	1.8	.3	.8
16	1.4	5.7	3.0	2.6	3.8	3.8	14	*39	8.6	1.3	.3	.8
17	1.6	3.6	3.0	2.6	3.8	4.0	11	36	10	1.3	.3	.7
18	1.8	3.4	3.0	2.6	3.8	4.2	11	34	*9.6	1.1	.3	.6
19	2.3	3.2	2.8	2.2	4.0	4.2	14	29	10	1.0	.3	.5
20	3.6	4.0	3.0	2.4	4.6	4.0	15	27	7.6	.8	.4	.5
21	3.2	4.6	2.8	2.4	4.4	4.6	12	26	6.1	.8	.4	.9
22	2.5	4.0	2.6	2.4	4.2	6	8.0	26	5.3	.8	.4	.9
23	2.3	4.0	2.6	2.6	4.2	8	7.2	26	4.2	.8	.4	.8
24	2.5	3.8	2.4	2.6	4.0	7	8.0	27	3.8	.6	.6	.6
25	2.7	4.0	2.2	2.4	4.0	6.5	8.6	27	3.4	.6	.8	.5
26	2.7	4.0	2.0	2.4	4.0	7	13	22	3.4	.6	.6	.4
27	2.7	3.6	1.6	2.6	4.0	8	24	21	3.4	.5	.6	.4
28	2.7	3.6	2.0	2.6	4.2	9	21	18	3.2	.5	.6	.4
29	2.7	3.4	2.2	2.6	-	10	17	18	2.7	.4	.5	.4
30	2.7	3.4	2.4	2.6	-----	12	20	17	2.5	.4	.5	.4
31	2.7	-----	2.6	3.5	-----	12	-----	16	-----	.4	.7	-----
Total	64.7	104.4	86.4	77.3	122.3	170.5	450.7	1,235	269.0	52.0	12.8	39.5
Mean	2.09	3.48	2.79	2.49	4.37	5.50	15.0	39.8	8.97	1.68	0.41	1.32
Ac-ft	128	207	171	153	243	338	894	2,450	534	103	25	78

Calendar year 1962: Max 305 Min 1.2 Mean 32.1 Ac-ft 23,230

Water year 1962-63: Max 80 Min 0.2 Mean 7.36 Ac-ft 5,320

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

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 17, 19, Dec. 2, Dec. 4 to Mar. 19 (no gage-height record Jan. 11-23), Mar. 21-28.

## 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 1963. 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. 6, 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.--47 years (1916-63), 1,556 cfs (1,126,000 acre-ft per year).

Extremes.--Maximum discharge during year, 6,290 cfs May 12 (gage height, 6.47 ft); minimum daily, 50 cfs Aug. 4.

1904-5, 1910-12, 1916-63: 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 or no gage-height record, 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)

1.0	45	2.5	600
1.3	93	3.0	950
1.4	115	4.0	2,060
1.7	205	5.0	3,640
2.0	325	6.5	6,350

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	170	284	252	200	360	340	1,440	1,650	3,540	576	81	216
2	222	280	252	220	440	340	1,730	1,780	3,280	498	73	216
3	233	280	264	240	500	320	1,890	1,930	3,640	442	64	216
4	216	280	*276	260	600	320	*1,140	2,200	4,670	420	50	236
5	205	*276	284	220	500	300	929	2,730	4,320	410	52	*216
6	212	264	244	200	480	300	887	3,490	4,050	410	77	240
7	233	256	220	180	*460	*280	1,040	4,060	3,300	415	*135	208
8	256	260	220	*180	460	248	1,500	4,390	3,200	365	174	316
9	*276	256	240	180	460	256	2,440	5,070	3,100	345	177	307
10	294	236	240	200	440	272	2,050	5,340	3,100	*294	180	280
11	298	230	220	180	400	272	1,740	5,790	2,850	284	194	256
12	307	252	220	140	360	280	1,340	5,880	2,500	294	198	198
13	280	272	200	160	340	272	1,160	5,480	2,550	320	240	174
14	252	268	220	180	320	268	1,290	*4,420	2,700	316	240	164
15	256	280	240	200	340	260	1,530	4,300	2,750	312	236	161
16	252	365	220	220	360	268	1,720	4,010	2,850	280	202	152
17	268	385	220	200	360	268	1,510	4,490	*2,950	244	161	158
18	268	370	220	200	380	272	1,260	4,440	2,590	216	140	149
19	284	298	240	200	360	316	1,190	4,720	2,300	216	143	120
20	302	276	240	200	340	276	1,080	4,780	2,120	198	174	135
21	360	294	220	220	340	280	998	4,320	1,780	151	184	184
22	452	307	240	240	340	294	958	4,390	1,740	174	170	155
23	420	325	240	240	340	350	887	4,470	1,600	167	628	198
24	385	312	220	220	340	522	817	4,470	1,360	152	554	272
25	365	312	200	220	320	887	775	4,710	1,180	143	474	233
26	345	302	180	220	320	908	782	4,490	1,040	146	385	198
27	320	294	140	240	340	817	936	3,860	950	132	316	177
28	312	284	100	240	340	852	1,570	*3,710	838	120	268	164
29	298	284	120	240	-	1,080	*1,620	3,720	740	106	240	143
30	289	264	140	260	-----	1,380	1,500	3,710	670	104	236	132
31	284	-----	180	300	-----	1,360	-----	3,710	-----	95	219	-----
Total	8,914	8,646	6,712	6,600	10,940	14,458	39,709	126,510	74,258	8,355	6,675	5,974
Mean	288	288	217	213	391	466	1,324	4,081	2,475	270	215	199
Ac-ft	17,680	17,150	13,310	13,090	21,700	28,680	78,760	250,900	147,300	16,570	13,240	11,850

Calendar year 1962: Max 11,300 Min 93 Mean 1,965 Ac-ft 1,423,000  
 Water year 1962-63: Max 5,880 Min 50 Mean 871 Ac-ft 630,200

Peak discharge (base, 7,000 cfs).--No peak above base.

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 7-25, Jan. 9-21, 30, 31, Feb. 1-6. No gage-height record Dec. 26 to Jan. 8, Jan. 22-29, Feb. 7 to Mar. 7 (stage-discharge relation affected by ice during most of periods), June 6-17.

9-2530. Little Snake River near Slater, Colo.

Location (revised).--Lat 41°00'00", long 107°08'35", in NW¼ 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 Spring Creek and 12 miles east of Slater.

Drainage area.--285 sq mi.

Records available.--October 1942 to September 1947, October 1950 to September 1963.

Gage.--Water-stage recorder. Datum of gage is 6,831.00 ft above mean sea level, datum of 1929.

Average discharge.--18 years, 212 cfs (153,500 acre-ft per year).

Extremes.--Maximum discharge during year, 1,430 cfs May 9 (gage height, 6.54 ft); minimum daily, 10 cfs Dec. 25.

1942-47, 1950-63: 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 period of ice effect, which are poor. Diversions for irrigation of about 2,000 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 May 16-20)

3.2	11	4.5	198
3.4	18	4.8	310
3.6	31	5.1	460
3.9	68	5.5	680
4.2	118	6.1	1,110

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	25	23	24	18	55	40	138	227	792	76	17	27
2	22	23	24	18	60	40	110	265	841	74	18	29
3	* 20	23	24	20	55	40	82	355	925	72	22	23
4	20	21	22	22	50	40	74	* 520	827	81	23	21
5	21	22	* 24	20	* 46	* 36	76	626	750	69	30	20
6	34	* 25	22	18	44	34	92	697	626	58	28	20
7	40	18	24	17	44	36	120	806	555	54	* 30	25
8	39	16	22	16	44	38	192	925	525	49	28	38
9	33	19	20	* 16	44	40	151	1,020	495	55	33	22
10	28	21	18	15	42	44	* 138	1,100	435	65	30	* 19
11	25	20	20	14	40	46	107	1,050	415	* 51	28	18
12	23	22	20	11	36	40	114	862	420	46	31	17
13	22	22	20	14	38	36	154	715	400	44	33	17
14	22	22	18	16	38	36	192	715	400	39	27	17
15	25	24	22	18	40	38	201	694	420	40	22	20
16	26	24	20	16	42	44	160	* 729	370	38	20	19
17	27	20	20	14	44	44	136	750	335	38	19	17
18	28	20	18	14	40	44	129	820	* 325	32	23	17
19	27	19	18	11	40	40	107	862	278	29	24	17
20	26	20	20	13	40	36	97	841	240	27	22	18
21	27	22	20	14	40	50	94	876	227	26	30	34
22	24	22	20	14	36	120	90	890	195	27	53	30
23	24	20	18	14	36	150	79	890	171	32	64	22
24	24	20	16	14	40	130	84	1,100	148	29	57	18
25	22	20	10	16	44	120	97	988	131	25	35	17
26	22	22	12	17	42	108	154	946	120	23	29	16
27	20	20	14	18	40	103	214	911	107	21	28	16
28	23	20	16	22	40	118	160	925	96	20	25	15
29	24	18	16	26	-	116	140	911	89	17	22	15
30	24	20	16	36	-----	108	180	890	91	18	22	15
31	23	-----	18	50	-----	125	-----	855	-----	17	22	-----
Total	790	628	596	562	1,200	2,040	3,862	24,751	11,739	1,292	895	619
Mean	25.5	20.9	19.2	18.1	42.9	65.8	129	798	391	41.7	28.9	20.6
Ac-ft	1,570	1,250	1,180	1,110	2,380	4,050	7,660	49,090	23,280	2,560	1,780	1,230

Calendar year 1962: Max 2,520 Min 10 Mean 289 Ac-ft 209,000  
 Water year 1962-63: Max 1,100 Min 10 Mean 134 Ac-ft 97,140

Peak discharge (base, 1,600 cfs)--No peak above base.

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 11 to Mar. 24 (no gage-height record Jan. 12 to Feb. 5).

## 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 1963. 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.--32 years (1931-63), 70.2 cfs (50,820 acre-ft per year).

Extremes.--Maximum discharge during year, 546 cfs May 10 (gage height, 6.23 ft); minimum daily, 0.7 cfs Aug. 1, 2. 1910-12, 1931-63: 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 period of ice effect, which are poor. Diversions for irrigation of about 500 acres above station.

Rating table, except period of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 6 to Nov. 6, Aug. 24 to Sept. 30)

0.6	0.5	2.2	43
.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

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	12	12	10	7	30	16	54	112	168	8.8	0.7	8.6
2	8.2	13	10	8	26	16	46	134	163	7.8	.7	9.0
3	* 3.3	13	9	10	24	14	30	* 183	200	6.4	2.0	6.4
4	5.4	13	8	12	22	14	29	264	187	9.4	4.0	5.2
5	9.2	13	* 10	10	* 20	* 12	32	304	169	10	4.6	4.2
6	13	* 13	12	10	18	14	35	322	124	9.6	4.5	6.6
7	14	9	12	10	16	14	50	328	108	10	* 4.1	5.7
8	12	6	12	* 10	16	16	87	390	104	8.6	2.5	2.7
9	10	7	10	10	16	18	71	392	102	8.2	4.1	1.5
10	9.6	9	8	8	15	20	* 62	392	87	13	8.6	5.4
11	9.6	10	7	7	12	22	44	354	78	* 9.0	9.6	* 8.8
12	9.2	11	6	4	10	14	40	290	74	7.8	8.8	7.8
13	9.2	10	6	6	12	18	52	218	73	8.2	8.6	6.2
14	9.4	12	7	8	12	20	76	222	79	7.4	6.6	8.4
15	12	14	8	10	12	20	91	200	80	7.6	4.1	1.4
16	9.4	10	8	10	12	18	71	* 211	73	6.8	2.4	1.1
17	9.6	8	8	10	12	16	55	189	63	6.4	1.0	8.8
18	9.8	8	7	10	14	16	50	209	60	6.0	.8	7.6
19	9.8	6	8	7	14	18	42	217	* 58	5.2	.9	7.2
20	11	7	8	10	14	24	41	201	50	4.6	1.0	7.4
21	11	8	9	10	14	30	40	204	44	4.4	3.5	1.2
22	11	8	8	10	14	40	37	213	39	4.8	9.2	1.4
23	11	8	6	10	14	38	33	219	32	5.1	21	10
24	11	8	5	10	16	36	36	302	22	5.0	24	8.0
25	11	7	4	8	18	34	38	273	19	4.6	14	6.8
26	11	7	2	8	18	32	56	227	18	4.0	8.6	6.2
27	11	7	3	8	18	36	102	218	15	3.5	10	5.8
28	11	7	5	10	16	40	76	198	13	3.2	8.6	5.7
29	11	7	7	12	-	36	72	202	11	2.7	6.8	5.7
30	11	8	8	12	-----	40	91	196	9.2	2.2	6.0	5.7
31	11	-----	7	18	-----	50	-----	193	-----	1.5	6.4	-----
Total	316.7	279	238	293	455	752	1,639	7,577	2,322.2	201.8	197.7	311.5
Mean	10.2	9.30	7.68	9.45	16.2	24.3	54.6	244	77.4	6.51	6.38	10.4
Ac-ft	628	553	472	581	902	1,490	3,250	15,030	4,610	400	392	618

Calendar year 1962: Max 820 Min 1.1 Mean 86.7 Ac-ft 62,780  
Water year 1962-63: Max 392 Min 0.7 Mean 40.0 Ac-ft 28,930

Peak discharge (base, 430 cfs).--May 10 (0030) 546 cfs (6.23 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 7 to Mar. 30 (no gage-height record Dec. 31 to Jan. 8, Jan. 12 to Feb. 5).

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 1963.

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

Average discharge.--10 years, 8.43 cfs (6,100 acre-ft per year).

Extremes.--Maximum discharge during year, 77 cfs Apr. 30 (gage height, 3.59 ft); maximum gage height, 4.14 ft Mar. 22 (backwater from ice); minimum daily discharge, 0.2 cfs Dec. 25.

1953-63: 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)  
(Shifting-control method used Apr. 30 to May 6)

1.9	0.3	2.5	8.4
2.0	.8	2.7	14
2.1	1.7	3.0	29
2.3	4.6	3.1	34

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.1	1.2	1.2			3.2	7.6	24	22	3.8	4.6	0.8
2	1.8	1.2	1.2			3.0	5.3	18	22	3.7	4.6	.9
3	*1.7	1.2	1.2			2.8	3.8	16	24	3.7	6.4	.6
4	1.7	1.2	1.4			3.0	3.4	18	25	7.2	5.0	.4
5	1.8	1.2	*1.4		(*)	*3.4	3.8	18	24	4.2	2.5	.3
6	2.7	1.2	1.4			3.8	5.1	18	20	3.1	1.7	.3
7	2.7	*.8	1.2			4.0	5.9	19	17	3.0	*1.8	1.1
8	2.4	.6	1.2	(*)		4.0	9.5	24	16	2.7	7.5	2.0
9	2.5	.9	1.2			4.0	7.2	24	16	2.8	4.2	2.0
10	2.5	1.2	1.0			4.2	*6.0	26	15	2.8	2.7	1.6
11	2.3	.8	1.0			3.8	4.2	26	13	*2.5	2.3	*1.5
12	2.3	.8	1.0			3.4	3.8	22	12	2.4	2.7	1.4
13	2.0	1.0	1.0			3.2	5.1	13	13	2.4	4.4	1.3
14	2.3	1.4	.8			3.2	6.4	14	13	2.1	3.2	2.4
15	2.5	1.6	1.2			3.2	7.4	*14	14	2.1	2.0	2.4
16	2.4	1.2	1.6	2	2.5	3.4	5.7	18	13	3.1	1.2	1.7
17	2.4	.8	1.6			3.2	4.8	14	12	4.6	.8	1.5
18	1.7	.8	1.6			3.2	4.4	14	10	6.6	.6	1.4
19	1.2	.6	1.4			3.2	4.2	15	*11	6.4	.6	1.5
20	1.2	.8	1.2			3.2	4.0	12	11	6.4	.5	4.7
21	1.1	1.0	1.2			4.0	4.0	14	9.9	6.4	.7	9.9
22	1.0	1.0	1.2			6	4.0	18	9.1	6.6	.9	2.8
23	1.0	1.2	1.0			10	3.7	18	8.4	6.4	1.4	1.7
24	1.0	1.4	.7			8	3.8	32	7.6	7.0	1.8	1.0
25	1.0	1.5	.2			7	3.8	26	7.0	6.2	1.7	.7
26	1.0	1.5	.4			6	5.0	24	6.2	6.0	1.4	.6
27	.9	1.4	.5			6	8.6	24	5.7	5.7	1.1	.6
28	.9	1.2	.6			7	8.0	20	5.0	5.5	.8	.6
29	1.1	1.2	.8			7.5	21	22	4.4	5.3	.6	.6
30	1.1	1.2	.8			6.8	*30	23	4.3	5.1	.6	.6
31	1.2	-----	1.0			9.5	-----	26	-----	5.0	.6	-----
Total	53.5	33.1	33.2	62	70.0	146.2	199.5	614	390.6	140.8	70.9	48.9
Mean	1.73	1.10	1.07	2	2.5	4.72	6.65	19.8	13.0	4.54	2.29	1.63
Ac-ft	106	66	66	123	139	290	396	1,220	775	279	141	97

Calendar year 1962: Max 63 Min 0.2 Mean 10.3 Ac-ft 7,430

Water year 1962-63: Max 32 Min 0.2 Mean 5.10 Ac-ft 3,700

Peak discharge (base, 70 cfs).--Apr. 30 (1900) 77 cfs (3.59 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 9-24, Nov. 28 to Dec. 3, Dec. 6 to Mar. 29.



## 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.

Drainage area.--3,020 sq mi, approximately.

Records available.--October 1961 to September 1963.

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, 2,770 cfs May 10 (gage height, 4.31 ft); minimum daily, 0.2 cfs July 31 to Aug. 6. 1961-63: Maximum discharge, about 10,000 cfs Mar. 28, 1962 (gage height, 8.0 ft, from floodmark, present datum); minimum daily, 0.1 cfs Sept. 14-20, 1962.

Remarks.--Records good except those for periods of ice effect, which are poor. Diversions for irrigation of about 15,000 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. 26-30)

0.2	0.1	0.7	13	2.5	780
.3	.3	1.0	50	3.0	1,180
.4	1.0	1.3	115	4.0	2,310
.5	3.2	1.6	230		
.6	6.5	2.0	450		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.9	60	50	46	80	90	510	614	1,350	11	0.2	15
2	1.9	56	50	48	120	95	450	696	1,250	13	.2	8.4
3	1.9	56	55	48	200	90	335	780	1,450	11	.2	10
4	* 1.7	58	70	48	180	85	230	970	1,510	16	.2	8.4
5	2.5	66	* 55	48	140	80	208	1,310	1,380	13	.2	6.5
6	27	56	40	46	130	* 75	190	1,490	1,240	8.4	.2	66
7	108	* 55	55	46	120	90	212	1,630	1,030	6.5	* 13	195
8	23	46	70	* 46	110	90	318	1,910	906	7.2	43	274
9	28	46	60	46	100	90	614	2,040	850	13	29	139
10	15	50	60	46	90	90	* 710	2,250	822	23	9.1	68
11	12	50	40	40	80	85	523	2,310	689	* 4.8	5.8	* 48
12	15	46	60	36	90	80	352	2,120	614	3.9	83	38
13	16	50	65	30	90	70	313	1,660	562	3.0	273	24
14	21	55	60	34	100	80	368	1,460	530	2.8	38	18
15	19	60	55	38	110	90	462	1,300	971	2.8	7.2	14
16	17	60	60	44	110	90	510	1,310	738	1.4	3.0	11
17	22	55	65	42	110	95	530	* 1,270	668	1.0	1.5	9.8
18	38	50	65	40	110	100	543	1,280	496	.9	1.2	9.1
19	42	34	65	36	110	95	384	1,350	* 456	.7	1.5	21
20	40	55	65	38	110	90	296	1,340	390	.6	128	13
21	47	65	60	36	110	318	270	1,290	324	.9	362	15
22	48	60	60	34	110	510	260	1,360	265	2.1	70	42
23	47	55	55	34	100	647	245	1,320	230	.9	52	44
24	46	60	50	34	95	820	221	1,390	185	.9	38	40
25	52	60	44	36	90	486	221	1,810	139	.9	136	34
26	50	55	40	38	90	379	221	1,610	80	.6	35	27
27	47	55	44	40	90	504	352	1,540	46	.4	31	21
28	47	55	46	42	90	575	601	1,410	35	.4	21	16
29	52	50	46	44	-	575	* 717	* 1,430	21	.4	9.1	12
30	54	50	46	48	-----	490	568	1,410	11	.3	5.2	10
31	58	-----	46	60	-----	504	-----	1,410	-----	.2	21	-----
Total	1,000.9	1,629	1,702	1,292	3,065	7,618	11,740	45,070	19,228	152.0	1,418.6	1,257.2
Mean	32.3	54.3	54.9	41.7	109	246	391	1,454	641	4.90	45.8	41.9
Ac-ft	1,990	3,230	3,380	2,560	6,080	15,110	23,290	89,400	38,140	301	2,810	2,490

Calendar year 1962: Max 8,000 Min 0.1 Mean 739 Ac-ft 535,000  
Water year 1962-63: Max 2,310 Min 0.2 Mean 261 Ac-ft 188,800

Peak discharge (base, 3,400 cfs).--No peak above base.

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 7-9, Nov. 11 to Mar. 20 (no gage-height record Dec. 25 to Jan. 8, Jan. 12 to Feb. 11).

9-2600. Little Snake River near Lily, Colo.

Location.--Lat 40°32'50", long 108°25'25", in NW¼NE¼ 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 1963. 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.--42 years (1921-63), 564 cfs (408,300 acre-ft per year).

Extremes.--Maximum discharge during year, 2,660 cfs May 12 (gage height, 4.21 ft); no flow Oct. 4, 5.

1904, 1921-63: 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, 11.1 ft (from floodmark, backwater from ice), 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 period of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 1 to Dec. 11, Mar. 13-20)

0.2	0	0.6	11	2.0	370
.3	.4	.8	30	2.5	705
.4	1.8	1.0	66	3.0	1,170
.5	5.5	1.5	185	4.1	2,500

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.4	35	66	55	100	100	529	588	1,370	38	0.2	30
2	.5	33	58	55	170	100	633	633	1,360	28	.4	25
3	.2	38	64	55	260	85	633	705	1,300	13	1.2	20
4	0	44	* 72	55	200	75	* 558	790	1,420	50	.5	12
5	0	* 42	62	55	170	80	405	994	1,530	35	.4	* 7
6	.2	38	35	55	150	90	338	1,410	1,360	25	.2	11
7	.5	38	56	50	130	* 95	317	1,580	1,270	20	* 1.5	13
8	1.4	33	66	* 50	* 120	100	348	1,660	1,200	10	1.4	150
9	* 9.9	42	47	50	90	100	390	1,960	1,100	* 55	9.9	293
10	29	47	56	50	80	100	558	2,020	1,000	53	166	152
11	19	44	24	44	75	90	984	2,220	900	26	33	140
12	14	40	40	40	95	60	618	2,370	800	27	21	99
13	11	37	60	36	110	58	462	* 2,250	700	27	90	78
14	6.6	47	70	30	120	78	380	1,660	600	16	320	62
15	6.0	58	75	34	140	80	370	1,480	800	12	200	40
16	4.8	55	70	38	130	82	468	1,360	1,100	3.6	60	23
17	4.8	51	75	46	120	99	602	1,370	* 937	4.0	30	23
18	7.7	60	75	46	120	109	633	1,320	625	4.8	10	17
19	10	27	75	46	120	105	673	1,320	522	4.4	20	14
20	10	66	75	36	120	99	515	1,370	432	3.6	50	16
21	13	88	70	40	120	123	405	1,390	405	4.4	160	26
22	17	76	70	36	120	128	370	1,340	348	13	450	56
23	18	64	65	36	110	232	338	1,380	297	12	180	17
24	21	72	60	36	100	529	321	1,390	246	44	50	17
25	26	70	55	38	100	835	305	1,420	212	9.9	70	30
26	28	64	44	40	100	782	285	1,900	194	2.9	180	33
27	29	66	40	44	100	432	285	* 1,650	158	1.2	120	32
28	32	70	46	46	100	420	330	1,550	101	.8	65	28
29	33	66	50	50	-	588	* 515	1,420	60	.5	40	19
30	35	66	50	60	-----	681	918	1,370	51	.4	20	15
31	37	-----	55	70	-----	665	-----	1,370	-----	.3	9	-----
Total	426.0	1,577	1,826	1,422	3,460	7,200	14,486	45,250	22,398	544.8	2,359.7	1,698
Mean	13.7	52.6	58.9	45.9	124	232	483	1,460	747	17.6	76.1	56.6
Ac-ft	845	3,130	3,620	2,820	6,860	14,280	28,730	89,750	44,430	1,080	4,680	3,370

Calendar year 1962: Max 9,000 Min 0 Mean 752 Ac-ft 544,700  
Water year 1962-63: Max 2,370 Min 0 Mean 281 Ac-ft 203,600

Peak discharge (base, 3,500 cfs).--No peak above base.

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 12 to Mar. 12 (no gage-height record Dec. 26 to Feb. 4). No gage-height record June 8-16, July 4-9, Aug. 14 to Sept. 5.

## 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 1963.

Gage.--Water-stage recorder. Altitude of gage is 9,600 ft (from topographic map).

Average discharge.--7 years, 27.8 cfs (20,130 acre-ft per year).

Extremes.--Maximum discharge during year, 146 cfs May 22 (gage height, 6.52 ft); minimum daily, 7.8 cfs Sept. 17-20.

1956-63: 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. Natural regulation by Trapper's Lake.

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

4.6	6.0	6.0	85
4.7	8.0	6.5	142
5.0	16	7.0	214
5.5	40		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9.8	12	10				12	14	75	15	10	13
2	9.6	12	10				12	14	75	15	11	12
3	11	12	11				13	14	70	16	14	12
4	12	11	12				12	15	62	17	14	11
5	12	11	13				11	18	* 61	17	15	11
6	12	11	* 13				11	21	58	16	16	13
7	12	10	12				11	24	54	15	18	20
8	13	* 9.8	12				13	28	52	15	17	18
9	12	10	12				13	34	49	17	* 16	13
10	* 12	11	12				13	42	45	16	15	14
11	12	12	12				12	46	39	16	16	13
12	12	12					12	48	35	* 17	16	* 13
13	12	11					13	46	34	17	16	13
14	12	11					14	46	32	16	14	14
15	11	12					15	44	32	14	13	14
16	12	12		10	12		15	* 49	35	14	12	12
17	13	12					14	56	36	13	13	7.8
18	14	12					14	73	37	13	13	7.8
19	16	12					14	103	38	12	12	7.8
20	16	12					13	122	* 35	11	12	7.8
21	16	12	12				12	136	32	12	12	10
22	15	12					12	143	28	12	12	11
23	15	12					12	136	25	12	12	11
24	14	11					11	128	23	13	11	10
25	14	11					* 11	11	122	21	13	10
26	14	11					11	13	109	20	12	9.6
27	14	11					10	15	98	19	11	9.6
28	14	11					11	16	93	18	11	9.2
29	13	11					12	16	87	16	10	8.8
30	13	10					12	14	85	16	10	8.8
31	12	-----					12	-----	85	-----	9.8	-----
Total	399.4	339.8	369	31.0	336	343	389	2,079	1,172	427.8	412	345.2
Mean	12.9	11.3	11.9	10	12	11.1	13.0	67.1	39.1	13.8	13.3	11.5
Ac-ft	792	674	732	615	666	680	772	4,120	2,320	849	817	685

Calendar year 1962: Max 190 Min 9.6 Mean 31.0 Ac-ft 22,470  
 Water year 1962-63: Max 143 Min 7.8 Mean 19.0 Ac-ft 13,720

\* Discharge measurement made on this day.

Note.--No gage-height record Nov. 13-16, Dec. 12 to Mar. 25 (stage-discharge relation affected by ice during part of period).

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 1963. 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.--10 years, 307 cfs (222,300 acre-ft per year).

Extremes.--Maximum discharge during year, 1,100 cfs May 9 (gage height, 4.48 ft); maximum gage height, 4.80 ft Jan. 14 (backwater from ice); minimum daily discharge, 95 cfs Dec. 27.

1903-6, 1956-63: Maximum daily discharge, 1,950 cfs June 8, 1905; minimum daily, 95 cfs Dec. 27, 1962

Remarks.--Records good except those for period of ice effect, which are poor. Diversions above station for irrigation of a few hay meadows.

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

2.8	100	4.0	700
3.0	165	4.2	850
3.5	400		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	193	173	151	140	190	137	201	* 260	450	193	158	169
2	189	177	148	150	180	134	* 185	265	485	193	173	154
3	189	173	154	160	169	134	154	330	515	201	201	148
4	185	173	154	160	169	134	154	428	* 438	205	189	144
5	193	173	* 154	150	169	130	165	509	428	197	177	144
6	201	173	154	150	162	* 137	193	557	390	185	169	173
7	193	158	154	140	162	137	255	611	360	185	165	210
8	* 193	162	154	150	158	144	295	694	345	181	* 158	165
9	193	* 169	151	160	158	140	255	810	360	197	165	154
10	189	165	144	* 190	158	137	228	802	340	189	181	151
11	185	162	151	140	165	134	214	786	310	* 201	181	* 151
12	185	158	151	120	140	134	255	687	295	205	173	148
13	185	162	148	100	* 127	130	315	635	290	201	165	154
14	181	173	144	100	148	130	345	611	280	189	154	173
15	189	173	148	100	144	130	310	* 605	275	189	154	165
16	210	165	144	100	144	134	228	668	330	189	151	151
17	214	154	144	110	144	130	205	687	295	185	173	148
18	201	169	140	120	140	130	197	735	335	177	169	140
19	232	165	140	130	137	130	189	770	* 306	173	151	140
20	214	173	137	140	137	127	173	721	290	173	148	154
21	205	169	137	150	137	130	169	742	280	185	151	181
22	201	162	144	150	134	140	162	749	260	189	154	151
23	193	158	140	150	134	154	158	735	250	181	162	148
24	189	158	140	140	130	148	169	714	236	177	154	144
25	177	158	121	140	130	140	201	654	232	173	148	140
26	181	158	110	140	134	144	280	593	223	169	151	134
27	181	154	95	140	140	154	315	563	218	169	162	130
28	177	154	100	140	137	173	236	533	218	165	154	134
29	173	154	110	140	-	173	218	509	197	165	148	134
30	173	151	120	150	-----	169	232	509	197	165	151	134
31	173	-----	130	160	-----	193	-----	485	-----	158	173	-----
Total	5,937	4,926	4,312	4,310	4,177	4,391	6,656	18,957	9,427	5,704	5,063	4,566
Mean	192	164	139	139	149	142	222	612	314	184	163	152
Ac-ft	11,780	9,770	8,550	8,550	8,280	8,710	13,200	37,600	18,700	11,310	10,040	9,060

Calendar year 1962: Max 1,380 Min 95 Mean 335 Ac-ft 242,200  
Water year 1962-63: Max 810 Min 95 Mean 215 Ac-ft 155,600

Peak discharge (base, 1,000 cfs).--May 9 (1930) 1,100 cfs (4.48 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 26 to Feb. 2 (no gage-height record Jan. 15-29).

## 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 1963. 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.--18 years, 316 cfs (228,800 acre-ft per year).

Extremes.--Maximum discharge during year, 1,110 cfs May 9 (gage height, 5.51 ft); minimum daily, 100 cfs Dec. 27. 1910-15, 1919-20, 1951-63: 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 ice effect or 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 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	230	216	172	150	220	139	233	* 308	440	193	165	196
2	230	216	170	160	200	141	* 212	312	485	193	172	175
3	230	208	170	170	190	141	181	385	505	205	193	170
4	226	205	170	170	180	139	172	500	* 435	205	190	165
5	240	205	* 170	160	170	137	197	582	425	196	181	165
6	256	205	168	160	160	* 143	222	650	390	190	178	184
7	244	193	170	150	160	141	288	698	365	196	178	240
8	* 236	196	170	160	160	143	342	761	347	199	* 175	187
9	230	* 202	162	170	160	141	296	894	356	212	178	172
10	222	208	155	* 180	160	141	268	866	352	202	193	172
11	219	208	158	150	160	145	252	852	312	* 205	193	* 172
12	219	196	160	130	140	145	288	754	296	208	187	168
13	216	205	158	110	* 120	145	360	680	284	202	181	175
14	216	208	152	110	132	141	400	662	280	190	170	187
15	230	212	162	110	139	145	365	* 620	272	190	170	175
16	248	205	158	110	134	145	268	692	324	190	168	168
17	252	190	158	120	134	145	244	704	296	190	190	165
18	240	202	158	140	136	146	226	740	329	178	184	160
19	280	196	158	140	139	145	208	761	* 308	175	170	158
20	260	208	158	160	139	145	196	728	284	172	168	175
21	248	202	158	170	136	146	193	734	276	187	172	178
22	240	193	160	170	136	158	181	747	256	190	178	155
23	233	187	160	160	136	175	172	734	240	184	184	150
24	230	187	155	150	134	170	193	704	222	181	178	152
25	226	187	136	150	134	162	226	644	216	170	170	152
26	226	184	120	150	136	170	316	576	212	170	175	148
27	226	178	100	150	139	184	370	545	205	168	187	148
28	222	175	110	160	137	205	280	520	193	168	181	148
29	219	175	120	160	-	199	260	500	193	165	175	150
30	219	172	130	160	-----	202	284	495	199	168	175	148
31	216	-----	140	170	-----	230	-----	485	-----	168	195	-----
Total	7,229	5,924	4,746	4,660	4,221	4,854	7,683	19,833	9,297	5,810	5,558	5,058
Mean	233	197	153	150	151	157	256	640	310	187	179	169
Ac-ft	14,340	11,750	9,410	9,240	8,370	9,630	15,240	39,340	18,440	11,520	11,020	10,030

Calendar year 1962: Max 1,470 Min 100 Mean 362 Ac-ft 261,800

Water year 1962-63: Max 894 Min 100 Mean 233 Ac-ft 168,300

Peak discharge (base, 1,000 cfs).--May 9 (2100) 1,110 cfs (5.51 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 30 to Jan. 10, Jan. 25 to Feb. 2. No gage-height record Dec. 26-28, Jan. 11-24, Feb. 3-13 (stage-discharge relation affected by ice during most of periods).

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 1963. 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.--13 years, 260 cfs (188,200 acre-ft per year).

Extremes.--Maximum discharge during year, 1,820 cfs May 19 (gage height, 5.90 ft); minimum daily, 80 cfs Dec. 26, 27.

1919-20, 1951-63: 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 period of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used May 27 to July 21)

3.0	96	4.5	620
3.3	137	5.0	1,020
3.6	205	5.6	1,580
4.0	355		

Discharge, in cubic feet per second, water year October 1962 to September 1963												
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	149	131	128	120	160	110	147	* 168	560	153	120	126
2	147	131	126	130	150	110	* 137	175	572	153	130	119
3	145	130	130	140	130	110	124	190	560	151	141	114
4	143	130	131	140	120	100	125	251	* 518	151	136	112
5	147	128	* 128	140	120	110	128	319	512	145	134	112
6	151	130	120	130	110	* 110	131	382	450	139	143	125
7	145	120	136	120	110	100	137	450	405	136	147	185
8	* 140	122	126	120	110	95	164	560	382	137	* 134	149
9	140	* 126	128	130	110	90	149	697	386	147	132	136
10	130	130	110	* 120	110	90	143	930	364	137	141	130
11	130	128	114	100	95	90	139	1,050	327	* 134	141	* 124
12	130	124	122	85	85	* 90	145	975	303	137	149	119
13	130	128	108	85	* 85	95	166	885	287	137	151	122
14	130	131	108	90	90	95	192	966	283	131	134	128
15	140	134	124	95	100	95	188	* 903	275	131	128	125
16	150	132	125	100	95	95	171	1,200	319	132	125	119
17	140	120	122	110	100	100	159	1,270	339	134	132	118
18	149	134	124	110	110	100	151	1,450	347	134	134	114
19	164	128	125	100	100	106	141	1,580	* 335	137	125	113
20	155	134	126	95	100	107	145	1,440	291	136	122	116
21	147	132	120	100	110	112	136	1,430	267	136	124	128
22	143	126	120	110	100	119	132	1,230	239	132	122	116
23	141	130	110	110	100	131	128	1,050	223	131	122	108
24	139	128	100	110	100	126	134	1,030	202	145	122	108
25	136	131	90	110	100	119	134	1,070	185	136	118	107
26	136	132	80	110	100	126	159	939	180	134	118	105
27	134	128	80	110	110	132	208	894	173	131	120	105
28	134	125	85	120	110	151	178	800	166	130	119	104
29	132	125	90	130	-	153	159	746	162	126	116	104
30	132	130	100	140	-----	141	157	704	153	124	116	104
31	132	-----	110	150	-----	147	-----	584	-----	122	120	-----
Total	4,361	3,858	3,546	3,560	3,020	3,455	4,507	26,318	9,765	4,239	4,016	3,595
Mean	141	129	114	115	108	111	150	849	326	137	130	120
Ac-ft	8,650	7,650	7,030	7,060	5,990	6,850	8,940	52,200	19,370	8,410	7,970	7,130

Calendar year 1962: Max 1,800 Min 80 Mean 328 Ac-ft 237,300  
Water year 1962-63: Max 1,580 Min 80 Mean 203 Ac-ft 147,200

Peak discharge (base, 1,300 cfs)--May 19 (0330) 1,820 cfs (5.90 ft).

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 8-17, Dec. 26 to Mar. 12. Stage-discharge relation affected by ice Dec. 22 to Mar. 18.

## 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 1963.

Gage.--Water-stage recorder. Prior to Sept. 7, 1957, at site 35 ft upstream at same datum.

Average discharge.--8 years, 15.4 cfs (11,150 acre-ft per year).

Extremes.--Maximum discharge during year, 104 cfs May 7 (gage height, 2.57 ft); maximum gage height, 2.92 ft sometime during period Jan. 12 to Feb. 13 (ice jam); minimum daily discharge, 0.1 cfs July 22, 25-31, Aug. 1.

1955-63: 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, which are poor. Small diversions above station for irrigation of hay meadows. One diversion above station for irrigation below station along the White River.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Nov. 14-16, Nov. 20 to Dec. 5,  
Dec. 19, Mar. 18, Mar. 24 to May 31)

1.2	0.1	1.7	6.0
1.3	.2	1.9	14
1.4	.8	2.2	35
1.5	1.6	2.6	78
1.6	3.5		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.6	3.1	3.8	2.2	8	4.6	12	* 26	1.3	0.3	0.1	0.8
2	2.6	3.1	3.8	2.4	7	4.4	* 10	24	1.3	.3	.2	.7
3	2.4	2.9	4.0	2.4	6.5	4.4	11	29	3.8	.4	.2	.6
4	2.6	2.9	4.0	2.6	6	4.2	9.2	47	* 3.1	.4	.4	.5
5	2.6	2.7	* 4.0	2.4	6	3.8	8.8	58	2.4	.4	.4	.6
6	2.7	2.2	3.8	2.4	5.5	* 3.8	9.5	62	1.8	.3	.4	.6
7	2.9	2.2	3.8	2.4	5.5	4.0	11	71	1.2	.2	.4	1.1
8	* 2.9	2.2	3.8	2.4	5.5	4.0	18	73	1.0	.2	* .4	.8
9	2.4	* 2.4	3.8	* 2.6	5	4.0	16	77	1.2	.4	.4	.6
10	2.4	2.7	3.6	* 2.4	5	3.8	15	70	1.4	.5	.4	.5
11	2.2	2.9	3.6	2.2	4.8	3.8	14	67	1.1	* .4	.4	* .5
12	2.2	2.8	3.6	2.0	4.4	3.6	15	55	.7	.3	.2	.4
13	2.0	3.0	3.6	2.0	* 4.6	3.4	15	45	1.0	.3	.2	.5
14	2.2	3.5	3.4	2.0	4.8	3.4	26	41	.8	.3	.2	.6
15	2.6	4.0	3.6	2.0	4.8	3.6	25	* 34	.7	.3	.2	.6
16	2.9	4.0	3.6	2.0	4.8	3.2	19	32	1.0	.3	.2	.6
17	3.5	3.8	3.6	2.2	4.8	3.4	15	27	1.2	.3	.3	.5
18	3.8	4.0	3.4	2.4	4.8	3.5	14	16	1.3	.3	.4	.4
19	5.2	3.8	3.1	2.6	5	3.4	13	14	* 1.6	.2	.3	.4
20	5.0	3.5	2.8	2.6	5.5	3.4	13	12	1.4	.2	.4	.5
21	4.2	2.9	2.8	2.6	5	4.0	12	11	1.1	.2	.4	.5
22	4.0	3.3	2.8	2.6	4.8	8	12	8.4	1.0	.1	.5	.5
23	4.0	3.5	2.8	2.6	4.8	11	10	8.4	.8	.2	.6	.5
24	3.8	3.8	2.6	2.6	4.6	9.2	11	9.2	.7	.2	.6	.4
25	3.8	4.0	2.2	2.6	4.6	9.2	12	8.4	.6	.1	.6	.4
26	3.5	4.2	2.0	2.6	4.6	8.8	17	5.2	.4	.1	.7	.4
27	3.5	4.0	1.6	2.8	4.4	8.8	26	3.3	.3	.1	.7	.4
28	3.5	4.2	1.8	2.8	4.4	9.5	22	3.3	.3	.1	.6	.3
29	3.5	3.8	2.0	3.0	-	11	21	3.1	.3	.1	.6	.3
30	3.1	3.5	2.0	3.6	-----	10	21	1.6	.3	.1	.5	.3
31	2.9	-----	2.2	4.4	-----	10	-----	1.4	-----	.1	.7	-----
Total	97.5	98.9	97.5	78.4	145.5	175.2	453.5	943.3	35.1	7.7	12.7	15.8
Mean	3.15	3.30	3.15	2.53	5.20	5.65	15.1	30.4	1.17	0.25	0.41	0.53
Ac-ft	193	196	193	156	289	348	900	1,870	70	15	25	31

Calendar year 1962: Max 224 Min 0.1 Mean 20.4 Ac-ft 14,760  
Water year 1962-63: Max 77 Min 0.1 Mean 5.92 Ac-ft 4,290

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

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 7-9, 12, 13, 17-19, Dec. 6-18, Dec. 20 to Mar. 17 (no gage-height record Jan. 12 to Mar. 6), Mar. 19-23.

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 1963.

Gage.--Water-stage recorder. Altitude of gage is 6,400 ft (from topographic map).

Extremes.--Maximum discharge during year, 2,210 cfs May 19 (gage height, 4.09 ft); minimum daily, 127 cfs July 30 to Aug. 1.  
1961-63: Maximum discharge, 3,580 cfs May 13, 1962 (gage height, 5.41 ft); minimum daily, 127 cfs July 30 to Aug. 1, 1963.

Remarks.--Records good except those for period of ice effect, which are poor. Diversions above station for irrigation of about 8,000 acres above station and about 4,000 acres below.

Rating table, except period of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used July 10-12, Sept. 22-30)

1.0	113	2.5	720
1.2	150	3.0	1,110
1.5	240	4.0	2,100
2.0	450		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	364	369	320	290	400	270	428	480	762	190	127	288
2	374	364	316	310	380	270	* 414	465	818	178	136	264
3	374	364	320	330	330	260	360	510	846	172	193	256
4	369	360	324	350	320	260	348	666	734	190	236	244
5	374	356	* 316	320	320	* 250	360	853	714	178	233	248
6	396	356	304	310	320	260	382	1,030	624	172	216	272
7	392	344	324	310	310	250	436	1,160	565	172	230	374
8	* 382	344	312	310	310	250	550	1,410	565	170	* 288	328
9	378	* 356	320	* 320	310	260	500	1,610	600	196	264	296
10	374	356	292	330	300	270	470	1,810	530	* 212	268	288
11	374	352	300	290	280	270	436	1,860	450	222	284	* 292
12	369	340	312	290	240	270	455	1,720	410	244	296	296
13	364	344	304	210	* 240	270	545	1,490	410	272	308	300
14	360	360	296	210	270	260	630	1,560	410	196	284	324
15	374	374	320	290	300	270	630	* 1,380	418	172	272	308
16	396	360	312	290	290	280	505	1,660	500	172	256	268
17	414	332	312	290	280	300	460	1,730	455	168	256	252
18	392	356	308	290	300	308	450	1,860	475	148	272	248
19	450	348	320	290	280	308	414	2,020	* 465	138	244	248
20	450	352	324	290	280	304	414	1,880	414	134	240	256
21	418	356	304	310	290	316	392	1,870	369	144	244	308
22	410	340	300	290	280	348	382	1,760	320	155	252	276
23	396	344	310	300	280	396	360	1,560	296	136	256	268
24	392	336	300	290	270	364	374	1,510	276	140	252	256
25	387	328	260	300	270	332	374	1,510	256	134	244	248
26	382	328	210	290	270	340	470	1,290	240	132	244	240
27	382	324	200	300	270	369	636	1,190	233	138	256	226
28	378	316	200	310	280	396	515	1,080	222	132	256	216
29	374	312	220	300	-	414	455	* 990	196	128	252	219
30	374	316	250	310	-----	387	* 455	948	184	127	252	222
31	369	-----	270	350	-----	410	-----	884	-----	127	284	-----
Total	11,982	10,387	9,080	9,000	8,270	9,512	13,600	41,736	13,757	5,189	7,695	8,129
Mean	387	346	293	290	295	307	453	1,346	459	167	248	271
Ac-ft	23,770	20,600	18,010	17,850	16,400	18,870	26,980	82,780	27,290	10,290	15,260	16,120

Calendar year 1962: Max 3,390 Min 180 Mean 733 Ac-ft 530,600

Water year 1962-63: Max 2,020 Min 127 Mean 406 Ac-ft 294,200

Peak discharge (base, 2,000 cfs)--May 11 (0400) 2,080 cfs (3.97 ft); May 19 (0300) 2,210 cfs (4.09 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 22 to Mar. 16 (no gage-height record Jan. 13 to Feb. 13).



## 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 1963.

Gage.--Water-stage recorder. Altitude of gage is 6,820 ft (from topographic map).

Average discharge.--6 years, 5.54 cfs (4,010 acre-ft per year).

Extremes.--Maximum discharge during year, 16 cfs May 19 (gage height, 3.01 ft); minimum daily, 0.6 cfs July 31, Aug. 1.

1957-63: 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 ice effect, 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 table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

2.2	0.5
2.3	1.0
2.4	2.0
2.6	5.6
3.0	15

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.5	1.9					3.7	* 6.2	4.5	1.0	0.6	1.5
2	1.5	1.9					3.4	5.6	4.8	1.0	.8	1.3
3	1.5	1.9					* 2.8	7.0	6.6	.9	1.0	1.2
4	1.5	1.9					2.6	9.0	* 4.8	1.0	1.3	1.0
5	1.6	1.9				(*)	3.0	11	4.1	1.0	1.3	1.0
6	1.8	1.9	(*)				3.2	11	4.5	1.0	1.1	1.4
7	1.8	1.6					3.4	12	4.1	1.0	* 1.1	1.6
8	1.8	* 1.4					4.1	12	3.4	.9	1.1	1.2
9	1.8	1.4		(*)			3.9	12	3.4	.9	1.2	1.1
10	* 1.7	1.6					3.7	13	4.8	* 1.2	1.3	* 1.1
11	1.8					3.2	3.5	13	4.8	1.2	1.4	1.0
12	1.7				(*)		3.5	12	4.3	1.2	1.4	1.0
13	1.8						3.7	11	3.9	1.2	1.2	1.0
14	1.8						4.6	10	3.7	1.1	1.2	1.2
15	1.9						5.2	* 9.0	2.2	1.3	1.1	1.1
16	2.0		1.4	1.4	3.2		3.9	9.3	2.3	1.4	1.1	1.0
17	2.0						3.0	8.1	2.3	1.7	1.4	1.0
18	2.0						3.0	14	* 2.5	1.6	1.3	1.1
19	3.2						3.2	14	1.9	1.6	1.1	1.0
20	2.7	1.6					3.4	13	1.7	1.5	1.1	1.3
21	2.2						3.0	12	1.5	1.5	1.2	1.6
22	2.0						3.0	11	1.4	1.6	1.3	1.2
23	2.0					4.0	2.7	11	1.2	1.7	1.7	1.2
24	1.9						2.5	9.3	1.2	1.6	1.6	1.7
25	1.9					(*)	2.5	7.6	.8	1.6	1.5	1.7
26	1.9						5.0	4.8	10	.8	1.4	1.6
27	1.9						5.0	6.6	8.1	.8	.9	1.6
28	1.9						5.0	5.6	6.2	.8	.8	1.3
29	1.9						4.6	6.4	5.8	.8	.8	1.3
30	1.9						4.5	6.0	5.4	1.0	.7	1.3
31	1.9						4.3	5.0	5.0	.6	1.8	1.6
Total	58.8	49.4	43.4	43.4	89.6	112.4	113.9	303.6	84.9	36.9	39.3	38.5
Mean	1.90	1.65	1.4	1.4	3.2	3.63	3.80	9.79	2.83	1.19	1.27	1.28
Ac-ft	117	98	86	86	178	223	226	602	168	73	78	76

Calendar year 1962: Max 65 Min 0.9 Mean 8.24 Ac-ft 5,960

Water year 1962-63: Max 14 Min 0.6 Mean 2.78 Ac-ft 2,010

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

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 7 to Mar. 27 (no gage-height record Nov. 8 to Mar. 25), Mar. 29, Apr. 3, 4.

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 1963. 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, end 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.**--59 years, 630 cfs (456,100 acre-ft per year).

**Extremes.**--Maximum discharge during year, 2,240 cfs May 19 (gage height, 2.87 ft); minimum daily, 180 cfs July 31.

1901-6, 1909-63: 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. Diversion above station for irrigation of about 12,000 acres above station and about 3,000 acres below.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 7-12, June 29 to July 18)

-0.1	180	1.5	780
.4	295	2.0	1,190
1.0	530	2.8	2,140

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	445	417	361	330	450	333	480	508	829	214	182	369
2	450	413	361	360	430	319	440	494	843	210	196	333
3	440	413	365	380	380	333	* 390	530	936	216	260	313
4	440	405	369	390	360	322	369	680	794	238	325	301
5	450	397	* 361	360	370	* 304	381	836	780	232	325	298
6	460	393	333	350	360	325	405	968	715	216	* 274	319
7	470	377	373	340	350	304	461	1,090	650	210	289	461
8	* 470	369	349	350	340	310	580	1,300	620	210	365	409
9	453	* 401	357	* 360	320	310	516	1,500	616	245	333	365
10	449	397	325	350	300	316	508	1,710	606	* 304	322	* 345
11	441	393	325	300	280	319	465	1,780	552	307	345	341
12	440	377	337	250	* 260	325	481	1,680	498	333	357	341
13	430	385	325	230	250	316	570	1,470	490	357	381	337
14	430	397	322	230	310	310	660	* 1,520	485	274	349	373
15	450	425	345	240	330	320	645	1,320	490	240	333	357
16	470	409	333	250	330	310	534	1,640	557	238	313	322
17	480	365	b 340	260	320	310	477	1,700	530	236	304	298
18	470	397	325	270	330	310	473	1,880	534	214	341	298
19	520	377	b 330	280	310	320	429	2,030	* 552	200	298	295
20	520	397	b 340	280	310	320	429	1,890	481	198	292	304
21	500	405	329	280	320	350	401	1,880	421	204	298	373
22	481	385	345	290	310	390	389	1,720	365	220	304	333
23	469	381	345	300	300	430	369	1,540	337	198	307	316
24	461	369	345	310	300	430	381	1,500	310	204	307	304
25	449	369	b 260	300	300	380	385	1,510	289	192	295	295
26	445	373	b 230	300	330	400	481	1,280	271	188	298	292
27	441	369	b 220	300	* 330	420	645	1,220	248	190	313	271
28	437	361	230	310	329	450	552	1,090	236	182	304	262
29	433	353	250	330	-	500	485	* 992	220	186	310	262
30	429	365	290	360	-----	480	* 491	960	208	182	298	268
31	425	-----	310	400	-----	470	-----	936	-----	180	329	-----
Total	14,148	11,634	10,030	9,640	9,209	11,036	14,262	41,154	15,463	7,018	9,547	9,755
Mean	456	388	324	311	329	356	475	1,328	515	226	308	325
Ac-ft	28,060	23,080	19,890	19,120	18,270	21,890	28,290	81,630	30,670	13,920	18,940	19,350

Calendar year 1962: Max 3,770 Min 200 Mean 766 Ac-ft 554,600  
Water year 1962-63: Max 2,030 Min 180 Mean 446 Ac-ft 323,100

Peak discharge (base, 2,100 cfs)--May 19 (0730) 2,240 cfs (2.87 ft).

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Oct. 2-8, 12-21, Dec. 28 to Feb. 27 (stage-discharge relation affected by ice during most of period), Mar. 14 to Apr. 3.

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 1963.

Gage.--Water-stage recorder. Altitude of gage is about 5,900 ft (estimated from nearby level line).

Extremes.--Maximum discharge during year, 2,180 cfs May 19 (gage height, 3.08 ft); minimum daily, 220 cfs Dec. 27, 28.

1961-63: Maximum discharge, 3,580 cfs May 13, 1962 (gage height, 3.88 ft); minimum daily, 220 cfs Jan. 10, Dec. 27, 28, 1962.

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)

0.6	220
.9	280
1.2	400
2.0	940
2.5	1,400
3.0	2,050

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	442	466	412	330	500	340	502	526	884	272	228	385
2	466	460	412	350	480	340	496	514	860	278	235	346
3	442	466	418	380	430	330	436	544	1,010	278	307	322
4	436	460	424	400	390	320	400	699	876	318	412	310
5	436	454	*412	380	380	*300	*412	860	839	283	478	301
6	466	454	380	370	380	310	442	1,020	797	249	*375	314
7	466	442	418	360	370	290	484	1,130	713	249	385	395
8	*460	424	400	350	360	310	601	1,260	664	247	460	448
9	448	*454	406	*350	350	320	587	1,440	650	*265	442	448
10	442	466	380	350	340	340	550	1,660	671	307	385	*375
11	424	466	375	300	320	*340	508	1,720	587	350	418	360
12	420	442	395	260	*300	334	514	1,680	538	355	424	350
13	412	448	390	240	260	334	594	1,480	508	380	430	338
14	412	466	380	240	290	310	692	*1,470	520	342	390	380
15	418	496	406	250	340	338	692	1,260	544	298	360	365
16	448	496	380	260	340	326	587	1,460	608	286	342	334
17	496	460	380	270	340	326	514	1,570	664	286	346	310
18	460	448	355	280	330	342	514	1,750	*594	265	400	314
19	520	442	375	280	320	338	460	1,960	657	245	360	310
20	601	460	380	290	320	334	466	1,860	580	245	334	310
21	526	466	365	300	340	355	424	1,840	532	247	334	375
22	514	448	375	310	340	395	412	1,710	442	265	334	350
23	502	442	400	310	320	466	380	1,530	395	251	342	322
24	496	436	370	320	320	502	390	1,470	350	258	334	310
25	484	424	260	320	320	395	385	1,480	314	245	334	301
26	484	436	240	320	340	395	460	1,320	301	234	326	304
27	484	430	220	320	360	430	657	1,240	292	234	338	286
28	478	412	220	320	350	460	587	*1,130	286	229	334	272
29	478	406	240	320	-	526	502	1,030	272	229	330	270
30	472	418	260	340	-----	472	*502	1,000	265	226	310	275
31	472	-----	300	380	-----	484	-----	980	-----	223	330	-----
Total	14,505	13,488	11,128	9,850	9,830	11,402	15,150	40,593	17,213	8,439	11,157	10,080
Mean	468	450	359	318	351	368	505	1,309	574	272	360	336
Ac-ft	28,770	26,750	22,070	19,540	19,500	22,620	30,050	80,520	34,140	16,740	22,130	19,990

Calendar year 1962: Max 3,380 Min 220 Mean 785 Ac-ft 568,500

Water year 1962-63: Max 1,960 Min 220 Mean 474 Ac-ft 342,800

Peak discharge (base, 2,000 cfs) May 19 (1100) 2,180 cfs (3.08 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 25 to Jan. 11, Feb. 13-20. No gage-height record Jan. 12 to Feb. 12, Feb. 21 to Mar. 11 (stage-discharge relation affected by ice during most of periods).

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 1963. 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, 1931, 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.--40 years (1923-63), 714 cfs (516,900 acre-ft per year).

Extremes.--Maximum discharge during year, 3,380 cfs Sept. 6 (gage height, 6.05 ft); minimum daily, 122 cfs Aug. 1. 1904-6, 1918, 1923-63: Maximum daily discharge, 8,160 cfs July 15, 1929; maximum gage height, 13.1 ft Feb. 11, 1962, from floodmark in well (backwater from ice); minimum discharge, 52 cfs July 19, 20, 1934; minimum daily, 53 cfs July 19, 1934.

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

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

2.5	110	3.5	630
2.8	210	4.0	1,100
3.0	300	5.0	2,100

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	431	431	392	350	500	380	445	494	850	178	122	694
2	417	431	392	400	560	424	480	487	773	164	128	466
3	431	431	398	420	610	392	487	487	773	182	140	368
4	438	431	* 404	450	580	335	* 459	487	930	194	511	* 330
5	431	* 424	404	400	540	345	410	566	800	198	515	315
6	431	424	392	350	520	360	392	764	737	230	480	962
7	452	410	392	310	500	* 380	404	890	694	186	* 380	1,090
8	459	410	404	* 310	* 500	380	445	1,030	630	161	345	515
9	* 452	398	410	310	490	398	543	1,130	574	* 190	410	522
10	445	410	404	320	470	368	574	1,280	550	158	494	452
11	438	424	431	300	420	362	508	1,500	574	182	445	410
12	431	424	392	250	360	356	480	1,560	522	238	529	398
13	424	417	392	220	340	340	466	* 1,510	466	242	459	386
14	417	410	380	200	360	345	508	1,340	417	255	417	368
15	417	438	368	200	400	345	630	1,310	417	270	356	374
16	417	473	350	220	390	335	652	1,180	438	226	310	392
17	438	473	398	260	380	345	598	1,310	* 494	198	300	356
18	480	445	410	300	400	340	536	1,400	574	190	431	340
19	473	410	392	320	390	345	515	1,550	501	186	410	325
20	487	424	438	290	370	362	480	1,720	558	164	325	392
21	582	431	445	270	380	356	452	1,660	501	152	300	1,240
22	522	445	410	300	370	368	438	1,560	459	174	480	582
23	501	445	404	320	370	410	410	1,510	386	226	1,060	374
24	487	424	315	350	360	480	398	1,390	340	255	670	320
25	473	424	140	360	350	522	368	1,340	305	186	574	290
26	466	410	130	370	350	438	374	1,320	275	174	380	265
27	459	410	130	380	360	398	404	* 1,240	242	171	335	255
28	452	410	140	400	360	404	558	1,100	230	149	410	250
29	452	398	180	420	-	452	* 622	1,000	210	143	356	234
30	438	392	220	440	-----	501	558	900	124	131	340	226
31	438	-----	300	460	-----	480	-----	880	-----	125	380	-----
Total	14,079	12,727	10,757	10,250	11,980	12,046	14,604	35,895	15,414	5,878	12,792	13,491
Mean	454	424	347	331	428	389	487	1,158	514	190	413	450
Ac-ft	27,930	25,240	21,340	20,330	23,760	23,890	28,970	71,200	30,570	11,660	25,370	26,760

Calendar year 1962: Max 5,010 Min 130 Mean 905 Ac-ft 655,100

Water year 1962-63: Max 1,720 Min 122 Mean 466 Ac-ft 337,000

Peak discharge (base, 2,900 cfs).--Sept. 6 (1900) 3,380 cfs (6.05 ft).

\* Discharge measurement made on this day.

Note.--No gage-height record Dec. 26 to Jan. 2, Jan. 23 to Feb. 4 (stage-discharge relation affected by ice most of periods). Stage-discharge relation affected by ice Jan. 3-22, Feb. 5 to Mar. 1, Mar. 6-8.

## 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 1963. 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.--7 years, 85.0 cfs (61,540 acre-ft per year).

Extremes.--Maximum discharge during year, 374 cfs May 17 (gage height, 4.42 ft); minimum not determined.

1956-63: Maximum discharge, 1,210 cfs June 6, 1957 (gage height, 6.32 ft); minimum daily determined, 3.4 cfs Dec. 2, 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		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	* 22	17	17				118	105	178	34	13	28
2	20	16	16				90	112	168	* 32	* 14	22
3	19	16	14				78	127	147	30	14	20
4	18	* 16	12				76	160	* 142	31	18	* 19
5	22	16	12				79	192	142	33	17	20
6	20	15	12				84	213	134	29	14	23
7	18	14	12				112	* 250	129	28	18	31
8	17	12	12				151	282	129	31	16	22
9	16	13	12				151	282	114	33	18	19
10	16	12	10				127	258	95	59	20	19
11	15	10	10			11	118	289	88	48	20	18
12	14	10	10				131	272	92	53	28	18
13	14	10	10				153	254	96	54	26	17
14	14	14	10				180	259	100	42	23	18
15	14	14	10				188	272	98	37	24	16
16	16	14	10	8.5	11		151	292	92	32	21	16
17	31	14	10				129	310	81	30	20	15
18	31	14	13				107	314	75	27	18	16
19	44	10	14				93	306	71	23	24	14
20	39	12	10				87	289	74	23	24	50
21	33	12	10			16	79	* 299	65	24	20	54
22	28	12	12			* 30	76	300	60	23	33	37
23	26	14	12			40	81	292	56	21	28	31
24	24	16	12			53	93	261	53	20	28	27
25	23	16	9			60	98	244	48	19	22	24
26	22	16	6.5			75	112	222	44	19	30	22
27	21	14	7			90	111	200	42	16	38	20
28	19	12	7.5			100	98	188	40	16	28	19
29	18	12	8			116	95	195	36	15	24	18
30	19	14	8.5			102	100	195	35	14	23	18
31	18	-----	9			118	-----	195	-----	14	28	-----
Total	670	407	337.5	263.5	308	1,020	3,346	7,388	2,724	910	692	701
Mean	21.6	13.6	10.9	8.5	11	32.9	112	238	90.8	29.4	22.3	23.4
Ac-ft	1,330	807	669	523	611	2,020	6,640	14,650	5,400	1,800	1,370	1,390

Calendar year 1962: Max 570 Min - Mean 95.4 Ac-ft 69,100  
 Water year 1962-63: Max 314 Min - Mean 51.4 Ac-ft 37,210

Peak discharge (base, 500 cfs).--No peak above base.

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 8, 11-13, 19-23, 27-30, Dec. 3-17, 20-24, Mar. 25-27, Apr. 2, 3. No gage-height record Dec. 25 to Mar. 22 (stage-discharge relation affected by ice during most of period).

9-3400. East Fork San Juan River near Pagosa Springs, Colo.

Location (revised).--Lat 37°22'00", long 106°53'30", in NW¼SW¼ sec.7, T.36 N., R.1 E., 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 1963. 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.--28 years, 119 cfs (86,150 acre-ft per year).

Extremes.--Maximum discharge during year, 490 cfs May 7 (gage height, 3.04 ft); maximum gage height, 3.31 ft Dec. 14 (ice jam); minimum daily discharge, 10 cfs Dec. 26.

1935-63: 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 table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.2	14	2.0	106
1.4	24	2.5	245
1.7	54	3.0	450

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	* 29	22	20	13	14	15	* 151	149	220	41	17	32
2	26	21	20	14	15	17	128	161	210	* 42	* 18	26
3	24	20	* 19	15	16	18	100	189	189	41	19	24
4	22	* 20	18	15	* 17	* 17	100	234	* 196	41	23	* 23
5	31	20	17	14	19	16	102	290	186	43	21	25
6	26	19	16	14	19	16	113	328	172	40	23	39
7	23	17	16	* 14	19	16	156	* 392	158	39	22	42
8	22	16	16	14	19	17	201	423	158	41	21	27
9	21	16	15	14	19	16	198	400	143	44	23	24
10	20	16	13	13	19	18	175	369	119	72	24	23
11	19	14	13	13	19	16	150	410	110	54	24	23
12	19	14	14	11	17	16	169	387	115	69	30	22
13	18	14	15	12	16	16	195	344	121	63	28	22
14	18	17	15	13	15	16	228	344	128	49	25	23
15	18	18	15	12	16	17	238	352	128	43	31	21
16	20	18	16	12	16	16	186	392	115	39	26	20
17	46	18	15	12	15	16	156	392	102	35	23	19
18	52	19	17	12	14	17	133	396	98	33	22	20
19	71	16	19	12	13	16	117	387	32	30	36	19
20	54	16	17	12	15	18	106	364	94	30	32	101
21	46	18	16	12	15	26	98	* 378	94	30	26	78
22	39	20	16	12	15	49	94	397	78	30	36	48
23	34	20	18	13	15	72	102	378	72	27	34	40
24	30	22	15	14	15	81	124	332	64	26	33	35
25	30	21	14	14	16	85	128	308	62	24	26	30
26	28	21	10	13	18	108	146	284	56	23	48	29
27	27	18	11	12	17	128	149	266	50	22	48	26
28	25	18	11	12	16	126	133	245	49	20	34	25
29	23	18	12	12	-	153	128	242	47	19	30	23
30	23	20	12	12	-----	146	143	238	43	19	28	23
31	23	-----	13	13	-----	164	-----	231	-----	17	35	-----
Total	907	547	474	400	459	1,468	4,356	9,951	3,449	1,146	866	932
Mean	29.3	18.2	15.3	12.9	16.4	47.4	145	321	115	37.0	27.9	31.1
Ac-ft	1,800	1,080	940	793	910	2,910	8,640	19,760	6,840	2,270	1,720	1,850

Calendar year 1962: Max 790 Min 10 Mean 126 Ac-ft 91,460

Water year 1962-63: Max 423 Min 10 Mean 68.4 Ac-ft 49,510

Peak discharge (base, 600 cfs).--No peak above base.

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 8, 11-13, 19-23, 27-29, Dec. 4 to Mar. 2 (no gage-height record Jan. 19-23, 25-31), Mar. 5-7, 9, 11-14, 16, 17, 19-21, 25, Apr. 3.

## 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 1963. 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.--32 years, 374 cfs (270,800 acre-ft per year).

Extremes.--Maximum discharge during year, 1,540 cfs May 7 (gage height, 4.67 ft); minimum daily, 30 cfs Dec. 26, Aug. 1, 2.

1910-14, 1935-63: 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 ice effect or no gage-height record, which are poor. Diversions for irrigation of several thousand acres above station.

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

1.8	30	3.5	530
2.0	57	4.0	860
2.4	129	5.0	1,850
3.0	305		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	64	79	86	44	49	60	578	394	554	* 69	* 30	80
2	* 58	75	77	46	74	60	* 426	421	525	63	30	60
3	58	* 70	* 74	50	92	60	329	485	475	60	35	50
4	51	69	68	50	70	* 60	317	632	450	63	42	* 46
5	80	66	60	48	80	53	345	790	* 435	74	44	50
6	82	63	56	46	* 89	57	353	924	398	68	39	68
7	68	58	57	* 48	93	57	465	1,130	357	70	38	104
8	60	53	60	46	97	64	608	* 1,290	345	74	34	66
9	56	54	54	47	97	60	638	1,250	325	87	38	53
10	53	54	49	46	87	64	495	1,060	266	147	46	49
11	51	53	47	42	64	62	430	1,200	229	116	53	51
12	49	49	53	b 40	68	58	495	1,130	214	131	47	49
13	47	49	56	b 34	62	51	596	1,060	232	154	56	44
14	46	63	56	b 36	58	58	692	1,050	242	100	43	57
15	44	86	57	38	72	69	762	1,060	242	96	43	51
16	49	74	58	38	66	62	572	1,160	223	74	44	40
17	143	69	56	38	60	63	480	1,260	197	68	42	38
18	152	69	69	38	60	64	398	1,240	195	64	39	35
19	197	53	72	38	68	64	341	1,180	180	56	39	42
20	157	64	58	38	62	89	302	1,100	194	42	56	193
21	136	69	42	40	65	134	274	1,100	170	50	39	242
22	125	74	36	40	65	194	256	* 1,070	152	51	46	152
23	114	75	54	46	65	291	280	1,050	143	51	54	116
24	106	80	57	44	65	341	345	916	134	47	51	100
25	102	77	40	44	65	349	381	839	121	46	40	87
26	95	77	30	44	65	408	426	727	114	46	57	79
27	93	75	32	43	60	465	430	671	106	38	121	72
28	96	70	34	* 39	65	460	377	596	95	36	74	66
29	94	70	36	40	-	602	353	614	82	34	58	63
30	82	79	38	42	-----	566	381	614	74	34	56	58
31	80	-----	40	44	-----	596	-----	584	-----	32	69	-----
Total	2,668	2,016	1,662	1,317	1,973	5,641	13,125	28,597	7,459	2,131	1,503	2,261
Mean	86.1	67.2	53.6	42.5	70.5	182	438	922	249	68.7	48.5	75.4
Ac-ft	5,290	4,000	3,300	2,610	3,910	11,190	26,030	56,720	14,790	4,230	2,980	4,480

Calendar year 1962: Max 2,230 Min 19 Mean 359 Ac-ft 260,000

Water year 1962-63: Max 1,290 Min 30 Mean 193 Ac-ft 139,500

Peak discharge (base, 1,500 cfs).--May 7 (2300) 1,540 cfs (4.67 ft); May 16 (2230) 1,520 cfs (4.66 ft).

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 26 to Jan. 7, Jan. 15-22, Feb. 21 to Mar. 4, July 28 to Aug. 1.

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 1963.

Gage.--Water-stage recorder. Altitude of gage is 7,950 ft (from topographic map).

Average discharge.--28 years, 84.8 cfs (61,390 acre-ft per year).

Extremes.--Maximum discharge during year, 691 cfs July 12 (gage height, 2.63 ft); maximum gage height, 2.71 ft sometime during period Jan. 12 to Feb. 6 (ice jam); minimum daily discharge, 10 cfs Dec. 26, Aug. 1.

1935-63: 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, which are poor. Diversions for irrigation of about 350 acres above station.

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

1.3	8.0	2.0	175
1.4	15	2.3	370
1.5	27	2.5	530
1.7	75		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	22	20	27	13	16	15	120	108	132	* 21	* 10	27
2	* 20	* 19	25	14	18	14	* 96	120	126	21	12	21
3	17	19	25	14	20	14	96	151	* 111	20	16	19
4	15	17	23	15	19	13	81	200	111	21	48	16
5	23	17	* 22	15	20	13	81	244	111	26	44	* 21
6	20	17	20	14	* 22	* 14	93	* 290	108	27	53	36
7	16	15	20	13	22	14	135	354	102	23	26	40
8	15	14	20	13	22	13	171	378	102	31	25	22
9	15	14	20	* 14	22	14	139	306	96	42	25	20
10	14	14	18	14	20	15	108	264	72	67	28	17
11	14	14	18	13	19	14	114	330	70	46	26	19
12	14	14	18	12	18	14	151	277	78	152	70	19
13	14	14	18	12	17	13	180	264	91	67	31	17
14	13	17	18	12	18	13	210	264	93	44	25	21
15	13	27	18	12	18	13	180	277	87	31	27	17
16	14	23	20	12	18	14	126	322	72	26	23	16
17	59	20	20	12	17	14	108	346	64	23	31	14
18	75	20	19	12	17	12	87	354	64	21	37	12
19	102	17	19	12	18	15	78	338	64	20	33	12
20	81	19	18	12	18	25	70	* 290	72	21	33	90
21	62	29	16	13	18	50	64	251	62	22	27	64
22	51	38	14	13	17	70	64	264	62	25	69	35
23	44	35	17	13	17	99	84	238	53	19	31	27
24	38	33	18	13	17	108	108	200	44	15	25	23
25	31	29	15	13	17	135	108	180	35	14	21	20
26	29	31	10	13	17	143	123	155	26	14	35	16
27	26	31	11	13	16	163	111	147	23	14	44	15
28	23	28	12	14	15	129	96	132	19	12	26	14
29	21	27	12	14	-	143	105	135	19	12	25	14
30	21	26	13	14	-----	126	111	135	19	11	25	14
31	20	-----	13	14	-----	132	-----	132	-----	11	27	-----
Total	942	658	557	407	513	1,584	3,398	7,446	2,178	919	978	718
Mean	30.4	21.9	18.0	13.1	18.3	51.1	113	240	72.6	29.6	31.5	23.9
Ac-ft	1,870	1,310	1,100	807	1,020	3,140	6,740	14,770	4,320	1,820	1,940	1,420

Calendar year 1962: Max 680 Min 8.0 Mean 83.3 Ac-ft 60,300

Water year 1962-63: Max 378 Min 10 Mean 55.6 Ac-ft 40,260

Peak discharge (base, 800 cfs).--No peak above base.

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 28, Dec. 5-17, Dec. 20 to Mar. 22 (no gage-height record Jan. 12 to Feb. 6, Feb. 15 to Mar. 6).



## 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 1963. 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.--27 years, 104 cfs (75,290 acre-ft per year).

Extremes.--Maximum discharge during year, 441 cfs May 17 (gage height, 3.08 ft); minimum daily, 17 cfs Dec. 26.

1936-63: 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, 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)  
(Shifting-control method used Jan. 5)

0.8	16	2.3	185
1.3	50	3.0	405
1.8	100		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	46	37	38	24	30	30	130	105	194	* 50	* 26	49
2	* 43	36	37	24	36	30	* 103	112	185	48	26	43
3	39	* 37	36	28	33	30	92	135	* 158	45	32	41
4	37	36	* 35	31	33	29	92	170	156	45	56	40
5	44	35	32	29	* 35	* 31	90	201	156	48	48	* 48
6	39	34	28	24	37	30	87	* 237	151	47	56	54
7	36	33	28	24	38	28	114	276	142	44	44	50
8	35	34	28	* 22	38	29	151	312	140	43	43	41
9	34	32	27	22	35	28	140	295	126	51	43	37
10	34	32	26	22	34	30	116	266	96	51	43	38
11	33	31	26	22	32	30	110	295	90	44	54	37
12	33	30	27	20	31	30	131	282	106	62	62	36
13	32	31	27	18	30	29	162	260	110	55	56	37
14	32	34	27	20	30	28	120	279	119	46	52	40
15	33	36	28	20	32	28	181	316	118	42	49	39
16	33	36	29	20	32	30	138	348	104	41	45	39
17	52	35	31	20	30	28	119	369	94	41	45	38
18	58	33	34	20	30	29	109	362	89	40	54	38
19	71	30	34	20	32	30	96	348	90	28	62	37
20	56	33	33	20	32	32	89	* 326	90	29	61	32
21	53	36	26	20	32	42	86	320	78	27	52	62
22	50	36	24	20	30	58	81	340	74	38	55	50
23	48	36	26	22	30	70	85	312	69	38	51	44
24	45	38	29	22	30	77	88	273	64	36	50	38
25	44	38	22	22	30	84	96	263	55	36	44	37
26	43	38	17	22	32	100	131	243	50	34	52	36
27	41	37	18	22	32	113	124	218	54	32	61	34
28	40	35	19	24	30	119	108	187	57	31	50	34
29	38	35	19	27	-	149	101	190	55	29	44	32
30	38	37	20	27	-----	130	104	201	52	27	46	31
31	38	-----	22	28	-----	138	-----	199	-----	26	52	-----
Total	1,298	1,041	853	706	906	1,669	3,444	8,040	3,122	1,254	1,514	1,262
Mean	41.9	34.7	27.5	22.8	32.4	53.8	115	259	104	40.5	48.8	42.1
Ac-ft	2,570	2,060	1,690	1,400	1,800	3,310	6,830	15,950	6,190	2,490	3,000	2,500

Calendar year 1962: Max 525 Min 17 Mean 106 Ac-ft 76,820  
Water year 1962-63: Max 369 Min 17 Mean 68.8 Ac-ft 49,790

Peak discharge (base, 500 cfs).--No peak above base.

\* Discharge measurement made this day.

Note.--Stage-discharge relation affected by ice, Dec. 21-23, 25-31, Jan. 1, 2, 6-28, Feb. 11, 13, 14, 17-20, 22-26, 28, Mar. 1, 2, 6, 7, 9, 11, 12, 14-17, 20, 21 (no gage-height record Jan. 15-21).

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 1963. Published as "near Chromo" 1956-58.

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

Average discharge.--7 years, 118 cfs (85,430 acre-ft per year).

Extremes.--Maximum discharge during year, 464 cfs May 17 (gage height, 4.79 ft); minimum daily, 18 cfs Dec. 26, 1956-63: 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, 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)

3.3	15	4.0	110
3.5	34	4.3	220
3.8	68	5.0	630

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	46	41	40	26	32	34	192	140	235	* 51	* 28	52
2	* 45	* 41	39	26	38	34	* 144	144	225	48	27	44
3	41	40	39	30	36	34	119	176	* 196	48	34	43
4	39	40	* 37	32	36	34	119	212	188	48	58	42
5	44	39	32	30	* 38	* 32	122	240	184	52	50	* 46
6	40	39	30	26	40	33	116	* 280	180	52	59	56
7	38	37	30	26	40	33	152	310	164	48	47	52
8	36	36	30	* 26	40	33	212	362	164	47	44	43
9	35	36	30	26	39	33	204	362	152	53	45	39
10	34	36	28	26	37	35	160	310	102	53	44	37
11	34	35	28	24	37	34	144	338	85	46	51	38
12	34	35	28	22	34	34	172	326	102	59	62	36
13	34	34	28	20	32	34	216	295	105	56	55	36
14	34	39	28	22	34	37	250	305	113	47	53	40
15	35	41	30	22	34	36	245	344	119	43	51	38
16	36	40	30	22	34	37	196	374	108	42	46	39
17	56	39	32	22	34	34	160	404	98	42	46	40
18	63	38	34	22	34	36	140	404	90	42	55	33
19	71	35	35	22	34	35	125	392	90	29	62	28
20	60	35	34	22	34	41	113	* 362	92	26	62	60
21	54	39	28	22	34	58	105	350	78	36	52	54
22	52	39	26	22	32	80	100	374	75	46	54	47
23	50	39	28	24	32	100	105	356	71	42	50	46
24	47	40	32	24	32	105	116	320	68	39	51	41
25	46	40	24	24	35	108	122	315	55	39	46	39
26	45	40	18	24	35	125	176	295	43	37	52	37
27	45	40	19	24	34	148	176	260	46	34	65	35
28	43	38	20	26	35	152	148	212	52	31	52	35
29	42	37	20	28	-	212	137	225	53	30	46	34
30	41	40	22	28	-----	192	140	245	53	28	48	31
31	41	-----	24	30	-----	200	-----	230	-----	27	52	-----
Total	1,361	1,148	903	770	986	2,173	4,626	9,252	3,386	1,321	1,547	1,241
Mean	43.9	38.3	29.1	24.8	35.2	70.1	154	298	113	42.6	49.9	41.4
Ac-ft	2,700	2,280	1,790	1,530	1,960	4,310	9,180	18,350	6,720	2,620	3,070	2,460

Calendar year 1962: Max 609 Min 6.4 Mean 121 Ac-ft 87,310  
Water year 1962-63: Max 404 Min 18 Mean 78.6 Ac-ft 56,970

Peak discharge (base, 550 cfs).--No peak above base.

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 5-17, 21-23, 25-31, Jan. 1 to Feb. 8, Feb. 12-20, 22-24, 27, Mar. 1, 5, 11-13, 17 (no gage-height record Dec. 31 to Jan. 8, Jan. 12 to Feb. 5).

## 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 1963. 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.--51 years, 159 cfs (115,100 acre-ft per year).

Extremes.--Maximum discharge during year, 473 cfs Mar. 23 (gage height, 4.51 ft); maximum gage height, 4.57 ft Feb. 5 (ice jam); minimum daily discharge, 22 cfs July 20.

1935-63: 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 period of ice effect, which are poor. Diversions for irrigation of about 1,700 acres above station.

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

2.8	16	3.4	112
2.9	24	4.0	270
3.1	50	4.5	495

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	57	44	50	34	46	42	237	178	220	* 44	* 28	65
2	* 52	43	47	36	60	43	* 199	178	218	46	28	52
3	47	* 43	46	36	60	43	153	199	* 199	42	36	47
4	43	43	* 43	38	55	43	158	223	189	43	64	44
5	47	42	39	40	* 60	* 43	160	252	183	43	58	* 46
6	46	39	34	38	65	43	153	* 280	181	52	62	75
7	42	37	36	38	70	42	191	313	168	46	55	64
8	40	37	36	* 36	75	44	249	350	173	44	47	47
9	39	39	35	36	75	46	252	345	173	57	52	42
10	39	39	35	38	65	46	204	280	126	71	50	39
11	37	37	34	36	50	43	189	313	95	53	55	44
12	37	35	34	34	44	44	209	305	107	69	67	40
13	37	35	36	28	46	39	249	270	124	86	73	39
14	37	44	36	30	48	43	280	274	131	60	62	44
15	39	64	37	30	48	52	291	302	141	47	60	43
16	39	55	37	30	48	52	232	329	126	40	57	42
17	67	49	39	30	48	53	204	350	114	39	52	44
18	75	47	42	30	48	50	186	368	110	35	55	39
19	112	42	47	30	48	55	163	376	107	35	67	34
20	84	42	42	30	48	117	148	* 350	112	22	75	64
21	71	46	37	30	48	181	141	354	100	34	60	90
22	65	49	36	32	46	204	* 134	372	86	40	62	71
23	60	49	39	32	46	232	134	358	78	40	55	58
24	55	50	49	34	46	204	146	313	75	39	57	50
25	53	50	39	36	50	183	153	294	69	37	50	46
26	50	50	26	36	50	196	196	274	44	39	46	44
27	50	50	28	36	48	204	215	255	43	29	78	36
28	49	47	30	38	44	207	189	215	44	24	78	30
29	46	47	30	40	-	267	173	218	43	25	55	34
30	46	49	32	40	-----	240	176	226	46	25	52	36
31	46	-----	34	42	-----	237	-----	226	-----	28	62	-----
Total	1,607	1,343	1,165	1,074	1,485	3,338	5,764	8,940	3,625	1,334	1,758	1,449
Mean	51.8	44.8	37.6	34.6	53.0	108	192	288	121	43.0	56.7	48.3
Ac-ft	3,190	2,660	2,310	2,130	2,950	6,620	11,430	17,730	7,190	2,650	3,490	2,870

Calendar year 1962: Max 698 Min 13 Mean 140 Ac-ft 101,100  
Water year 1962-63: Max 376 Min 22 Mean 90.1 Ac-ft 65,220

Peak discharge (base, 600 cfs).--No peak above base.

\* Discharge measurement made this day.

Note.--Stage-discharge relation affected by ice Dec. 26 to Mar. 1 (no gage-height record Jan. 17-31).

9-3464. San Juan River near Carracas, Colo.

Location.--Lat 37°00'47", long 107°18'39", in SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec.17, T.32 N., R.4 W., on right bank at river mile 178.8 just above flow line of Navajo Reservoir and 3 miles northwest of Carracas, 7.2 miles upstream from Piedra River.

Drainage area.--1,230 sq mi, approximately.

Records available.--October 1961 to September 1963.

Gage.--Water-stage recorder. Altitude of gage is 6,090 ft (from river-profile map).

Extremes.--Maximum discharge during year, 2,310 cfs May 9 (gage height, 4.68 ft); minimum, about 15 cfs Dec. 26 (result of freezeup).  
1961-63: Maximum discharge, 3,920 cfs Apr. 20, 1962 (gage height, 5.55 ft); maximum gage height, 6.58 ft Feb. 19, 1962 (ice jam); minimum discharge, about 5 cfs Dec. 10, 1961 (result of freezeup).  
Maximum flood known occurred Oct. 5, 1911. Major floods occurred Sept. 5 or 6, 1909 and June 29, 1927.

Remarks.--Records fair 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 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)  
(Shifting-control method used Apr. 4, 5, Apr. 16 to May 9, May 25 to June 5, July 13 to Aug. 15)

Oct. 1 to Feb. 2

Feb. 3 to Sept. 30

1.0	19	2.0	255	1.3	45	2.5	360
1.1	37	2.5	440	1.6	94	3.0	670
1.5	127	3.0	700	1.9	156	4.0	1,360
				2.2	235		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	178	150	212	b 120	b 150	163	1,310	788	1,010	127	58	200
2	160	150	208	b 130	b 300	146	1,020	780	964	122	58	179
3	148	145	190	b 130	d 650	150	780	884	916	116	89	150
4	134	141	178	b 140	d 670	143	740	1,070	828	116	162	137
5	129	136	160	b 150	d 650	129	740	1,320	804	120	195	193
6	180	132	138	b 140	d 600	120	780	1,490	756	135	146	357
7	160	125	132	b 126	d 500	131	860	1,710	698	141	172	252
8	143	116	141	b 130	d 420	146	1,210	1,980	656	139	124	197
9	134	109	145	b 120	b 350	150	1,350	2,050	677	168	120	152
10	132	111	127	b 120	b 550	163	1,110	1,680	600	238	118	133
11	129	109	116	b 110	a 350	150	908	1,870	486	263	280	122
12	a 120	102	113	b 100	a 170	139	989	1,830	450	290	174	129
13	a 115	97	127	b 50	a 200	131	1,160	1,740	468	438	189	129
14	a 110	125	138	b 60	a 130	148	1,330	1,750	504	249	154	141
15	a 110	386	138	b 70	a 150	211	1,520	1,710	540	192	127	143
16	a 110	316	141	b 80	a 200	211	1,210	1,860	492	161	152	129
17	476	279	143	b 90	a 150	200	1,010	1,980	456	148	139	114
18	a 670	261	152	b 100	a 140	235	852	2,050	420	133	158	110
19	712	220	182	b 90	a 160	192	733	1,960	402	122	148	98
20	545	195	182	b 85	156	a 400	663	1,800	414	108	211	169
21	388	190	138	b 80	179	a 900	594	1,800	366	98	165	836
22	332	210	92	b 90	182	a 1,500	534	1,750	315	112	174	509
23	296	218	88	b 95	170	a 1,300	534	1,800	274	112	184	278
24	a 260	215	136	b 103	179	a 1,200	642	1,560	256	106	168	229
25	a 240	215	122	b 100	187	a 1,150	712	1,460	232	100	152	195
26	a 220	205	b 40	b 100	172	a 1,100	796	1,290	202	92	150	174
27	a 200	202	b 30	b 95	202	1,180	948	1,210	170	92	298	158
28	a 180	188	b 50	b 90	182	1,210	828	1,100	158	80	242	143
29	a 166	178	b 80	b 90	-	1,360	726	1,060	139	73	174	129
30	160	188	b 100	b 95	-----	1,360	772	1,070	131	62	200	124
31	158	-----	b 110	b 100	-----	1,360	-----	1,070	-----	60	182	-----
Total	7,195	5,414	4,049	3,179	3,099	17,078	27,361	47,472	14,784	4,513	5,063	6,009
Mean	234	180	131	103	289	551	912	1,531	493	146	163	200
Ac-ft	14,270	10,740	8,030	6,310	16,060	33,870	54,270	94,160	29,320	8,950	10,040	11,920

Calendar year 1962: Max 3,510 Min 30 Mean 673 Ac-ft 487,000  
Water year 1962-63: Max 2,050 Min 30 Mean 412 Ac-ft 297,900

Peak discharge (base, 2,500 cfs).--No peak above base.

- a No gage-height record.
- b Stage-discharge relation affected by ice.
- d Doubtful gage-height record.

## SAN JUAN RIVER BASIN

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.

**Drainage area.**--371 sq mi.

**Records available.**--October 1911 to September 1912, October 1938 to September 1963. Monthly discharge only for some period, 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.**--26 years, 318 cfs (230,200 acre-ft per year).

**Extremes.**--Maximum discharge during year, 1,190 cfs May 9 (gage height, 3.36 ft); minimum daily, 30 cfs Dec. 26, 1911-12, 1938-63; 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, 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.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used June 17, 18)

1.0	29	2.3	290
1.3	56	2.8	560
1.7	125	3.3	1,090

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	* 32	93	87	50	55	50	* 703	375	370	42	* 35	206
2	79	87	82	50	60	46	560	390	355	* 41	36	158
3	72	83	* 77	55	60	52	400	436	335	41	43	128
4	66	* 83	71	60	* 64	* 56	385	560	318	45	56	* 113
5	83	83	61	60	66	49	410	703	* 306	49	72	117
6	103	82	59	55	69	46	405	830	287	42	61	190
7	80	75	59	* 53	71	44	448	902	269	43	59	209
8	72	68	61	50	74	50	592	* 1,010	254	57	53	160
9	66	71	55	55	74	48	658	1,020	224	64	55	130
10	62	69	52	50	75	50	525	854	221	175	57	117
11	60	65	46	48	72	50	466	890	198	123	66	138
12	57	62	50	46	66	46	490	842	188	125	75	111
13	55	61	60	38	50	48	600	820	185	125	69	101
14	54	74	60	42	55	46	740	800	190	123	56	158
15	53	89	59	44	50	50	720	730	185	101	52	148
16	55	83	61	44	60	48	* 658	790	158	80	49	121
17	142	80	61	44	50	48	560	830	* 140	72	55	115
18	190	77	68	44	55	48	448	820	125	65	59	111
19	221	56	72	44	55	46	390	780	119	57	52	119
20	190	77	66	44	55	55	355	740	130	53	52	223
21	162	69	46	46	50	80	330	750	123	55	55	395
22	155	72	34	46	55	150	* 306	* 712	103	69	57	306
23	145	77	40	50	50	260	310	685	89	61	91	254
24	140	89	50	50	50	340	345	624	74	55	89	221
25	128	83	44	50	50	355	390	584	65	50	72	192
26	121	89	30	50	50	448	405	484	60	48	82	172
27	117	79	36	50	50	504	425	466	55	43	252	155
28	107	69	38	44	48	504	375	420	52	39	209	140
29	101	66	40	46	-	649	355	415	48	38	172	125
30	97	89	42	48	-----	649	365	415	44	38	175	115
31	93	-----	46	50	-----	624	-----	395	-----	35	148	-----
Total	3,198	2,300	1,713	1,506	1,639	5,609	14,189	21,072	5,270	2,124	2,514	4,948
Mean	103	76.7	55.3	48.6	58.5	181	473	680	176	68.5	81.1	165
Ac-ft	6,340	4,560	3,400	2,990	3,250	11,130	28,140	41,800	10,450	4,210	4,990	9,810

Calendar year 1962: Max 1,780 Min 28 Mean 300 Ac-ft 217,200  
Water year 1962-63: Max 1,020 Min 30 Mean 181 Ac-ft 131,100

Peak discharge (base, 1,300 cfs)--No peak above base.

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 21 to Jan. 4, Jan. 8 to Feb. 3, Feb. 13 to Mar. 3, Mar. 6-20 (no gage-height record Jan. 13 to Feb. 2).

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 1962 to September 1963. 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 year, 1,640 cfs Mar. 29 (gage height, 4.05 ft); minimum daily, 28 cfs Aug. 1-3.

1962-63: Maximum discharge, that of Mar. 29, 1963; minimum daily, 26 cfs Sept. 4-6, 1962.

Major floods occurred Oct. 5, 1911, and Sept. 5 or 6, 1909.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Discharge measurements generally made twice a month. Diversions for irrigation of about 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 Mar. 20

Mar. 21 to Sept. 30

1.4	18	1.4	18	2.8	540
1.6	49	1.6	49	3.3	920
2.0	157	1.9	120	3.7	1,270
2.3	280	2.3	260		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	88	99	99	b 55	a 70	76	1,010	404	345	46	28	210
2	86	99	99	b 55	a 90	69	808	422	325	46	28	178
3	79	91	91	b 60	a 120	74	575	458	320	46	28	147
4	74	88	86	b 65	a 110	74	568	575	296	44	34	126
5	71	86	74	b 65	a 120	67	582	696	278	51	57	126
6	110	83	69	b 60	b 130	65	589	800	248	51	59	212
7	93	79	69	b 58	a 140	65	610	888	224	46	51	216
8	81	71	69	b 55	a 150	71	752	992	216	55	49	178
9	74	67	69	b 58	a 130	69	824	1,020	196	74	49	147
10	69	67	61	b 60	b 110	71	712	896	196	162	49	126
11	67	65	57	b 55	90	74	596	936	182	154	92	132
12	63	63	55	b 45	80	79	596	896	171	138	74	126
13	61	61	63	b 40	80	65	680	856	168	210	79	115
14	57	69	63	b 45	75	69	768	856	164	147	65	147
15	55	102	63	b 47	90	76	872	736	160	120	59	168
16	57	99	63	b 50	85	74	728	816	144	104	57	141
17	144	99	63	b 50	79	74	659	896	138	91	53	129
18	192	96	65	b 50	79	79	540	872	132	81	65	123
19	266	79	79	b 50	83	76	458	832	123	69	59	129
20	234	81	81	b 50	79	123	416	776	126	61	57	200
21	188	81	b 60	b 50	81	199	394	792	123	59	55	434
22	171	81	b 40	b 50	81	302	340	720	112	69	61	345
23	160	86	b 45	b 52	76	526	335	696	98	74	91	274
24	150	91	b 50	b 55	76	731	366	631	83	59	93	232
25	140	91	b 55	a 55	81	742	404	596	74	55	88	202
26	136	88	b 35	a 55	76	870	428	491	61	47	96	182
27	129	91	b 30	a 53	88	1,010	491	446	51	46	265	164
28	116	86	b 35	a 50	79	950	440	399	49	39	248	150
29	108	81	b 40	a 50	-	1,200	399	388	47	34	192	132
30	102	93	b 50	a 52	-----	1,170	410	388	46	31	196	123
31	99	-----	b 55	a 55	-----	1,090	-----	372	-----	31	157	-----
Total	3,520	2,513	1,933	1,650	2,628	10,280	17,350	21,542	4,896	2,340	2,634	5,314
Mean	114	83.8	62.4	53.2	93.4	332	578	695	163	75.5	85.0	177
Ac-ft	6,980	4,980	3,830	3,270	5,210	20,390	34,410	42,730	9,710	4,640	5,220	10,540

Calendar year 1962: Max - Min - Mean - Ac-ft -  
 Water year 1962-63: Max 1,200 Min 28 Mean 210 Ac-ft 151,900

Peak discharge (base, 1,500 cfs).--Mar. 29 (2300) 1,640 cfs (4.05 ft).

a No gage-height record.

b Stage-discharge relation affected by ice.

## SAN JUAN RIVER BASIN

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 1963. 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.--54 years (1896-97, 1910-63), 1,204 cfs (871,700 acre-ft per year).

Extremes.--Maximum discharge during year, 3,420 cfs May 9 (gage height, 5.34 ft); minimum daily, 55 cfs Dec. 27.

1920-63: 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 no gage-height record, which are fair. 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 tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

(Shifting-control method used Dec. 19, 20, Mar. 15-18, 25-31, Apr. 9-17, May 11-23)

Oct. 1 to Feb. 2				Feb. 3 to Sept. 30			
0.95	55	3.0	780	0.8	55	3.0	710
1.3	104	4.0	1,690	1.0	78	4.0	1,500
1.8	222	5.0	3,130	1.5	165	5.0	2,750
2.5	489			2.0	290	5.5	3,600
				2.5	470		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	314	252	335	b 180	a 220	248	a 2,350	1,220	1,370	a 180	82	446
2	272	249	328	b 190	a 400	230	a 1,850	1,230	1,310	a 170	82	378
3	240	237	285	187	b 800	230	a 1,370	1,380	1,250	a 170	116	299
4	219	231	272	198	800	230	a 1,320	1,660	1,140	a 165	151	255
5	217	225	243	214	782	210	a 1,320	2,040	1,100	a 175	269	332
6	317	219	211	208	746	192	a 1,350	2,310	1,030	a 190	205	585
7	268	214	200	198	645	212	a 1,450	2,620	949	a 190	228	520
8	225	192	217	b 190	575	225	a 1,950	2,980	900	a 195	172	414
9	214	176	219	b 180	490	242	2,170	3,040	900	242	176	302
10	200	182	195	b 180	665	248	1,810	2,620	818	424	176	263
11	190	176	176	b 170	458	242	1,550	2,810	705	458	340	260
12	179	168	168	a 150	269	220	1,590	2,750	655	473	235	258
13	176	158	208	a 95	281	192	1,830	2,600	670	680	287	248
14	168	190	208	a 100	218	215	2,080	2,600	685	430	232	296
15	166	493	203	b 120	252	305	2,340	2,480	700	329	189	326
16	171	419	206	b 130	296	326	1,970	2,680	a 650	266	210	272
17	696	381	206	b 140	245	299	1,710	2,900	a 610	238	196	240
18	830	361	219	b 150	230	341	1,430	2,930	a 560	215	232	225
19	1,050	296	268	a 140	248	290	1,230	2,820	a 530	192	212	230
20	823	255	262	a 135	245	520	1,130	2,630	a 550	172	290	a 370
21	586	255	203	a 130	272	1,120	1,010	2,630	a 500	159	228	a 1,280
22	505	285	144	a 140	278	1,820	907	2,510	a 430	178	218	a 880
23	455	303	134	a 150	258	1,830	900	2,520	a 380	196	275	a 570
24	419	310	195	a 160	269	1,940	1,000	2,230	a 340	167	260	a 480
25	389	317	179	a 160	290	1,930	1,130	2,080	a 320	152	232	a 420
26	365	307	b 60	a 160	266	2,000	1,250	1,820	a 270	140	235	a 370
27	346	303	b 55	a 150	305	2,280	1,400	1,710	a 230	138	602	a 340
28	325	282	b 80	a 140	275	2,230	1,270	1,520	a 210	118	555	a 300
29	299	255	b 120	a 140	-	2,600	1,150	1,460	a 190	102	382	a 270
30	272	278	b 160	a 150	-----	2,520	1,190	1,470	a 180	105	412	a 260
31	262	-----	b 170	a 160	-----	2,480	-----	1,460	-----	85	344	-----
Total	11,158	7,969	6,129	4,895	11,078	27,967	45,007	69,710	20,132	7,094	7,883	11,689
Mean	360	266	198	158	396	902	1,500	2,250	671	229	254	390
Ac-ft	22,130	15,810	12,160	9,710	21,970	55,470	89,270	138,300	39,930	14,070	15,640	23,180

Calendar year 1962: Max 5,700 Min 55 Mean 1,030 Ac-ft 746,100

Water year 1962-63: Max 3,040 Min 55 Mean 632 Ac-ft 457,600

Peak discharge (base, 4,000 cfs).--No peak above base.

a No gage-height record.

b Stage-discharge relation affected by ice.

## SAN JUAN RIVER BASIN

311

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 left of spillway, a quarter of a mile upstream from Little Red Creek, and 11 miles northeast of Bayfield.

Records available.--April 1941 to September 1963.

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, 98,650 acre-ft June 1 (elevation, 7,654.43 ft); minimum observed, 37,720 acre-ft Sept. 30 (elevation, 7,625.29 ft).

1941-63: 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 1962 to September 1963

Date	Elevation (feet) †	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	7,630.63	46,720	-
Oct. 31.....	7,629.75	45,160	-1,560
Nov. 30.....	7,631.90	49,020	+3,860
Dec. 31.....	7,632.61	50,340	+1,320
Calendar year 1962.....	-	-	-16,230
Jan. 31.....	7,632.98	51,030	+690
Feb. 28.....	7,633.33	51,690	+660
Mar. 31.....	7,634.97	54,840	+3,150
Apr. 30.....	7,643.23	72,120	+17,280
May 31.....	7,654.42	98,620	+26,500
June 30.....	7,647.87	82,720	-15,900
July 31.....	7,636.97	58,810	-23,910
Aug. 31.....	7,628.18	42,450	-16,360
Sept. 30.....	7,625.29	37,720	-4,730
Water year 1962-63.....	-	-	-9,000

† 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 1963. 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 2¼ 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 2¼ miles downstream for use when upper spillway at Vallecito Reservoir is operating.

Average discharge.--36 years, 349 cfs (252,700 acre-ft per year).

Extremes.--Maximum discharge during year, 1,500 cfs Apr. 3 (gage height, 3.43 ft); minimum daily, 35 cfs Apr. 6-15. 1927-63: 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-Loehr 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 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	222	69	47	53	53	53	55	322	633	618	546	326
2	222	47	47	53	53	53	55	330	633	613	546	326
3	222	47	47	53	53	53	64	330	633	608	546	314
4	* 222	47	47	53	53	53	51	361	633	608	546	306
5	208	47	47	53	53	53	40	377	633	604	513	306
6	202	47	51	53	* 53	53	35	401	633	604	487	306
7	202	47	53	53	53	53	35	460	628	604	487	306
8	202	47	53	53	53	53	35	465	628	604	487	302
9	192	47	53	53	53	53	35	469	628	589	482	302
10	193	47	53	53	53	53	35	491	628	541	469	306
11	193	47	53	53	53	53	35	500	628	527	460	302
12	193	47	53	53	53	53	35	504	628	522	443	302
13	193	47	53	53	53	53	35	509	623	456	434	302
14	193	47	53	53	53	53	35	546	618	401	434	302
15	193	47	53	53	53	53	35	570	618	389	434	302
16	179	47	53	53	53	53	36	570	618	434	434	302
17	179	47	53	53	53	53	36	570	618	474	434	302
18	167	47	53	53	53	53	36	580	618	487	430	302
19	158	47	53	53	53	53	36	618	618	513	430	302
20	158	47	53	53	53	53	36	623	618	522	426	302
21	158	47	53	53	53	53	36	623	618	541	426	302
22	158	47	53	53	53	53	72	628	618	546	422	302
23	158	47	53	53	53	53	137	628	613	546	422	298
24	158	47	53	53	53	53	173	628	618	546	422	298
25	158	47	53	53	53	53	173	628	623	546	422	298
26	158	47	53	53	53	53	170	628	623	541	409	298
27	158	47	53	53	53	53	170	633	618	546	393	298
28	158	47	53	53	53	53	173	633	618	560	369	310
29	158	47	53	53	-	55	183	633	618	556	353	318
30	126	47	53	53	-----	55	244	633	618	556	334	318
31	110	-----	53	53	-----	55	-----	633	-----	551	326	-----
Total	5,491	1,431	1,611	1,643	1,484	1,649	2,326	16,524	18,700	16,753	13,766	9,160
Mean	177	47.7	52.0	53.0	53.0	53.2	77.5	533	623	540	444	305
Ac-ft	10,890	2,840	3,200	3,260	2,940	3,270	4,610	32,770	37,090	33,230	27,400	18,170

Calendar year 1962: Max 1,540 Min 44 Mean 367 Ac-ft 265,400  
Water year 1962-63: Max 633 Min 35 Mean 248 Ac-ft 179,600

\* Discharge measurement made on this day.

## SAN JUAN RIVER BASIN

313

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 1963. 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.--13 years, 190 cfs (137,600 acre-ft per year).

Extremes.--Maximum discharge during year, about 800 cfs Feb. 4 (gage height, 5.36 ft, backwater from ice); minimum, 32 cfs Apr. 23. 1950-63: 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 doubtful or no gage-height record, which are poor. Discharge measurements generally made twice a month. Flow regulated by Vallecito Reservoir (capacity, 126,280 acre-ft). Diversions for irrigation of about 33,000 acres above station.

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. 1-18, Oct. 31 to Nov. 13, June 22 to July 14, July 22, 30, 31, Aug. 3 to Sept. 3, Sept. 14-25)

3.2	38	4.0	240
3.4	64	4.5	480
3.6	112	5.0	830

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	112	107	d 85	a 55	b 100	110	268	92	112	107	92	137
2	115	66	d 90	a 55	b 150	97	233	115	107	100	97	118
3	137	55	a 80	a 60	b 300	97	194	115	123	104	120	104
4	140	52	a 75	a 60	b 350	92	188	104	100	155	180	97
5	158	50	a 70	a 60	b 300	85	191	120	94	132	167	a 95
6	129	49	66	a 60	b 300	87	174	118	102	123	140	a 110
7	120	52	66	a 55	b 250	87	158	97	104	120	177	a 100
8	115	69	69	b 55	b 200	94	164	100	107	158	132	a 95
9	115	69	66	b 55	b 170	104	164	94	134	180	137	a 90
10	100	69	66	b 55	b 200	118	152	100	129	316	155	a 100
11	92	69	64	b 50	b 110	107	134	107	118	202	216	a 90
12	87	64	64	b 45	92	100	123	97	115	198	164	85
13	87	64	66	b 40	94	87	115	92	110	198	155	76
14	90	82	66	b 45	90	92	112	71	112	140	137	112
15	94	123	66	b 45	102	120	110	102	100	118	137	92
16	102	94	71	b 45	97	112	110	102	100	107	137	80
17	235	78	69	b 50	90	104	100	92	115	120	137	78
18	272	82	76	b 55	90	104	90	78	115	120	149	69
19	500	80	107	b 55	90	100	73	97	123	115	126	66
20	288	76	87	b 50	90	140	50	107	120	110	115	78
21	205	76	76	b 55	97	186	46	112	123	159	118	100
22	180	73	76	b 55	107	222	40	126	112	155	118	104
23	174	d 70	71	b 55	107	252	44	110	112	126	129	87
24	167	d 65	76	b 55	123	290	82	118	126	120	123	87
25	167	d 60	82	b 60	146	256	71	110	126	118	118	85
26	164	d 58	a 70	b 60	134	244	64	120	126	107	132	82
27	164	d 56	a 50	b 55	149	248	82	123	112	100	205	76
28	164	d 55	a 50	b 60	126	244	78	123	97	97	140	69
29	161	d 55	a 52	b 75	-	240	78	118	97	97	118	73
30	158	d 55	a 55	b 80	-----	276	73	123	102	82	123	76
31	115	-----	a 55	b 90	-----	276	-----	118	-----	82	129	-----
Total	4,907	2,073	2,182	1,750	4,254	4,771	3,561	3,301	3,373	4,166	4,323	2,711
Mean	158	69.1	70.4	56.5	152	154	119	106	112	134	139	90.4
Ac-ft	9,730	4,110	4,330	3,470	8,440	9,460	7,060	6,550	6,690	8,260	8,570	5,380

Calendar year 1962: Max 1,710 Min 40 Mean 203 Ac-ft 146,700  
Water year 1962-63: Max 500 Min 40 Mean 113 Ac-ft 82,050

a No gage-height record.

b Stage-discharge relation affected by ice.

d Doubtful gage-height record.

## 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 1963. 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.--13 years, 28.1 cfs (20,340 acre-ft per year).

Extremes.--Maximum discharge during year, 258 cfs July 21 (gage height, 3.00 ft); maximum gage height, 3.22 ft Feb. 2 (backwater from ice); minimum discharge, 1 cfs Mar. 12.

1951-63: 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 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)

0.6	1.3	1.2	22
.7	2.6	1.6	54
.8	4.6	2.0	98
1.0	12	2.5	170

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	41	a10	21	3.4	b30	6.1	8.4	20	41	43	38	a40
2	a40	9.9	10	b3.5	b100	b5	7.0	30	45	43	35	a35
3	a35	9.6	7.3	3.8	b50	4.9	5.8	28	48	47	39	a35
4	30	9.2	6.4	4.2	b60	4.6	4.2	31	44	59	60	a30
5	35	9.2	5.5	4.6	b50	4.6	5.8	31	43	54	68	a30
6	31	8.8	5.5	4.6	b20	4.6	5.2	29	43	47	59	a35
7	29	8.4	5.2	4.4	b10	b4	4.4	28	42	40	66	a30
8	29	7.0	5.8	3.8	b7	3.6	3.8	31	46	51	51	a30
9	29	5.2	b5.5	3.4	a6	3.2	3.6	29	53	68	50	a30
10	28	4.6	b5	4.0	a8	3.4	3.4	31	56	81	52	a35
11	28	4.2	b4.5	a3	a6	3.8	3.0	30	55	60	78	a30
12	28	3.8	b4.5	a2.5	a2	4.0	2.5	31	54	99	53	a30
13	26	4.0	b4	a2	a5	b3.5	2.3	32	47	84	49	32
14	24	8.4	b4	a2.5	a5	b4	2.1	32	53	64	45	44
15	25	26	b4	a3	a6	b4	2.1	36	46	52	45	36
16	26	12	b4.5	b3	a5	b4.5	1.8	35	47	40	44	37
17	87	12	b5	b3	a5	4.9	1.7	34	44	39	43	38
18	106	14	5.2	a3	a5	5.5	1.7	34	43	43	48	34
19	129	9.9	14	a3	a5	b4	1.8	34	49	44	40	32
20	44	8.8	7.6	a3	a6	4.4	24	42	42	43	43	43
21	20	8.4	b6	a3	12	8.8	8.8	44	40	75	42	52
22	16	7.6	b5	a3	19	13	8.8	40	36	87	40	49
23	14	6.4	b4	a3	23	15	9.9	35	36	59	56	46
24	13	5.8	b5	a3	26	1.7	12	45	35	53	39	46
25	12	5.2	b6	a3	20	12	12	42	35	46	a40	44
26	a12	4.9	b4	a3	13	9.7	19	44	36	46	a50	42
27	a11	4.4	b3	a3	12	10	23	45	38	41	a70	38
28	a11	4.0	b3	a3	7.9	9.2	20	43	37	41	a45	33
29	a11	4.2	b3	b3.5	-	11	23	43	39	42	a40	31
30	a10	5.2	b3	b4	-----	13	20	43	36	38	a40	30
31	a10	-----	b3	b5	-----	12	-----	44	-----	37	a40	-----
Total	990	241.1	179.5	104.2	526.9	217.3	251.1	1,096	1,309	1,666	1,508	1,097
Mean	31.9	8.04	5.79	3.36	18.8	7.01	8.37	35.4	43.6	53.7	48.6	36.6
Ac-ft	1,960	478	356	207	1,050	431	498	2,170	2,600	3,300	2,990	2,180

Calendar year 1962: Max 129 Min 1 Mean 27.2 Ac-ft 19,700

Water year 1962-63: Max 129 Min 1.7 Mean 25.2 Ac-ft 18,220

Peak discharge (base, 120 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
10-19	0800	2.73	206	7-21	1910	3.00	258
2-2	1800	3.22	250	8-4	2330	2.55	178
7-12	2000	2.66	191	8-11	0020	2.39	152

a No gage-height record.

b Stage-discharge relation affected by ice.

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 1963. 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.--28 years, 105 cfs (76,020 acre-ft per year).

Extremes.--Maximum discharge during year, 630 cfs May 17 (gage height, 3.04 ft); minimum daily, 12 cfs Dec. 26.

1935-63: 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, 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 July 5-12)

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 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	41	* 30	22	18	18	19	37	69	325	108	33	69
2	40	29	22	19	17	18	26	76	282	110	36	58
3	38	29	22	20	20	17	24	108	* 220	108	37	51
4	37	29	22	20	17	16	25	170	220	118	49	49
5	38	27	20	19	17	18	26	235	223	98	* 47	49
6	36	26	20	18	17	17	29	* 325	232	90	57	63
7	34	24	21	19	18	18	39	374	254	90	52	71
8	33	23	21	18	17	19	* 44	392	244	100	49	62
9	32	24	22	20	18	20	38	349	205	* 124	58	* 54
10	31	24	* 22	19	18	19	35	274	160	118	64	52
11	* 30	23	22	17	18	* 20	37	264	158	110	74	50
12	29	23	20	14	17	18	56	257	214	122	62	45
13	29	23	20	14	* 16	18	93	289	254	155	52	46
14	28	24	20	* 15	18	17	122	278	313	126	47	50
15	28	24	20	16	17	16	112	254	285	108	44	43
16	32	24	18	16	17	20	85	353	229	95	43	39
17	36	24	20	17	19	17	63	435	208	85	45	38
18	37	24	20	18	19	17	50	460	211	81	41	38
19	41	24	20	18	20	18	44	445	205	73	41	35
20	41	23	20	18	20	20	39	440	214	66	51	38
21	37	23	20	17	22	20	37	392	220	69	47	44
22	37	22	19	17	22	17	32	370	208	64	46	39
23	37	22	18	17	22	18	38	365	193	62	46	37
24	34	22	17	17	22	19	62	317	175	54	44	35
25	33	22	16	18	22	19	71	297	162	51	43	33
26	33	22	12	17	22	22	74	329	152	46	47	33
27	33	22	13	17	20	26	76	353	152	43	95	31
28	31	22	14	16	20	30	62	357	138	41	73	30
29	31	22	15	17	-	30	51	357	128	38	63	30
30	31	22	15	17	-----	31	57	383	118	37	58	29
31	31	-----	16	18	-----	37	-----	349	-----	34	64	-----
Total	1,059	722	589	541	530	631	1,584	9,716	6,302	2,624	1,608	1,341
Mean	34.2	24.1	19.0	17.5	18.9	20.4	52.8	313	210	84.6	51.9	44.7
Ac-ft	2,100	1,430	1,170	1,070	1,050	1,250	3,140	19,270	12,500	5,200	3,190	2,660

Calendar year 1962: Max 618 Min 12 Mean 112 Ac-ft 81,040

Water year 1962-63: Max 460 Min 12 Mean 74.6 Ac-ft 54,030

Peak discharge (base, 700 cfs).--No peak above base.

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 19, 28, Dec. 5, 6, 9-16, 20-31, Jan. 1-18, 21, 23, 24, 26-28, Feb. 3, 6-8, 12-28, Mar. 1-16 (no gage-height record Dec. 30 to Jan. 4, Feb. 17 to Mar. 11), 19-22, 25, Apr. 2, 3, 22, 23.

## 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 1963. 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.--35 years, 141 cfs (102,100 acre-ft per year).

Extremes.--Maximum discharge during year, 486 cfs May 8 (gage height, 2.39 ft); minimum daily, 9.5 cfs Dec. 26. 1912-14, 1919-28, 1939-63: 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, 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		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	24	23	24	15	16	17	217	112	112	28	17	74
2	23	22	22	16	20	17	174	136	110	27	18	53
3	23	21	21	17	22	17	* 125	183	108	27	32	47
4	* 22	21	22	* 18	20	17	120	242	94	29	31	42
5	28	21	19	18	20	15	117	270	91	33	25	47
6	29	21	18	17	24	16	139	316	87	29	24	63
7	25	* 19	17	16	24	17	189	368	* 82	27	32	63
8	23	18	16	15	22	17	224	414	78	33	25	52
9	22	18	15	15	22	18	217	* 427	75	* 31	24	46
10	21	18	* 14	14	20	19	186	372	69	45	26	43
11	21	17	13	14	20	19	168	376	63	38	37	46
12	21	17	14	13	20	17	192	356	60	35	30	40
13	21	19	15	11	18	18	224	320	56	42	24	39
14	21	23	15	12	* 15	* 18	256	284	56	31	22	40
15	22	24	16	12	17	18	273	252	53	27	21	38
16	26	24	16	12	17	19	228	276	52	25	22	35
17	52	23	16	12	16	19	186	284	52	24	23	34
18	52	23	17	12	16	19	150	280	49	24	32	33
19	60	20	17	12	16	18	130	270	47	22	26	31
20	51	20	17	12	16	21	112	259	46	21	27	31
21	42	24	14	12	15	31	103	238	43	23	26	40
22	38	22	11	13	15	43	94	228	40	24	31	34
23	35	23	13	14	15	69	93	* 217	39	28	36	31
24	33	24	15	14	15	89	115	207	38	28	34	30
25	31	24	13	12	15	110	130	186	34	24	24	28
26	30	23	9.5	12	16	139	136	168	33	22	38	27
27	29	21	10	13	16	174	122	156	31	20	91	27
28	28	20	11	13	16	177	108	144	31	19	* 64	26
29	25	22	12	13	-	174	* 98	139	29	* 18	49	25
30	24	23	13	13	-----	186	105	133	29	18	51	24
31	24	-----	14	14	-----	125	-----	122	-----	17	64	-----
Total	926	638	479.5	426	504	1,743	4,731	7,735	1,787	839	1,026	1,189
Mean	29.9	21.3	15.5	13.7	18.0	56.2	158	250	59.6	27.1	33.1	39.6
Ac-ft	1,840	1,270	951	845	1,000	3,460	9,380	15,340	3,540	1,660	2,040	2,360

Calendar year 1962: Max 948 Min 9.5 Mean 122 Ac-ft 88,600

Water year 1962-63: Max 427 Min 9.5 Mean 60.3 Ac-ft 43,690

Peak discharge (base, 800 cfs).--No peak above base.

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 19, 20, 22, 28, 29, Dec. 5-17, Dec. 21 to Mar. 16, Mar. 19 (no gage-height record Jan. 17 to Feb. 14).

## SAN JUAN RIVER BASIN

317

9-3612, Falls Creek near Durango, Colo.

Location.--Lat 37°22'00", long 107°52'00", 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 1963.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 7,120 ft (from topographic map).

Extremes.--Maximum discharge during year, 4.3 cfs May 9 (gage height, 3.45 ft); minimum daily, 0.1 cfs for many days.

1959-63: Maximum discharge, 23 cfs May 13, 1960 (gage height, 3.95 ft); minimum daily, 0.1 cfs for many days in 1961-63.

Remarks.--Records good except those for periods of ice effect, which are poor. Small diversions above station for irrigation of meadows.

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

3.1	0.1
3.2	.7
3.3	1.6
3.5	4.6

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.2	0.2	0.4	0.2	0.3	0.4	3.3	2.2	1.4	0.6	0.1	0.2
2	.2	.2	.3	.2	.4	.4	2.7	2.4	1.4	.6	.2	.1
3	*.2	.2	.3	.2	*.3	.3	2.0	2.7	1.3	.6	.2	.1
4	.2	.2	.3	*.2	.3	.3	2.0	3.2	1.2	.6	.2	.1
5	.2	.2	.2	.2	.3	.3	2.2	3.2	1.2	.6	.2	.2
6	.2	.2	.2	.2	.3	.3	2.3	3.3	1.2	.6	.2	.2
7	.2	.2	.2	.2	.4	*.3	2.6	3.8	*1.1	.5	.2	.2
8	.2	*.2	.2	.2	.4	.3	2.7	*3.8	1.1	.5	.1	.2
9	.2	.2	.2	.2	.5	.3	2.3	4.1	1.2	.5	.2	.2
10	.2	.2	.2	.2	.5	.3	1.6	4.0	1.1	.6	.2	.2
11	.1	.2	.2	.2	.3	.3	1.4	3.6	1.0	.5	.2	.2
12	.1	.2	.2	.1	.3	.3	1.3	3.3	1.0	*.5	.2	.2
13	.1	.2	.2	.1	.4	.3	1.3	2.9	.9	.4	.2	.2
14	.1	.3	.2	.1	.5	.3	1.4	2.7	.9	.4	.2	.4
15	.1	.5	.2	.1	.3	.3	1.2	2.6	.9	.3	.2	.3
16	.2	.3	.2	.1	.3	.3	.8	2.4	.9	.3	.2	.3
17	.3	.3	.2	.1	.3	.3	.7	2.3	.9	.3	.2	.3
18	.3	.3	.2	.1	.3	.4	.8	2.0	.8	.3	.2	.3
19	.5	.3	.3	.2	.3	.6	1.0	1.9	.8	.2	.2	.3
20	.5	.3	.3	.2	.3	1.2	1.0	1.9	.8	.2	.2	.3
21	.3	.3	.3	.2	.3	1.2	1.3	1.9	.7	.2	.2	.3
22	.2	.3	.3	.2	.3	.6	1.6	1.9	.7	.2	.2	.3
23	.2	.3	.2	.2	.3	.6	1.7	1.7	.7	.2	.2	.2
24	.2	.3	.3	.2	.3	.9	2.0	1.7	.7	.2	.1	.2
25	.2	.4	.3	.2	.3	1.0	2.0	1.6	.6	*.2	.1	.2
26	.2	.4	.2	.2	.3	1.1	2.2	1.6	.6	.2	.3	.2
27	.2	.3	.2	.2	.4	1.4	2.0	1.6	.6	.2	.5	.2
28	.2	.3	.2	.2	.4	1.5	2.2	1.6	.6	.2	*.2	.2
29	.2	.3	.2	.2	-	*2.0	1.9	1.5	.6	*.2	.1	.2
30	*.2	*.3	.2	.2	-----	2.7	1.9	1.4	.6	.1	.1	.2
31	.2	-----	.2	.3	-----	3.0	-----	1.4	-----	.1	.2	-----
Total	6.4	8.1	7.2	5.6	9.6	23.5	53.4	76.2	27.5	11.1	6.0	6.7
Mean	0.21	0.27	0.23	0.18	0.34	0.76	1.78	2.46	0.92	0.36	0.19	0.22
Ac-ft	13	16	14	11	19	47	106	151	55	22	12	13

Calendar year 1962: Max 13 Min 0.1 Mean 1.18 Ac-ft 855

Water year 1962-63: Max 4.1 Min 0.1 Mean 0.66 Ac-ft 479

Peak discharge (base, 12 cfs).--No peak above base.

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 26, Jan. 12-30.

## SAN JUAN RIVER BASIN

9-3614. Junction Creek near Durango, Colo.

Location.--Lat 37°20'05", long 107°54'30", in sec. 36, T.36 N., R.10 W., on left bank 4½ miles upstream from mouth and 4½ miles northwest of Durango.

Drainage area.--26.3 sq mi.

Records available.--October 1959 to September 1963.

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, 77 cfs May 8 (gage height, 3.58 ft); maximum gage height, 4.92 ft Feb. 14 (backwater from ice); minimum daily discharge, 1.1 cfs July 31 to Aug. 2.

1959-63: Maximum discharge, about 230 cfs May 13, 1960 (gage height not determined); maximum gage height, 4.95 ft Dec. 14, 1961 (backwater from ice); minimum daily discharge, 0.9 cfs Sept. 3-5, 10-13, 18, 1962.

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

2.3	0.6	3.0	20
2.4	1.2	3.3	44
2.6	5.5	3.6	80
2.8	11		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.1	4.8	4.6	1.8	2.4	2.8	45	20	14	2.8	1.1	4.0
2	3.7	4.8	4.4	2.0	2.6	2.8	36	23	13	2.8	1.1	26
3	* 3.4	4.6	4.1	2.0	3.0	2.8	23	31	13	2.4	2.6	19
4	3.2	4.4	4.1	* 2.0	2.8	2.8	23	42	12	2.6	6.0	14
5	3.2	4.4	3.9	2.0	2.8	2.4	22	48	12	3.0	6.0	14
6	3.0	4.1	3.8	2.0	3.0	2.6	25	53	11	2.8	5.3	23
7	2.8	3.9	3.6	2.0	3.4	* 2.8	34	57	* 9.5	2.4	9.8	29
8	2.8	* 3.7	3.6	2.0	3.4	3.0	36	* 62	9.8	3.4	6.8	23
9	2.8	3.7	3.2	1.8	3.2	3.2	42	62	9.8	3.9	7.2	17
10	2.6	3.7	2.8	1.8	3.0	3.4	38	52	8.0	* 5.3	8.0	14
11	2.6	3.4	2.6	1.6	2.8	3.2	32	51	7.8	4.6	13	12
12	2.4	3.2	2.6	1.6	3.0	3.2	34	46	7.5	4.1	11	10
13	2.4	3.2	2.8	1.6	3.0	3.2	36	42	7.8	4.1	7.5	9.5
14	2.2	3.7	2.8	1.8	2.4	3.4	42	37	7.5	3.2	6.2	9.2
15	2.2	4.1	2.8	1.8	2.6	3.6	50	31	7.2	2.8	5.8	8.3
16	3.7	3.7	2.8	1.8	2.8	4.0	* 44	37	7.2	2.4	6.2	7.5
17	7.2	3.4	3.0	1.8	2.6	4.8	34	39	6.8	2.4	5.8	7.0
18	13	3.9	3.2	1.8	2.4	4.8	27	38	6.5	2.2	5.8	6.5
19	16	3.2	3.2	1.8	2.4	4.6	23	37	6.2	2.2	4.8	6.2
20	12	3.4	3.0	1.8	2.4	5.0	19	35	6.2	2.0	4.6	7.0
21	11	3.4	2.6	1.8	2.4	7.0	17	32	5.8	2.0	4.6	11
22	10	3.4	2.2	1.8	2.4	12	15	* 32	5.5	1.8	5.3	7.5
23	10	3.4	2.6	1.8	2.4	16	16	30	5.3	2.0	6.5	7.0
24	9.2	3.7	2.4	1.8	2.4	23	18	27	5.3	2.0	7.5	6.2
25	8.3	4.6	2.2	1.6	2.4	25	21	23	4.6	1.6	5.8	6.0
26	7.5	4.8	1.4	1.8	2.6	28	23	21	4.1	1.6	9.5	5.5
27	6.8	4.6	1.6	1.8	2.6	32	20	20	3.9	1.6	31	5.0
28	6.2	4.4	1.6	1.8	2.6	34	18	18	3.7	1.6	* 23	4.8
29	5.8	4.1	1.8	2.0	-	* 37	* 16	18	3.4	* 1.6	16	4.8
30	5.5	* 4.4	1.8	2.0	-----	41	18	17	3.0	1.2	31	4.6
31	5.3	-----	1.8	* 2.2	-----	44	-----	15	-----	1.1	41	-----
Total	180.9	118.1	88.9	57.2	75.8	367.4	847	1096	227.4	79.5	305.8	364.6
Mean	5.84	3.94	2.87	1.85	2.71	11.9	28.2	35.4	7.58	2.56	9.86	12.2
Ac-ft	359	234	176	113	150	729	1,680	2,170	451	158	607	723

Calendar year 1962: Max 139 Min 0.9 Mean 14.6 Ac-ft 10,570  
 Water year 1962-63: Max 62 Min 1.1 Mean 10.4 Ac-ft 7,550

Peak discharge (base, 120 cfs).--No peak above base.

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 19, Dec. 6-15, Dec. 21 to Mar. 16, Mar. 19, 20. No gage-height record Dec. 29 to Jan. 3, Jan. 12-31, Apr. 8-16.

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 1902 (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 1963. 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 detums. 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.**--58 years (1896-1900, 1904-5, 1910-63), 857 cfs (620,400 acre-ft per year).

**Extremes.**--Maximum discharge during year, 3,300 cfs May 9 (gage height, 5.15 ft); minimum daily, 150 cfs Jan. 12, 13.

1895-1905, 1910-63: 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 periods of ice effect or 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, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.9	145	3.5	1,170
2.2	245	4.0	1,740
2.5	395	5.0	3,080
3.0	740		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	360	310	285	205	217	205	876	543	1,510	489	225	804
2	335	300	255	202	217	205	772	578	1,450	463	205	692
3	325	315	255	209	221	202	585	708	1,170	439	225	592
4	305	325	255	217	213	209	529	1,040	1,030	444	310	522
5	310	325	250	209	221	199	496	1,440	1,040	450	390	502
6	335	315	245	199	229	199	502	1,920	1,030	412	390	571
7	310	305	245	193	237	202	608	2,300	1,010	406	444	684
8	295	290	245	196	245	205	772	2,650	1,080	470	463	608
9	285	290	241	202	250	213	780	* 2,850	1,020	543	422	543
10	285	290	233	172	250	213	708	1,990	860	660	428	522
11	270	285	229	b 160	245	221	622	1,960	756	638	476	529
12	265	275	225	a 150	233	217	684	1,840	748	585	502	482
13	260	270	233	a 150	209	209	852	1,890	972	668	463	456
14	245	280	233	a 160	202	209	1,040	2,030	1,120	592	417	482
15	241	310	225	a 180	225	217	1,220	1,460	1,230	515	395	476
16	265	305	233	190	225	221	1,030	1,840	1,100	463	* 370	439
17	365	305	229	190	217	205	852	2,410	876	412	375	422
18	395	300	237	199	209	213	716	2,610	852	390	380	412
19	422	285	241	205	221	205	622	2,440	836	375	355	412
20	444	280	233	199	217	209	564	2,420	836	350	360	400
21	422	285	221	199	221	229	502	2,250	852	335	390	476
22	400	295	209	199	221	270	456	1,900	844	380	406	476
23	395	285	205	202	209	330	439	1,860	804	385	456	439
24	385	285	209	205	213	400	522	1,670	764	360	489	422
25	375	285	b 190	205	* 213	456	652	1,520	708	330	450	406
26	365	290	175	213	213	536	708	1,370	668	300	456	385
27	355	280	178	193	213	645	684	1,670	630	275	796	370
28	350	280	184	196	209	756	608	1,610	* 592	255	860	350
29	335	275	184	199	-	* 748	* 529	* 1,740	557	* 241	* 660	325
30	* 325	* 280	196	199	-----	748	522	1,600	508	237	630	* 315
31	320	-----	* 205	* 209	-----	788	-----	1,680	-----	241	660	-----
Total	10,344	8,800	6,983	6,006	6,215	10,084	20,452	55,789	27,453	13,103	13,838	14,514
Mean	334	293	225	194	222	325	682	1,800	915	423	446	484
Ac-ft	20,520	17,450	13,850	11,910	12,330	20,000	40,570	110,700	54,450	25,990	27,450	28,790

Calendar year 1962: Max 4,040 Min 142 Mean 816 Ac-ft 590,600

Water year 1962-63: Max 2,850 Min 150 Mean 530 Ac-ft 384,000

Peak discharge (base, 4,000 cfs).--No peak above base.

\* Discharge measurement made on this day.

a No gage-height record.

b Stage-discharge relation affected by ice.



## 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 1963 (discontinued).

Gage.--Water-stage recorder. Altitude of gage is 7,940 ft (by barometer).

Average discharge.--8 years, 86.1 cfs (62,330 acre-ft per year).

Extremes.--Maximum discharge during year, 742 cfs May 8 (gage height, 8.02 ft); minimum daily, 8.0 cfs Dec. 26, Mar. 18.

1955-63: Maximum discharge, 1,880 cfs July 26, 1957; maximum gage height, 8.79 ft 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 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	23	38	20	b 10	11	11	77	84	161	23	12	128
2	21	36	18	b 10	12	b 11	74	87	149	24	12	103
3	19	34	18	b 11	12	11	* 63	116	137	* 24	17	* 87
4	* 18	34	18	b 11	12	b 9	61	180	122	30	21	75
5	25	* 32	* 18	b 11	11	b 10	61	277	118	29	21	86
6	26	30	18	11	* 12	* b 11	58	440	* 111	26	19	130
7	23	28	18	10	12	b 12	62	522	104	29	26	110
8	21	26	17	11	12	b 9	74	580	97	33	24	90
9	19	24	16	* 11	13	b 9	80	* 534	100	38	24	80
10	18	24	17	b 11	13	9.2	74	395	90	41	28	75
11	18	24	16	11	12	9.2	72	415	81	36	50	73
12	16	22	17	10	b 12	9.2	81	420	72	34	50	65
13	16	20	16	9	11	b 9	108	446	78	32	61	63
14	15	22	15	9.5	12	b 9	142	410	81	28	43	66
15	15	30	16	10	b 12	9.8	174	340	78	25	40	60
16	19	28	16	10	b 12	b 9	160	415	75	24	40	56
17	32	26	15	10	b 12	8.6	134	446	69	21	41	52
18	33	26	16	10	b 12	8.0	120	415	63	20	40	49
19	43	26	16	10	13	b 9	100	395	58	19	39	46
20	39	24	13	10	12	10	90	355	58	19	36	* 48
21	38	24	12	10	12	13	80	308	52	18	35	58
22	39	22	b 13	11	11	20	75	272	50	20	37	50
23	41	24	b 14	11	10	28	70	* 250	45	19	43	44
24	43	22	15	11	10	33	80	232	* 42	18	45	42
25	45	20	b 11	11	11	38	95	214	40	18	45	42
26	44	20	b 8	11	11	49	100	197	37	16	47	40
27	41	19	b 9	10	11	60	95	205	33	16	128	36
28	40	18	b 9	10	10	65	85	205	32	15	100	35
29	39	19	b 9	10	-	66	75	197	29	13	82	33
30	40	19	b 9.5	11	-----	66	* 80	199	27	* 13	98	31
31	39	-----	b 9.5	11	-----	73	-----	173	-----	12	118	-----
Total	908	761	453.0	323.5	326	704.0	2,700	9,704	2,289	733	1,422	1,953
Mean	29.3	25.4	14.6	10.4	11.6	22.7	90.0	313	76.3	23.6	45.9	65.1
Ac-ft	1,800	1,510	899	642	647	1,400	5,360	19,250	4,540	1,450	2,827	3,870

Calendar year 1962: Max 640 Min 8 Mean 86.7 Ac-ft 62,750  
 Water year 1962-63: Max 580 Min 8.0 Mean 61.0 Ac-ft 44,190

Peak discharge (base, 500 cfs).--May 8 (2100) 742 cfs (8.02 ft); May 16 (2100) 580 cfs (7.75 ft).

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 2-26, Jan. 6-9, Jan. 11 to Feb. 6, Feb. 13, 14 (stage-discharge relation affected by ice during most of periods), Apr. 18-30.

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 1½ miles southeast of Durango.

Drainage area.--16.2 sq mi.

Records available.--October 1956 to September 1963 (discontinued).

Gage.--Water-stage recorder. Altitude of gage is 6,480 ft (from topographic map).

Average discharge.--7 years, 11.8 (8,540 acre-ft per year).

Extremes.--Maximum discharge during year, 222 cfs Aug. 11 (gage height, 4.43 ft); minimum not determined.

1956-63: 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, which are poor. Water imported from Los Pinos River. Most of flow is 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 July 10 to Sept. 9)

1.1	0	1.7	8.0
1.2	.3	2.0	19
1.3	.7	2.5	39
1.4	1.8	3.0	67
1.5	3.4	3.5	103

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	* 29	14	5.3		3.0	3.4	0.4	* 5.1	18	12	10	32
2	25	11	5.1		6	2.6	.3	4.0	21	11	11	30
3	21	4.7	* 3.6		14	2.4	* .3	3.8	21	12	18	32
4	15	3.2	3.2		* 20	* 1.5	.4	3.8	17	17	29	29
5	12	* 2.4	2.9		26	.8	.6	8.7	* 16	20	32	28
6	11	2.1	2.6		24	1.0	.4	5.5	16	19	18	28
7	12	2.0	2.6	(*)	22	1.2	.3	4.7	16	17	20	26
8	12	1.8	2.4		22	3.4	.3	8.7	17	27	18	22
9	9.8	1.7	2.2		20	4.4	.2	17	21	33	27	20
10	2.4	1.6	2.0		22	4.9	.2	21	19	74	29	16
11	9.8	1.6	2.1		7	2.6	.2	17	17	30	66	15
12	10	1.2	2.1		4.4	1.0	.2	17	16	* 31	25	15
13	10	1.7	2.9		3.2	.8	.2	16	15	33	19	15
14	9.8	3.8	2.9		2.2	2.0	.2	12	14	25	17	21
15	10	8.7	2.4	0.3	1.4	7.0	.2	12	12	22	16	19
16	11	7.0	2.4		1.2	3.6	.2	11	17	24	15	19
17	29	5.5	1.8		1.0	2.8	.2	10	19	21	13	20
18	36	6.0	1.2		1.2	2.2	.2	12	19	23	12	20
19	87	7.0	1.0		1.0	3.1	.2	10	21	21	15	21
20	25	6.8	.8		1.0	9.4	.2	14	20	20	21	24
21	15	6.2	.6		1.6	15	.2	14	21	23	20	27
22	14	5.3	.4		1.8	12	.1	12	23	25	20	19
23	14	4.9	.4		2.8	6.0	.1	14	23	23	22	18
24	13	3.1	.4		5.4	2.8	.1	15	20	21	23	17
25	13	1.7	.3		8	1.1	.2	16	20	* 23	23	19
26	13	1.4	.2		7.5	.7	.4	15	19	22	30	19
27	13	1.1	.3		8	.6	.4	14	21	21	42	17
28	13	.8	.3		5	.6	.3	15	14	21	* 33	16
29	14	.7	.4		-	.8	.2	15	14	20	30	15
30	14	.9	.4		-----	.6	.4	16	12	17	31	* 18
31	14	-----	.4		-----	.5	-----	17	-----	15	33	-----
Total	543.8	119.9	55.6	9.3	242.7	100.8	7.8	376.3	539	723	738	637
Mean	17.5	4.00	1.79	0.3	8.67	3.25	0.26	12.1	18.0	23.3	23.8	21.2
Ac-ft	1,080	238	110	18	481	200	15	746	1,070	1,430	1,460	1,260

Calendar year 1962: Max 87 Min 0 Mean 11.5 Ac-ft 8,300  
Water year 1962-63: Max 87 Min - Mean 11.2 Ac-ft 8,110

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 7-10, Dec. 19 to Feb. 9, Feb. 11-20, 22-28, Mar. 1, 2, 5-7, 11-13, 16-18 (no gage-height record Dec. 26 to Feb. 4).

## SAN JUAN RIVER BASIN

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 1963 (discontinued).

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.--7 years, 77.8 cfs (56,320 acre-ft per year).

Extremes.--Maximum discharge during year, 488 cfs May 9 (gage height, 4.33 ft); minimum daily, 9.5 cfs Aug. 2.

1956-63: Maximum discharge determined, 1,430 cfs June 7, 1958 (gage height, 4.35 ft), 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)

2.2	8.0	3.0	76
2.5	24	3.5	190
2.7	38	4.5	520

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	* 32	44	36	17	20	28	125	* 21	28	16	11	123
2	32	44	36	18	24	26	123	18	29	15	9.5	121
3	28	42	* 30	19	32	25	* 102	16	32	14	18	98
4	26	42	28	19	30	* 26	94	29	25	17	29	78
5	20	* 40	27	19	32	19	92	93	* 26	22	36	80
6	19	39	26	18	34	18	89	232	25	22	28	138
7	19	36	24	* 17	* 36	18	85	310	25	17	22	150
8	19	34	24	17	38	19	94	* 370	23	23	20	106
9	18	32	22	18	38	21	106	387	28	31	54	68
10	16	33	20	18	40	22	108	262	27	60	59	53
11	17	31	19	17	40	22	98	232	25	35	71	47
12	18	29	20	15	24	17	98	226	23	* 61	32	36
13	18	28	20	13	26	14	118	235	23	38	28	28
14	18	32	20	14	26	16	155	256	24	28	24	28
15	19	45	20	15	26	20	205	155	21	26	20	29
16	20	41	20	15	24	22	199	169	23	23	19	28
17	38	37	22	15	22	23	175	223	26	23	16	28
18	52	39	25	15	22	22	143	223	26	22	17	27
19	114	36	29	15	24	20	125	181	26	22	20	26
20	68	32	26	15	26	27	114	158	25	19	28	26
21	37	34	20	15	30	43	98	132	25	20	26	32
22	30	33	16	16	29	56	78	* 98	25	25	26	35
23	28	34	16	17	27	60	48	74	27	20	28	28
24	26	33	18	17	29	74	52	56	25	20	30	24
25	40	31	16	17	35	70	81	46	25	19	30	21
26	42	31	12	17	34	78	81	37	24	18	36	19
27	46	29	13	16	38	94	60	32	24	18	50	19
28	48	28	13	15	32	108	50	30	20	17	* 110	19
29	46	28	14	16	-	106	38	30	18	16	70	19
30	46	28	15	17	-----	108	26	27	16	* 15	54	* 19
31	44	-----	16	18	-----	114	-----	28	-----	14	81	-----
Total	1,044	1,045	663	510	838	1,336	3,060	4,386	739	736	1,102.5	1,553
Mean	33.7	34.8	21.4	16.5	29.9	43.1	102	141	24.6	23.7	35.6	51.8
Ac-ft	2,070	2,070	1,320	1,010	1,660	2,650	6,070	8,700	1,470	1,460	2,191	3,080

Calendar year 1962: Max 356 Min 12 Mean 63.5 Ac-ft 45,960

Water year 1962-63: Max 387 Min 9.5 Mean 46.6 Ac-ft 33,750

Peak discharge (base, 600 cfs).--No peak above base.

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 26 to Nov. 4, Jan. 12 to Feb. 4, July 26-30, Aug. 12-28. Stage-discharge relation affected by ice Dec. 7-17, 21-31, Jan. 1 to Feb. 19, Mar. 5-7, 12-16.

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 S.5 miles north of Cedar Hill.

Drainage area.--1,090 sq mi, approximately.

Records available.--October 1933 to September 1963. 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.--30 years, 902 cfs (653,000 acre-ft per year).

Extremes.--Maximum discharge during year, 4,140 cfs May 9 (gage height, 7.00 ft); minimum daily, 120 cfs Jan. 14.

1933-63: 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 1944-45, 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 Oct. 17, 18, Feb. 8 to Apr. 27, July 26 to Sept. 30)

Oct. 1 to Mar. 31				Apr. 1 to Sept. 30			
3.4	106	4.2	415	3.3	210	4.8	1,160
3.6	150	4.6	720	3.5	285	5.5	1,900
3.8	213	5.0	1,100	3.9	490	6.6	3,460
				4.3	750		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	409	355	340	b240	b300	242	1,110	598	a1,800	544	238	998
2	379	345	310	b230	b320	234	1,030	631	a1,700	532	253	940
3	361	340	290	b240	b350	221	836	729	a1,400	484	277	778
4	350	361	290	b250	b330	242	736	1,110	1,150	484	365	666
5	340	355	290	b240	b350	230	694	1,630	1,140	526	415	659
6	361	350	280	b220	b400	221	673	2,160	1,150	478	400	750
7	340	340	280	b210	b380	226	778	2,770	1,120	442	448	924
8	320	320	285	b210	373	234	956	3,220	1,180	520	520	820
9	305	315	280	b220	350	247	989	3,440	1,160	598	478	680
10	305	320	265	b220	409	247	908	2,490	1,020	799	479	624
11	285	315	260	b200	345	251	813	2,280	884	743	580	645
12	270	305	251	a160	310	251	860	2,230	860	729	574	574
13	265	295	255	a130	300	238	1,020	2,270	1,080	736	550	532
14	260	320	260	a120	265	242	1,260	2,410	1,240	708	502	550
15	260	361	251	b130	265	255	1,520	1,860	1,430	610	448	574
16	285	345	247	a150	275	260	1,350	2,080	1,290	550	415	520
17	441	345	251	b170	265	242	1,140	2,700	1,070	496	415	490
18	543	345	260	b200	251	251	940	2,960	980	442	420	460
19	630	330	280	b230	260	242	836	2,780	972	436	425	460
20	508	305	265	a250	265	265	729	2,740	932	405	400	454
21	460	320	247	a230	285	330	659	2,610	956	380	425	568
22	434	325	230	a220	280	391	598	2,230	948	410	472	592
23	415	320	226	a220	265	460	532	2,150	908	420	520	514
24	403	320	226	a220	270	536	580	1,960	852	390	574	478
25	403	315	b220	b220	275	598	750	1,790	778	355	550	454
26	397	320	b200	b230	265	648	836	a1,650	736	308	568	436
27	397	310	b180	b220	265	819	806	a1,900	708	303	1,050	415
28	385	300	b190	b210	255	950	743	a1,900	659	294	1,160	400
29	373	295	b200	b220	-	990	652	a2,050	631	261	860	365
30	367	300	b210	b220	-----	1,020	598	a1,900	586	253	799	335
31	367	-----	b220	b230	-----	1,030	-----	a2,000	-----	253	884	-----
Total	11,618	9,792	7,839	6,460	9,523	12,613	25,932	65,228	31,320	14,889	16,464	17,655
Mean	375	326	253	208	304	407	864	2,104	1,044	480	531	588
Ac-ft	23,040	19,420	15,550	12,810	16,910	25,020	51,440	129,400	62,120	29,530	32,660	35,020

Calendar year 1962: Max 4,440 Min 150 Mean 901 Ac-ft 652,600

Water year 1962-63: Max 3,440 Min 120 Mean 626 Ac-ft 452,900

Peak discharge (base, 4,000 cfs).--May 9 (1000) 4,140 cfs (7.00 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 1963. 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.--47 years (1905-6, 1917-63), 45.6 cfs (33,010 acre-ft per year).

Extremes.--Maximum discharge during year, 205 cfs May 8 (gage height, 2.07 ft); minimum not determined.

1904-6, 1910, 1917-63: 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 fair except those for period of no gage-height record, which are poor. 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	1.4	27
1.1	6.0	1.6	58
1.2	11	1.8	114
1.3	18	2.0	188

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.0	*12	9.0				111	*28	53	*12	6.0	102
2	*5.0	12	9.0	(*)			86	40	47	10	7.0	63
3	6.0	12	9.0				63	63	*40	10	8.0	49
4	6.5	12	8.5				54	92	40	11	8.5	45
5	8.0	11	*8.5		(*)		49	111	42	12	8.5	47
6	8.5	11					54	*128	40	11	8.5	45
7	9.0	11					83	146	30	12	18	47
8	9.0	11					*111	150	35	14	17	42
9	9.0	11					105	139	37	15	16	*35
10	10	11					80	114	30	21	22	*44
11	9.5	10				8.5	73	105	27	21	22	45
12	9.5	10					102	89	26	20	18	37
13	9.5	10					139	73	34	20	17	32
14	9.5	10					161	63	37	18	15	32
15	9.5	11					*169	47	37	15	15	26
16	11	10		6.2	8		139	66	35	15	*16	24
17	16	9.5		(*)			105	*89	*31	14	21	22
18	15	10	8.5				83	92	30	14	18	21
19	14	9.0					68	80	30	12	17	20
20	13	9.0				(*)	60	73	*28	11	16	24
21	12	9.0					53	68	27	11	15	26
22	*12	9.0					*42	63	26	10	15	23
23	12	9.0				30	37	58	23	90	15	22
24	13	9.0					42	49	21	8.5	17	*20
25	12	9.0			(*)		49	44	*19	8.0	16	17
26	12	9.0					70	54	42	18	80	17
27	12	9.0					*86	44	54	17	7.5	15
28	12	9.0					86	32	49	17	7.0	108
29	12	8.5					80	28	53	15	7.0	66
30	13	9.0					78	27	58	14	6.0	92
31	13						92		54	6.0	121	13
Total	327.5	302.0	265.0	192.2	224	812.0	2,303	2,380	906	376.0	937.5	983
Mean	10.6	10.1	8.55	6.2	8	26.2	76.8	76.8	30.2	12.1	30.2	32.8
Ac-ft	650	599	526	381	444	1,610	4,570	4,720	1,800	746	1,860	1,950

Calendar year 1962: Max 270 Min 3.2 Mean 34.6 Ac-ft 25,020  
Water year 1962-63: Max 169 Min - Mean 27.4 Ac-ft 19,860

Peak discharge (base, 230 cfs).--No peak above base.

\* Discharge measurement made on this day.

Note.--No gage-height record Dec. 6 to Mar. 26 (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 1963. 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.--43 years, 34.2 cfs (24,760 acre-ft per year).

Extremes.--Maximum discharge during year, 449 cfs Aug. 27 (gage height, 3.35 ft), from rating curve extended above 120 cfs; minimum daily, 0.2 cfs Apr. 24, 25, 28, 29.

1920-63: 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 fair except those for periods of ice effect or no gage-height record, which are poor. Diversions above station for irrigation of about 15,000 acres, mostly 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. 10-20)

0.1	0.1	0.6	8.0
.2	.6	1.1	33
.3	1.6	1.6	81
.4	3.0	2.0	131
.5	5.0		

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.0	*2.3	4.4			17	32	*0.4	33	*1.5	1.0	6.4
2	*4.8	2.0	3.4	(*)		14	33	2.3	31	1.9	.9	2.9
3	4.6	1.7	3.4			12	28	*1.6	*29	1.7	1.4	5.9
4	4.6	1.7	3.4		(*)	12	26	37	25	1.9	3.4	3.4
5	4.8	1.9	*3.2			13	22	51	24	1.6	2.7	.8
6	4.6	1.6				10	18	62	22	1.4	2.0	*1.3
7	4.4	1.5				9.2	22	76	18	1.2	2.0	4.7
8	4.4	.9			16	8.0	*70	95	13	2.7	15	20
9	4.2	1.0				8.4	68	121	17	3.9	10	19
10	4.2	1.1				10	41	103	16	2.2	4.6	16
11	4.2	1.6				10	32	104	12	2.7	2.7	28
12	4.0	1.6				10	85	53	10	3.2	2.7	25
13	2.6	1.7		2		8.0	110	1.3	10	2.7	2.3	22
14	2.7	2.4				8.4	104	.3	12	2.0	2.3	22
15	2.7	3.0				7.4	*100	.3	13	1.4	2.0	22
16	4.8	2.6			15	7.1	87	.3	14	1.2	2.2	18
17	16	3.0			16	6.2	104	1.3	*14	2.4	3.0	11
18	17	3.6	2.5		14	6.5	89	*63	9.2	2.2	2.7	3.2
19	4.4	2.5			16	5.6	91	61	8.0	1.5	2.3	2.2
20	14	2.9			14	*6.2	81	55	6.5	2.0	2.0	16
21	7.4	3.0			18	21	*71	53	5.6	2.0	4.9	4.6
22	*4.6	3.6			18	37	31	54	4.8	2.2	3.0	2.0
23	3.0	3.5			16	42	1.3	52	5.0	2.0	2.4	2.0
24	1.6	3.4			16	46	.2	49	5.0	2.7	2.4	2.3
25	.9	3.5			*17	36	.2	39	5.0	1.9	2.2	1.6
26	.7	3.2			18	56	.6	32	6.5	1.9	4.6	1.6
27	1.1	3.2			20	29	.4	39	6.8	1.4	5.9	2.4
28	2.6	2.9		5	17	*78	.2	37	*5.3	1.4	16	3.2
29	2.4	2.9			-	43	.2	34	2.9	1.4	5.9	4.2
30	2.7	2.9				32	.5	36	2.6	1.4	35	4.6
31	2.7					29		37		.4	58	
Total	187.3	72.7	82.8	80	455	708.0	1,348.6	1,365.2	386.2	798	260.6	404.3
Mean	6.04	2.42	2.67	2.6	16.2	22.8	45.0	44.0	12.9	2.57	8.41	13.5
Ac-ft	372	144	164	159	902	1,400	2,670	2,710	766	158	517	802

Calendar year 1962: Max 255 Min 0.7 Mean 24.6 Ac-ft 17,780  
Water year 1962-63: Max 121 Min 0.2 Mean 14.9 Ac-ft 10,760

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 19-26, Dec. 6 to Feb. 15 (no gage-height record Jan. 16 to Feb. 4).

## SAN JUAN RIVER BASIN

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 1963. 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.--35 years, 53.2 cfs (38,520 acre ft per year).

Extremes.--Maximum discharge during year, 1,480 cfs Aug. 27 (gage height, 4.73 ft); no flow for many days.

1920-43, 1951-63: 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 fair except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 10,000 acres above station. One diversion above station for irrigation of about 100 acres below.

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	11	18	15	12	14	17	64	0.1		0	0	69
2	10	17	16	12	30	17	62	.1		0	0	10
3	9.0	16	15	13	80	16	48	.1		0	0	5
4	9.5	16	14	12	132	18	* 37	.1		0	0	2
5	10	15	14	12	100	16	31	.1		0	64	1.9
6	11	* 15	13	11	116	15	26	.1	(*)	0	80	14
7	10	15	* 12	11	* 104	15	30	.1		0	15	2.3
8	* 10	15	13	11	98	* 15	42	.1		* 0	10	1.1
9	9.5	14	13	11	78	16	46	0		16	30	.4
10	9.0	15	13	* 11	64	16	40	0		226	6.0	.3
11	8.5	15	12	9	52	18	32	0		40	40	.1
12	9.0	15	10	7.5	37	16	26	0		20	5	.4
13	9.0	15	11	7.5	19	15	32	.2		10	1	1.1
14	8.5	16	11	8	28	15	36	.4		5	0	.5
15	8.5	23	11	8.5	30	16	35	.7		1	0	1.5
16	12	28	10	9	31	19	35	.2		0	0	.7
17	39	23	12	9	28	17	28	.3		0	1	.2
18	104	21	16	8.5	24	17	21	1.7		0	12	.2
19	100	19	17	8.5	27	18	14	2.8		0	10	.2
20	86	16	19	9	28	16	10	* .3		0	1	.2
21	52	16	15	10	32	21	7.0	.1		0	1	.2
22	35	19	10	9.5	37	31	2.5	.1		0	15	.2
23	27	17	9	11	28	37	.5	.1		0	2	.2
24	25	16	10	10	26	40	.2	0		0	1	.2
25	24	16	9.5	11	26	39	.1	0		0	.5	.2
26	24	16	7	11	23	36	.1	0		0	15	.2
27	23	16	8	10	21	37	.1	0		0	611	.2
28	21	15	9	11	21	43	.9	0		0	93	.2
29	20	13	9.5	11	-	44	* .2	0		0	* 24	.2
30	20	13	10	11	-----	54	.1	0		0	10	.2
31	19	-----	11	12	-----	55	-----	0	-----	* 0	110	-----
Total	773.5	504	375.0	318.0	1,334	765	706.7	7.7	0	318	1,157.5	113.1
Mean	25.0	16.8	12.1	10.3	47.6	24.7	23.6	0.25	0	10.3	37.3	3.77
Ac-ft	1,530	1,000	744	631	2,650	1,520	1,400	15	0	631	2,300	224

Calendar year 1962: Max 142 Min 0 Mean 21.6 Ac-ft 15,660  
 Water year 1962-63: Max 611 Min 0 Mean 17.5 Ac-ft 12,640

Peak discharge (base, 700 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
10-18	1730	3.87	890	8- 5	1215	4.43	1,180
7-10	0400	4.52	1,430	8-27	0500	4.73	1,480

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

Note.--Stage-discharge relation affected by ice Dec. 13-17, 22, 23, Dec. 25 to Feb. 3, Feb. 5, 13, 14. No gage-height record July 11-30, Aug. 8, 12-26, Sept. 2-4, 18-30.

## 9-3720. McElmo Creek near Colorado-Utah State line

Location.--Lat 37°19'27", long 109°00'54", in NE¼ 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 1963.

Gage.--Water-stage recorder. Altitude of gage is 4,890 ft, revised (from topographic map).

Average discharge.--12 years, 37.7 cfs (27,290 acre-ft per year).

Extremes.--Maximum discharge during year, 1,140 cfs Aug. 27 (gage height, 6.17 ft); minimum daily, 0.6 cfs July 31, Aug. 1.  
1951-63: 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. Diversion 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)

2.2	0.5	2.9	36
2.3	1.0	3.2	81
2.4	2.0	3.5	131
2.5	4.0	4.0	228
2.6	9.0	4.5	370
2.7	16	5.0	535

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		29	47	28	40	27	24	20	44	2.2	0.6	1.6
2		28	60	30	75	28	24	15	47	1.9	1.0	1.8
3		29	52	25	202	32	23	11	54	1.7	72	1.1
4	a 30	35	44	26	102	36	* 26	27	49	2.6	118	8.5
5		39	43	29	84	36	42	24	37	1.9	44	6.5
6		* 37	* 42	28	73	27	40	17	* 36	2.2	42	8.1
7		34	32	26	* 62	24	34	17	33	1.9	44	4.3
8	* 27	34	30	26	56	* 25	54	18	29	* 1.6	28	2.7
9	25	34	30	28	49	23	60	24	50	9.0	14	1.8
10	23	34	30	23	60	24	58	39	59	11.5	21	1.3
11	21	35	27	* 18	71	24	42	40	46	9.8	159	1.1
12	17	35	26	13	50	26	58	46	35	5.0	62	8.5
13	16	36	27	14	49	25	62	54	32	2.6	23	1.0
14	18	39	27	17	35	27	49	44	28	1.9	7.5	1.2
15	24	76	27	20	39	33	39	22	27	1.5	2.4	1.2
16	32	71	28	20	39	29	33	53	26	8.0	1.8	1.4
17	106	70	32	22	35	28	37	44	28	3.2	3.0	1.3
18	86	59	32	22	35	29	60	50	20	2.2	4.0	1.1
19	186	53	46	22	35	32	67	49	20	1.9	8.5	8.5
20	140	46	52	22	34	28	49	* 60	21	1.9	4.5	9.7
21	62	40	35	24	35	28	40	70	22	1.9	1.8	1.3
22	47	52	30	24	40	46	32	58	15	1.6	2.0	1.2
23	42	46	28	26	40	49	28	58	13	1.4	2.0	1.3
24	39	39	33	26	32	53	23	64	12	1.4	2.0	1.5
25	36	53	23	24	29	27	19	67	10	1.3	1.9	1.2
26	35	54	17	26	33	21	24	56	9.0	1.3	2.0	1.2
27	34	53	20	26	35	22	43	47	7.0	.9	44.5	1.4
28	32	46	22	28	32	27	70	43	5.0	.8	170	1.5
29	29	46	24	28	-	29	* 65	40	3.0	1.0	* 36	1.1
30	29	44	26	30	-----	30	43	36	2.4	.8	17	9.7
31	28	-----	28	32	-----	27	-----	39	-----	* 6	15	-----
Total	1,344	1,326	1,020	753	1,501	922	1,268	1,252	819.4	378.2	1,355.0	478.4
Mean	43.4	44.2	32.9	24.3	53.6	29.7	42.3	40.4	27.3	12.2	43.7	15.9
Ac-ft	2,670	2,630	2,020	1,490	2,980	1,830	2,520	2,480	1,630	750	2,690	949

Calendar year 1962: Max 186 Min 2.6 Mean 38.7 Ac-ft 28,050  
Water year 1962-63: Max 445 Min 0.6 Mean 34.0 Ac-ft 24,640

Peak discharge (base, 500 cfs).--Aug. 11 (1130) 611 cfs (5.19 ft); Aug. 27 (0630) 1,140 cfs (6.17 ft).

\* Discharge measurement made on this day.

a No gage-height record.

Note.--Stage-discharge relation affected by ice Dec. 29 to Jan. 2, Jan. 6 to Feb. 2.



## TRANSMOUNTAIN DIVERSIONS

## 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.5 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 Crystal Creek (tributary to Spruce Creek) in sec.14, T.7 S., R.78 W., 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 River (formerly 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 Gochetopa 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.

## Transmountain diversions from Colorado River basin in Colorado--Continued

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, tributary to North Clear Creek in sec.35, T.43 N., R.3 W., in Rio Grande basin.

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 NW $\frac{1}{4}$  sec.4, T.38 N., R.1 W., and SW $\frac{1}{4}$  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

## Transmountain diversions from Colorado River basin in Colorado

Diversion, in acre-feet, water year October 1962 to September 1963

Diversion	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Water year
<b>TO PLATTE RIVER BASIN</b>													
Grand River ditch.....	0	0	0	0	0	0	0	2,790	7,560	2,680	1,990	578	15,600
Eureka ditch.....	0	0	0	0	0	0	0	0	69	17	.6	0	87
Alva B. Adams tunnel.....	11,010	28,590	32,430	28,760	26,080	28,720	24,140	26,970	19,450	27,540	17,310	14,350	285,400
Berthoud Pass ditch.....	0	0	0	0	0	0	0	69	163	75	49	28	384
Moffat water tunnel.....	2,580	1,630	1,330	849	674	742	1,790	10,890	12,400	3,180	4,460	4,620	45,140
Boreas Pass ditch.....	0	0	0	0	0	0	0	0	0	0	0	0	0
Total.....	13,590	30,220	33,760	29,610	26,750	29,460	25,930	40,720	39,640	33,490	23,810	19,580	346,600
<b>TO ARKANSAS RIVER BASIN</b>													
Hoosier Pass tunnel.....	0	0	0	0	0	0	40	2,180	3,340	64	2,970	1,260	9,850
Fremont Pass ditch.....	0	0	0	0	0	0	0	480	323	0	0	0	0
Columbine ditch.....	0	0	0	0	0	0	19	165	106	0	0	0	803
Ewing ditch.....	0	0	0	0	0	0	0	754	456	0	0	0	290
Wurtz ditch.....	0	0	0	0	0	0	2.2	0	0	0	63	23	1,300
Twin Lakes tunnel.....	525	300	261	242	182	229	643	11,060	10,270	3,350	2,820	2,060	31,940
Busk-Ivanhoe tunnel.....	0	0	0	0	0	0	0	1,800	1,330	460	115	0	3,700
Larkspur ditch.....	0	0	0	0	0	0	0	12	0	0	0	0	12
Total.....	525	300	261	242	182	229	704	16,450	15,820	3,870	5,970	3,340	47,900
<b>TO RIO GRANDE BASIN</b>													
Tarbell ditch.....	0	0	0	0	0	0	0	40	0	0	0	0	40
Tabor ditch.....	0	0	0	0	0	0	0	148	63	25	0	0	236
Treasure Pass ditch.....	0	0	0	0	0	0	0	110	35	0	0	0	145
Piedra Pass ditch.....	0	0	0	0	0	0	0	79	60	0	0	0	139
Squaw Pass ditch.....	0	0	0	0	0	0	0	108	210	34	0	0	352
Fuchs ditch.....	0	0	0	0	0	0	0	307	127	81	48	119	682
Raber-Loehr ditch.....	0	0	0	0	0	0	0	557	386	180	122	0	1,240
Total.....	0	0	0	0	0	0	0	1,350	881	320	170	119	2,830
Grand total.....	14,120	30,520	34,020	29,850	26,940	29,690	26,630	58,520	56,350	37,690	29,950	23,040	397,300

## DISCHARGE AT MISCELLANEOUS SITES

331

## 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 1963

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Platte River basin						
Harvard Gulch....	South Platte River.....	SE $\frac{1}{4}$ sec.27, T.4 S., R.68 W., at State Children's Home near intersection of Washington Avenue and Harvard Street at Denver, Colo.	a4.45	1960	6-15-63	†942
McIntyr Gulch...	Lakewood Gulch...	SE $\frac{1}{4}$ sec.9, T.4 S., R.69 W., at crossing of Agricultural ditch, at southeast edge of Denver Federal Center, 7.1 miles southwest of State Capitol, Denver, Colo.	3.22		6-15-63	†968
Newlin Creek.....	Cherry Creek.....	NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec.17, T.6 S., R.66 W., about 1 mile above mouth and 2 miles northwest of Parker, Colo.	13.6		8- 3-63	†7,620
Cottonwood Creek tributary.....	Cottonwood Creek.	SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec.23, T.5 S., R.67 W., at culvert under Arapahoe Road, 0.5 mile above mouth and 7.6 miles northwest of Parker, Colo.	.65		8- 3-63	†223
Cottonwood Creek.	Cherry Creek.....	NW $\frac{1}{4}$ sec.24, T.5 S., R.67 W., 0.3 mile above water line of Cherry Creek Reservoir at elevation 5,598 ft and 7 $\frac{1}{2}$ miles northwest of Parker, Colo.	7.81		8- 3-63	†3,330
Lone Tree Creek..	Cottonwood Creek.	SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec.24, T.5 S., R.67 W., et culvert under Arapahoe Road about 1 $\frac{1}{2}$ miles above water line of Cherry Creek Reservoir at elevation 5,598 ft and 6.7 miles northwest of Parker, Colo.	1.38		8- 3-63	†930
Toll Gate Creek..	Sand Creek.....	On line between secs.6 and 7, T.4 S., R.66 W., at East 6th Avenue, at south city limits of Aurora, Colo., $\frac{1}{2}$ mile below confluence of East Toll Gate and West Toll Gate Creeks, and 3 $\frac{1}{2}$ miles above mouth.	35.8	1957	6-15-63	†3,920
Sand Creek.....	South Platte River.....	W $\frac{1}{2}$ sec.21, T.3 S., R.67 W., at northeast city limits of Denver, Colo., 1,000 ft above bridge on State Highway 72 (relocated), 1.8 miles below Toll Gate Creek, and 4 miles above mouth.	187	1957	6-15-63	†3,740
Lefthand Creek...	St. Vrain Creek..	NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec.19, T.2 N., R.70 W., at culvert under State Highway 7, 7 miles north of Boulder, Colo.	59.2		8- 8-63	†1,500
Gunbarrel Hill draw.....	Boulder Creek....	SE $\frac{1}{4}$ sec.8, T.1 N., R.69 W., at road crossing $\frac{1}{2}$ mile north of Boulder Creek and 3 $\frac{1}{2}$ miles southeast of Niwot, Colo.	.54	1962	10- 5-62	†16.0
Arkansas River basin						
Kramer Creek.....	Arkansas River...	NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec.29, T.21 S., R.60 W., $\frac{1}{2}$ mile above mouth and 1.5 miles north of Nepesta, Colo.	b160		7-13-63	†c7,000
Arkansas River tributary.....	do.....	NE $\frac{1}{4}$ sec.16, T.23 S., R.53 W., at culverts under U. S. Highway 50 6 $\frac{1}{2}$ miles southwest of Las Animas, Colo.	5.29		7-27-63	†1,230

† Peak flow.

a 3.09 sq mi contributing downstream from Highline Canal.

b Approximately, of which 20 to 30% is noncontributing.

c About.

## DISCHARGE AT MISCELLANEOUS SITES

Discharge measurements made at miscellaneous sites during water year 1963--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Roaring Fork basin						
Rocky Fork.....	Fryingpan River..	NW¼ sec.18, T.8 S., R.84 W., near private bridge at mouth, 1¼ miles west of Ruedi, Colo.	d13	1959-62	10- 3-62 11- 1-62 12- 5-63 1- 9-63 2- 5-63 3- 6-63 4- 2-63 5- 1-63 5-15-63 6- 5-63 6-25-63 7-10-63 8- 6-63 9-10-63	*3.23 *4.65 *2.84 *2.26 *1.91 *1.96 *2.66 4.11 15.3 11.4 6.20 7.47 5.39 5.93
Avalanche Creek..	Crystal River....	SE¼ sec.28, T.9 S., R.88 W., 1 mile above mouth and ¼ miles north of Redstone, Colo.	41.8	1909, 1955-57*, 1958-62	10- 4-62 11- 2-62 12- 6-62 1-10-63 2- 6-63 3- 7-63	*33.3 *24.6 *22.9 *21.3 *14.6 *13.6

\* Base flow.

† Peak flow.

‡ Operated as a continuous-record gaging station.

a 3.09 sq mi contributing downstream from Highline Canal.

b Approximately, of which 20 to 30% is noncontributing.

c About.

d Approximately.

# INDEX

	Page		Page
Alamosa Creek above Terrace Reservoir.....	118	Colorado River, at Hot Sulphur Springs.....	150
Alkali Creek near Wolcott.....	182	below Baker Gulch, near Grand Lake.....	136
Alva B. Adams tunnel at east portal, near Estes Park.....	138	below Lake Granby.....	142
diversion by.....	328,330	near Cameo.....	205
Animas River, at Durango.....	319	near Colorado-Utah State line.....	262
at Howardsville.....	315	near Dotsero.....	185
near Cedar Hill, N. Mex.....	323	near Granby.....	143
Antelope Creek near Kremmling.....	160	near Grand Lake.....	137
Apishapa River near Fowler.....	88	near Kremmling.....	175
Arapaho Creek at Monarch Lake Outlet.....	140	Columbine ditch at Deadman Hill, diversion by.....	52
Arkansas River, at Canon City.....	78	Columbine ditch near Fremont Pass, diversion by.....	328,330
at Granite.....	72	Conejos River, below Platoro Reservoir.....	127
at La Junta.....	89	near La Sauses.....	132
at Lamar.....	100	near Mogote.....	128
at Las Animas.....	90	Cottonwood Creek (Arkansas River basin) below Hot Springs,	
at Salida.....	75	near Buena Vista.....	74
below John Martin Reservoir.....	99	Cottonwood Creek (Gunnison River basin) near Grand Mesa.....	246
near Coolidge, Kans.....	102	Cow Creek (tributary to Leroux Creek) near Cedaredge.....	241
near Nepesta.....	87	Cow Creek (tributary to Uncompahgre River) near Ridgway.....	257
near Pueblo.....	79	Cross Creek near Minturn.....	181
near Wellsville.....	76	Crystal Creek near Maher.....	231
		Crystal River, above Avalanche Creek, near Redstone.....	192
Battlement Creek near Grand Valley.....	202	at Placita.....	191
Bear Creek, at Morrison.....	23	near Redstone.....	193
at mouth, at Sheridan.....	24	Cucharas River at Boyd Ranch, near La Veta.....	85
Beaver Creek (tributary to Colorado River) near Rifle.....	201	Culebra Creek at San Luis.....	133
Beaver Creek (tributary to East Fork Dallas Creek) near		Curecanti Creek near Sapinero.....	228
Ridgway.....	254		
Beaver Creek (tributary to San Miguel River) near Norwood.....	269	Dallas Creek, near Ridgway.....	256
Bemrose-Hoosier diversion near Hoosier Pass.....	164	East Fork, near Ridgway.....	253
Berthoud Pass ditch at Berthoud Pass, diversion by.....	328,330	West Fork, near Ridgway.....	252
Big Alkali Creek near Burns.....	178	Disappointment Creek near Dove Creek.....	265
Big Beaver Creek near Buford.....	294	Dolores River, at Dolores.....	264
Big Thompson River, at Estes Park.....	41	below Rico.....	263
at mouth, near La Salle.....	46		
at mouth of canyon, near Drake.....	43	Eagle River, at Red Cliff.....	179
near Estes Park.....	42	below Gypsum.....	184
Blue River, above Green Mountain Reservoir.....	172	East Divide Creek near Silt.....	198
below Dillon.....	171	East Rifle Creek near Rifle.....	199
below Green Mountain Reservoir.....	174	East River at Almont.....	216
near Dillon.....	166	Elevenmile Canyon Reservoir near Lake George, contents of.....	44,45
Bob Creek ditch near Glendevey, diversion by.....	52	Elk River at Clark.....	275
Bonny Reservoir near Hale.....	67	Elkhead Creek, near Clark.....	278
Boreas Pass ditch at Boreas Pass, diversion by.....	328,330	near Elkhead.....	279
Boulder Creek near Orodell.....	37	North Fork, near Elkhead.....	280
Brush Creek (Eagle River basin) near Eagle.....	183	Eureka ditch near Flattop Mountain, diversion by.....	328,330
Brush Creek (Plateau Creek basin) near Collbran.....	211	Ewing ditch at Tennessee Pass, diversion by.....	328,330
Busk-Ivanhoe tunnel at east portal, near Malta, diversion			
by.....	328,330	Fall Creek near Rustic.....	48
Buzzard Creek, below Owens Creek, near Heiberger.....	209	Falls Creek near Durango.....	317
near Collbran.....	210	Fish Creek near Milner.....	276
		Florida River, at Bondad.....	322
Cache la Poudre River, at mouth of canyon, near Fort Collins		near Hermosa.....	320
near Greeley.....	54	Fountain Creek, at Pueblo.....	83
near Rustic.....	55	near Colorado Springs.....	80
North Fork, near Livermore.....	47	Fourmile Creek near Glenwood Springs.....	195
South Fork, near Rustic.....	53	Fraser River near Winter Park.....	146
Cameron Pass ditch at Cameron Pass, diversion by.....	51	Fremont Pass ditch at Fremont Pass, diversion by.....	328,330
Cantero Creek near La Garita.....	116	Frijole Creek near Alcala.....	93
Carter Lake near Berthoud, contents of.....	44,45	Frontier ditch near Coolidge, Kans.....	101
Cattle Creek near Carbondale.....	194	Fryingpan River, at Norrie.....	188
Cebolla Creek near Powderhorn.....	223	at Ruedi.....	190
Cheesman Lake near Deckers, contents of.....	44,45	North Fork, near Norrie.....	189
Cherry Creek, at Denver.....	28	Fuchs ditch at Weminuche Pass, diversion by.....	329,330
below Cherry Creek Reservoir.....	27		
near Franktown.....	25	George Creek near Grand Mesa.....	243
near Melvin.....	26	Goose Creek (Platte River basin) above Cheesman Lake.....	15
Cimarron Creek, at Cimarron.....	230	Goose Creek (Rio Grande basin) at Wagonwheel Gap.....	107
near Cimarron.....	229	Grand River ditch at La Poudre Pass, diversion by.....	328,330
Cimarron ditch, diversion by.....	229	Grape Creek near Westcliffe.....	77
Clear Creek (Arkansas River basin) above Clear Creek		Grass Valley Canal, diversion by.....	200
Reservoir.....	73	Grassy Creek near Mount Harris.....	277
Clear Creek (Platte River basin), at mouth, near Derby.....	32	Green Mountain Reservoir near Kremmling.....	173
near Golden.....	31	Gunnison River, below Blue Mesa Dam.....	227
near Lawson.....	30	below Gunnison tunnel.....	232
Coal Creek (Green River basin) near Meeker.....	296	near Grand Junction.....	261
Coal Creek (Platte River basin) near Plainview.....	39	near Gunnison.....	219
Colorado River, at Glenwood Springs.....	186	near Lazear.....	242

	Page		Page
Gunnison River, North Fork, near Somerset.....	236	Plateau Creek, near Collbran.....	208
Gunnison tunnel, diversion by.....	232	near Heiberger.....	206
Halfmoon Creek near Malta.....	70	Platoro Reservoir at Platoro.....	126
Hermosa Creek near Hermosa.....	316	Pleasant Valley Creek near Noel.....	255
Homestake Creek near Red Cliff.....	180	Plum Creek near Louviers.....	21
Hoosier Pass tunnel at Hoosier Pass, diversion by.....	328,330	Purgatoire River, at Ninemile Dam, near Higbee.....	96
Horsetooth Reservoir near Fort Collins, contents of.....	44,45	at Trinidad.....	91
Hubbard Creek near Paonia.....	237	near Alfalfa.....	95
Hubbard ditch, diversion by.....	271	near Hoehne.....	92
Huerfano River, at Manzanares Crossing, near Redwing.....	84	near Las Animas.....	97
below Huerfano Valley Dam, near Undercliffe.....	86	Quartz Creek near Ohio City.....	221
John Martin Reservoir at Caddoa.....	98	Raber-Lohr ditch at Weminuche Pass, diversion by.....	329,330
Jones Pass tunnel, diversion by.....	152	Ranch Creek near Fraser.....	149
Junction Creek near Durango.....	318	Red Dirt Creek near Kremmling.....	161
Kannah Creek near Whitewater.....	260	Republican River, North Fork, near Wray.....	64
Kerber Creek at Ashley Ranch, near Villa Grove.....	113	South Fork, near Hale.....	68
Keystone Gulch near Dillon.....	168	South Fork, near Idalia.....	65
Kiowa Creek, at Bennett.....	60	Rifle Creek near Rifle.....	200
at Elbert.....	58	Rio Blanco near Pagosa Springs.....	303
at K-79 Reservoir, near Eastonville.....	57	Rio Grande, above mouth of Trinchera Creek, near La Sauses.....	120
at Kiowa.....	59	at Alamosa.....	112
Kiser Creek near Grand Mesa.....	245	at Colorado-New Mexico State line.....	135
La Garita Creek near La Garita.....	117	at Thirtymile Bridge, near Creede.....	103
La Jara Creek at Gallegos Ranch, near Capulin.....	119	at Wagonwheel Gap.....	106
La Plata River, at Colorado-New Mexico State line.....	325	near Del Norte.....	109
at Hesperus.....	324	near Lobatos.....	134
Lake Creek above Twin Lakes Reservoir.....	71	near Monte Vista.....	111
Lake Fork (Arkansas River basin) above Sugar Loaf Reservoir.....	69	South Fork, at South Fork.....	108
Lake Fork (Gunnison River basin) at Gateview.....	226	Roan Creek, above Clear Creek, near De Beque.....	203
Lake Granby near Granby.....	141	near De Beque.....	204
Landsman Creek near Hale.....	66	Roaring Fork, at Aspen.....	187
Laramie River near Glendevy.....	12	at Glenwood Springs.....	196
Laramie-Poudre tunnel near Chambers Lake, diversion by.....	52	Rock Creek near Toponas.....	177
Larkspur ditch at Marshall Pass, diversion by.....	328,330	Saguache Creek near Saguache.....	114
Leopard Creek at Noel.....	267	St. Louis Creek near Fraser.....	148
Leroux Creek near Cedaredge.....	240	St. Vrain Creek, at Lyons.....	35
Little Beaver Creek, near Idylwilde.....	49	at mouth, near Platteville.....	40
near Rustic.....	50	Salt Creek near Oxford.....	321
Little Muddy Creek near Parshall.....	151	San Antonio River, at mouth, near Manassa.....	131
Little Snake River, near Baggs, Wyo.....	288	at Ortiz.....	129
near Lily.....	289	San Francisco Creek near Alfalfa.....	94
near Slater.....	285	San Juan River, at Pagosa Springs.....	302
Los Pinos River (Rio Grande basin) near Ortiz.....	130	at Rosa, N. Mex.....	310
Los Pinos River (San Juan River basin), at La Boca.....	313	East Fork, above Sand Creek, near Pagosa Springs.....	300
near Bayfield.....	312	East Fork, near Pagosa Springs.....	301
McCullough-Spruce-Crystal diversion near Hoosier Pass.....	165	near Carracas.....	307
McElmo Creek near Colorado-Utah State line.....	327	San Miguel River, at Naturita.....	270
Mancos River near Towaoc.....	326	near Placerville.....	268
Michigan ditch at Cameron Pass, diversion by.....	52	near Telluride.....	266
Michigan River, North Fork, near Gould.....	10	Sangre de Cristo Creek near Fort Garland.....	122,123
Middle Boulder Creek at Nederland.....	36	Shadow Mountain Lake near Grand Lake.....	139
Middle Hubbard Creek near Paonia.....	238	Skylark Creek near Parshall.....	153
Milk Creek near Thornburg.....	283	Skyline ditch at Chambers Lake, diversion by.....	52
Miscellaneous sites, discharge measurements at.....	331,332	Slater Fork near Slater.....	286
Moffat water tunnel at East Portal, diversion by.....	328,330	Smith Fork near Crawford.....	233
Monte Cristo diversion near Hoosier Pass.....	163	Snake River, at Dillon.....	169
Muddy Creek near Kremmling.....	159	near Montezuma.....	167
Navajo River, above Chromo.....	305	Soap Creek near Sapinero.....	224,225
at Banded Peak Ranch, near Chromo.....	304	South Boulder Creek near Eldorado Springs.....	38
at Edith.....	306	South Platte River, above Elevenmile Canyon Reservoir, near Hartsel.....	13
North Clear Creek below Continental Reservoir.....	104	at Balzac.....	62
North Crestone Creek near Crestone.....	115	at Denver.....	29
North Platte River near Northgate.....	11	at Henderson.....	33
Ohio Creek, at Baldwin.....	217	at Julesburg.....	63
near Baldwin.....	218	at Littleton.....	22
Paonia Reservoir, contents of.....	236	at South Platte.....	19
Pass Creek near Kremmling.....	162	at Waterton.....	20
Piedra Pass ditch at Piedra Pass, diversion by.....	329,330	below Cheesman Lake.....	16
Piedra River, near Arboles.....	309	near Kersey.....	56
near Piedra.....	308	near Lake George.....	14
Piney River near State Bridge.....	176	near Weldona.....	61
Pinos Creek near Del Norte.....	110	North Fork, at South Platte.....	18
Plateau Creek, near Cameo.....	212	North Fork, below Geneva Creek, at Grant.....	17
		South St. Vrain Creek near Ward.....	34
		Spring Creek at La Boca.....	314
		Squaw Pass ditch at Squaw Pass, diversion by.....	329,330
		Surface Creek, at Cedaredge.....	249

	Page		Page
Surface Creek, near Cedaredge.....	248	West Hubbard Creek near Paonia.....	239
Tabor ditch at Spring Creek Pass, diversion by.....	329,330	West Kiowa Creek at Elbert.....	58
Tarbell ditch near Cochetopa Pass, diversion by.....	328,330	West Monument Creek near Pikeview.....	81
Taylor Creek near Gateway.....	271	West Muddy Creek, near Ragged Mountain.....	234
Taylor Park Reservoir at Taylor Park.....	213	near Somerset.....	235
Taylor River, at Almont.....	215	White River, above Coal Creek, near Meeker.....	295
below Taylor Park Reservoir.....	214	at Buford.....	292
Templeton Gap Floodway at Colorado Springs.....	82	below Meeker.....	298
Tenmile Creek below North Fork, at Frisco.....	170	below Trapper's Lake.....	290
Tomichi Creek, at Gunnison.....	222	near Buford.....	291
at Sargents.....	220	near Meeker.....	297
Tongue Creek at Cory.....	250	near Watson, Utah.....	299
Transbasin diversions from North Platte River basin to Cache		South Fork, at Buford.....	293
la Poudre River basin in Colorado.....	52	Williams Fork (tributary to Colorado River), below Williams	
Transmountain diversions from Colorado River basin in		Fork Reservoir.....	156
Colorado.....	328-330	near Leal.....	152
Treasure Pass ditch at Wolf Creek Pass, diversion by.....	329,330	near Parshall.....	154
Trinchera Creek, above Turners Ranch, near Fort Garland....	121	Williams Fork (tributary to Yampa River), East Fork of,	
below Smith Reservoir, near Blanca.....	125	above Willow Creek.....	281
Troublesome Creek, East Fork, near Troublesome.....	158	East Fork of, near Pagoda.....	282
near Pearmont.....	157	Williams Fork Reservoir near Parshall.....	155
Twin Lakes tunnel at east portal, near Twin Lakes, diversion		Willow Creek (tributary to Colorado River) below Willow	
by.....	328,330	Creek Reservoir.....	145
Uncompahgre River, at Colona.....	258	Willow Creek (tributary to Little Snake River) near	
at Delta.....	259	Dixon, Wyo.....	287
near Ridgway.....	251	Willow Creek (tributary to Rio Grande) at Creede.....	105
Ute Creek near Fort Garland.....	124	Willow Creek Pump Canal, diversion by.....	145
Vallecito Reservoir near Bayfield.....	311	Willow Creek Reservoir near Granby.....	144
Vasquez Creek near Winter Park.....	147	Wilson supply ditch near Eaton Reservoir, diversion by....	52
Vega Reservoir near Colibran.....	207	Wurtz ditch near Tennessee Pass, diversion by.....	328,330
Ward Creek near Grand Mesa.....	244	Yampa River, at Steamboat Springs.....	274
West Divide Creek near Raven.....	197	near Maybell.....	284
		near Oak Creek.....	273
		near Toponas.....	272
		Youngs Creek near Grand Mesa.....	247