

LIBRARY COPY

# Compilation of Records of Surface Waters of the United States, October 1950 to September 1960

Part 6-B. Missouri River Basin below  
Sioux City, Iowa

---

GEOLOGICAL SURVEY WATER-SUPPLY PAPER 1730





# Compilation of Records of Surface Waters of the United States, October 1950 to September 1960

## Part 6-B. Missouri River Basin below Sioux City, Iowa

*Prepared under the direction of E. L. HENDRICKS, Chief, Surface Water Branch*

---

GEOLOGICAL SURVEY WATER-SUPPLY PAPER 1730



**UNITED STATES DEPARTMENT OF THE INTERIOR**

**STEWART L. UDALL, *Secretary***

**GEOLOGICAL SURVEY**

**Thomas B. Nolan, *Director***

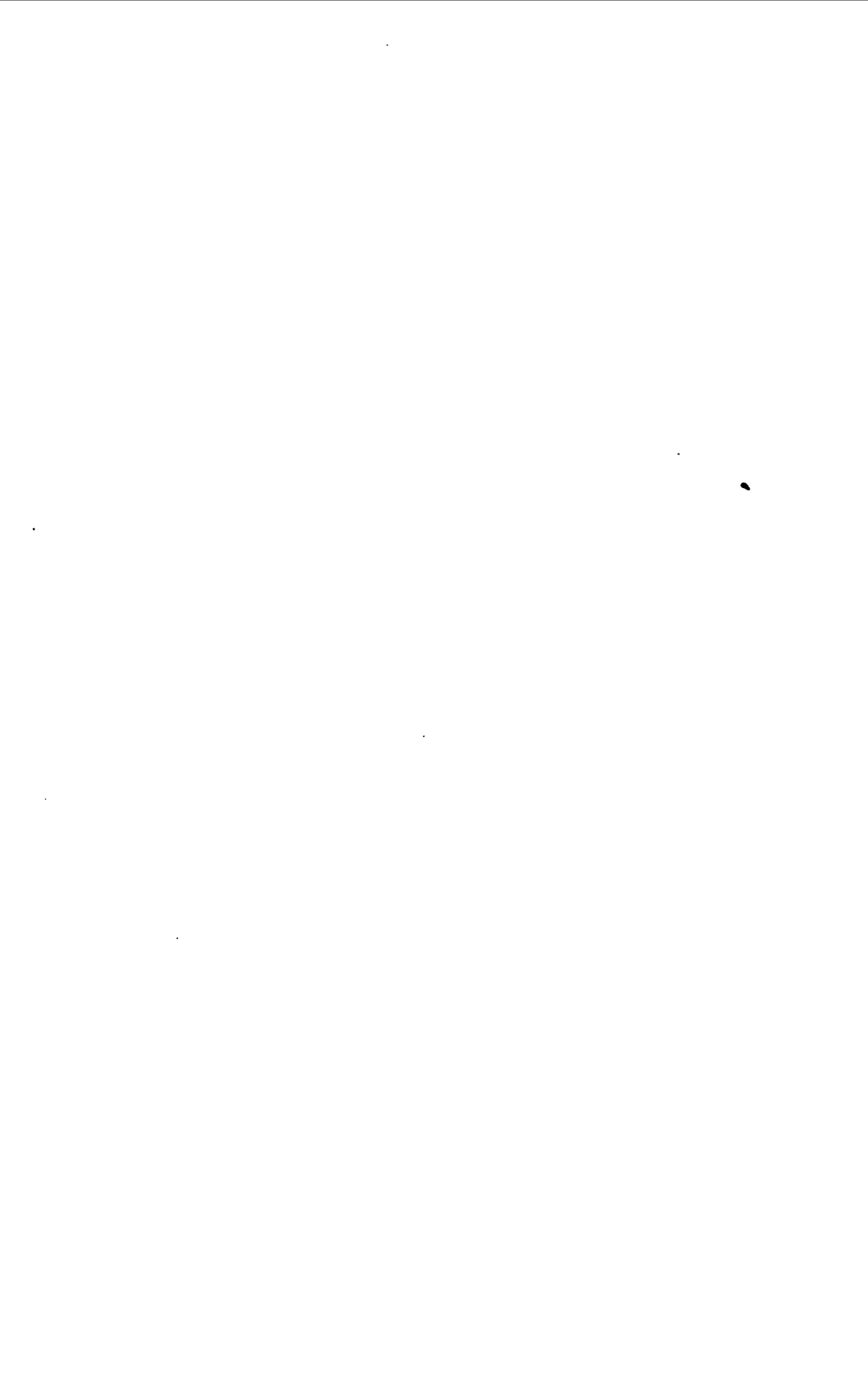


## PREFACE

This report contains summaries of streamflow records in the Missouri River basin below Sioux City, Iowa. It was prepared by the United States Geological Survey in the Water Resources Division, L. B. Leopold, chief, under the general direction of E. L. Hendricks, chief, Surface Water Branch, and F. J. Flynn, chief, Reports Section.

The data were compiled under the supervision of district engineers, Surface Water Branch, as follows:

V. R. Bennion.....	Iowa City, Iowa
H. C. Bolon.....	Rolla, Mo.
E. R. Leeson.....	Topeka, Kans.
F. F. LeFever.....	Lincoln, Nebr.
W. T. Miller, succeeded by J. W. Odell for Colorado and by L. A. Wiard, Cheyenne, for Wyoming.....	Denver, Colo.
L. R. Sawyer.....	St. Paul, Minn.



# CONTENTS

	Page
Purpose and scope.....	1
Description of data.....	1
Publications.....	4
Hydrologic conditions.....	6
Gaging-station records.....	8
Missouri River at Sioux City, Iowa.....	8
Perry Creek basin	
Perry Creek at 38th Street, Sioux City, Iowa.....	9
Floyd River basin	
Floyd River at Alton, Iowa.....	10
West Branch Floyd River near Struble, Iowa.....	11
Floyd River at James, Iowa.....	12
Omaha Creek basin	
Omaha Creek at Homer, Nebr.....	13
Monona-Harrison ditch basin	
West Fork ditch (head of Monona-Harrison ditch) at Holly Springs, Iowa.....	14
Monona-Harrison ditch near Turin, Iowa.....	15
Little Sioux River basin	
Little Sioux River near Lakefield, Minn.....	16
Jackson County ditch 11 near Lakefield, Minn.....	17
Little Sioux River at Gillett Grove, Iowa.....	18
Little Sioux River at Correctionville, Iowa.....	19
Little Sioux River near Kennebec, Iowa.....	20
Maple River:	
Odebolt Creek near Arthur, Iowa.....	21
Maple River at Mapleton, Iowa.....	22
Little Sioux River near Turin, Iowa.....	23
Tekamah Creek basin	
Tekamah Creek at Tekamah, Nebr.....	24
Soldier River basin	
Soldier River at Pisgah, Iowa.....	25
New York Creek basin	
New York Creek at Herman, Nebr.....	26
Boyer River basin	
Boyer River at Logan, Iowa.....	27
Missouri River at Omaha, Nebr.....	28
Indian Creek basin	
Indian Creek at Council Bluffs, Iowa.....	29
Platte River basin	
Grizzly Creek (head of Platte River):	
Colorado Creek near Spicer, Colo.....	30
North Platte River (continuation of Grizzly Creek):	
Michigan River:	
South Fork Michigan River near Gould, Colo.....	31
North Fork Michigan River near Gould, Colo.....	32
North Platte River near Northgate, Colo.....	33
Douglas Creek above Keystone, Wyo.....	34
Douglas Creek near Foxpark, Wyo.....	35
North Brush Creek (head of Brush Creek) near Saratoga, Wyo.....	36
South Brush Creek near Saratoga, Wyo.....	36
Encampment River near Encampment, Wyo.....	36
Encampment River at mouth, near Encampment, Wyo.....	37
North Platte River at Saratoga, Wyo.....	38
Jack Creek below Willow Creek, near Saratoga, Wyo.....	39
Pass Creek near Elk Mountain, Wyo.....	39
North Platte River above Seminole Reservoir, near Sinclair, Wyo.....	40
Medicine Bow River above Rock Creek, near Medicine Bow, Wyo.....	41
Rock Creek at Arlington, Wyo.....	42
Rock Creek below Rock River, Wyo.....	43
Medicine Bow River above Seminole Reservoir, near Hanna, Wyo.....	44
Seminole Reservoir near Leo, Wyo.....	45
North Platte River above Pathfinder Reservoir, Wyo.....	46
Sweetwater River near South Pass City, Wyo.....	47
Willow Creek near Atlantic City, Wyo.....	47
Willow Creek near South Pass City, Wyo.....	48
Rock Creek near South Pass City, Wyo.....	48
Rock Creek near Atlantic City, Wyo.....	49
Slate Creek near Atlantic City, Wyo.....	49
Rock Creek at Atlantic City, Wyo.....	50
Sweetwater River near Atlantic City, Wyo.....	50
Sweetwater River near Alcova, Wyo.....	51
Pathfinder Reservoir near Alcova, Wyo.....	52
North Platte River below Pathfinder Reservoir, Wyo.....	53
Alcova Reservoir at Alcova, Wyo.....	54
North Platte River at Alcova, Wyo.....	55
Bates Creek near Freeland, Wyo.....	56
Bates Creek near Alcova, Wyo.....	57
North Platte River near Goose Egg, Wyo.....	58
Poison Spider Creek near Goose Egg, Wyo.....	59
Casper Creek at Casper, Wyo.....	60

## Gaging-station records--Continued

## Missouri River--Continued

## Platte River basin--Continued

	Page
North Platte River below Casper, Wyo.....	61
Deer Creek in canyon, near Glenrock, Wyo.....	62
Deer Creek at Glenrock, Wyo.....	63
North Platte River near Glenrock, Wyo.....	64
Box Elder Creek at Boxelder, Wyo.....	64
Box Elder Creek near Careyhurst, Wyo.....	65
La Prele Creek near Douglas, Wyo.....	66
La Prele Creek near Orpha, Wyo.....	67
North Platte River near Douglas, Wyo.....	68
Wagonhound Creek near La Bonte, Wyo.....	69
La Bonte Creek:	
West Fork La Bonte Creek near La Bonte, Wyo.....	70
La Bonte Creek near La Bonte, Wyo.....	71
North Platte River at Orin, Wyo.....	72
Glendo Reservoir near Glendo, Wyo.....	72
North Platte River below Glendo Reservoir, Wyo.....	73
Horseshoe Creek near Esterbrook, Wyo.....	73
Horseshoe Creek near Glendo, Wyo.....	74
North Platte River near Cassa, Wyo.....	75
Cottonwood Creek near Fletcher Park, Wyo.....	76
Cottonwood Creek at Wendover, Wyo.....	77
Guernsey Reservoir near Guernsey, Wyo.....	78
North Platte River below Guernsey Reservoir, Wyo.....	79
North Platte River at recorder station, below Whalen, Wyo.....	80
Laramie River near Glendevy, Colo.....	81
Laramie River near Jelm, Wyo.....	82
Laramie River and Pioneer Canal near Woods, Wyo.....	83
Sand Creek near Tie Siding, Wyo.....	84
Laramie River at Laramie, Wyo.....	85
Laramie River at Two Rivers, Wyo.....	86
Little Laramie River near Filmore, Wyo.....	87
Little Laramie River at Two Rivers, Wyo.....	88
Dutton Creek near McFadden, Wyo.....	89
Laramie River near Lookout, Wyo.....	90
Wheatland Reservoir No. 2, near Lookout, Wyo.....	90
Laramie River below Wheatland Reservoir No. 2, Wyo.....	91
Sybille Creek above Bluegrass Creek, near Wheatland, Wyo.....	92
Bluegrass Creek near Wheatland, Wyo.....	92
Sybille Creek below Bluegrass Creek, near Wheatland, Wyo.....	93
Wheatland Canal No. 1 near Wheatland, Wyo.....	94
Wheatland Canal No. 3 near Wheatland, Wyo.....	95
Wheatland Canal No. 2 near Wheatland, Wyo.....	96
Sybille Creek near Muleshoe Ranch, near Wheatland, Wyo.....	97
Sybille Creek at Muleshoe Ranch, near Wheatland, Wyo.....	97
North Laramie River near Wheatland, Wyo.....	98
Laramie River near Uva, Wyo.....	99
Laramie River near Fort Laramie, Wyo.....	100
Rawhide Creek near Lingle, Wyo.....	101
Cherry Creek drain near Torrington, Wyo.....	102
Katzner drain near Henry, Nebr.....	103
North Platte River at Wyoming-Nebraska State line.....	104
Horse Creek near Lyman, Nebr.....	105
Sheep Creek near Morrill, Nebr.....	106
Dry Spottedtail Creek at Mitchell, Nebr.....	107
North Platte River at Mitchell, Nebr.....	108
Tub Springs near Scottsbluff, Nebr.....	109
Winter Creek near Scottsbluff, Nebr.....	110
Gering drain near Gering, Nebr.....	111
North Platte River near Minatare, Nebr.....	112
Ninemile drain near McGrew, Nebr.....	113
Bayard Sugar Factory drain near Bayard, Nebr.....	114
Red Willow Creek near Bayard, Nebr.....	115
North Platte River at Bridgeport, Nebr.....	116
Pumpkin Creek near Bridgeport, Nebr.....	117
North Platte River at Lisco, Nebr.....	118
North Platte River at Oshkosh, Nebr.....	119
Blue Creek near Lewellen, Nebr.....	120
North Platte River at Lewellen, Nebr.....	121
Lake McConaughy near Keystone, Nebr.....	122
North Platte River near Keystone, Nebr.....	123
North Platte River near Sutherland, Nebr.....	124
Birdwood Creek near Hershey, Nebr.....	125
Lincoln County drain No. 1 near North Platte, Nebr.....	126
North Platte River at North Platte, Nebr.....	127
Middle Fork South Platte River:	
Hoosier Pass tunnel at Hoosier Pass, Colo.....	128
South Platte River above Elevenmile Canyon Reservoir, near Hartsel, Colo.....	128
Elevenmile Canyon Reservoir near Lake George, Colo.....	129
South Platte River near Lake George, Colo.....	130
Tarryall Creek:	
Boreas Pass ditch at Boreas Pass, Colo.....	131
Tarryall Creek near Lake George, Colo.....	131
Goose Creek above Cheesman Lake, Colo.....	132
Cheesman Lake near Deckers, Colo.....	132

## Gaging-station records--Continued

## Missouri River--Continued

## Platte River basin--Continued

## North Platte River--Continued

	Page
South Platte River below Cheesman Lake, Colo.....	133
North Fork South Platte River below Geneva Creek, at Grant, Colo.....	134
North Fork South Platte River at South Platte, Colo.....	135
South Platte River at South Platte, Colo.....	136
South Platte River at Waterton, Colo.....	137
Plum Creek near Louviers, Colo.....	138
South Platte River at Littleton, Colo.....	139
Bear Creek at Morrison, Colo.....	140
Turkey Creek near Morrison, Colo.....	141
Bear Creek at mouth, at Sheridan, Colo.....	142
Cherry Creek near Franktown, Colo.....	143
Cherry Creek near Melvin, Colo.....	144
Cherry Creek below Cherry Creek Reservoir, Colo.....	145
Cherry Creek at Denver, Colo.....	146
South Platte River at Denver, Colo.....	147
Clear Creek:	
West Fork Clear Creek:	
Jones Pass tunnel at east portal, near Jones Pass, Colo.....	148
Hoop Creek:	
Berthoud Pass ditch at Berthoud Pass, Colo.....	148
Clear Creek near Lawson, Colo.....	149
Clear Creek below Idaho Springs, Colo.....	150
North Clear Creek near Blackhawk, Colo.....	150
Clear Creek near Golden, Colo.....	151
Clear Creek at mouth, near Derby, Colo.....	152
South Platte River at Henderson, Colo.....	153
South Platte River at Fort Lupton, Colo.....	154
North St. Vrain Creek (head of St. Vrain Creek) at Longmont Dam, near Lyons, Colo.....	155
South St. Vrain Creek near Ward, Colo.....	156
Middle St. Vrain Creek near Raymond, Colo.....	157
St. Vrain Creek at Lyons, Colo.....	158
Lefthand Creek near Boulder, Colo.....	158
Lefthand Creek at mouth, at Longmont, Colo.....	159
Middle Boulder Creek (head of Boulder Creek) at Nederland, Colo.....	160
Boulder Creek near Ordeell, Colo.....	161
Fourmile Creek at Ordeell, Colo.....	162
South Boulder Creek:	
Moffat water tunnel at East Portal, Colo.....	162
South Boulder Creek near Eldorado Springs, Colo.....	163
Coal Creek near Plainview, Colo.....	164
Boulder Creek at mouth, near Longmont, Colo.....	164
St. Vrain Creek at mouth, near Platteville, Colo.....	165
Big Thompson River:	
Spruce Creek:	
Eureka ditch near Flattop Mountain, Colo.....	166
Glacier Creek near Estes Park, Colo.....	167
Fall River at Estes Park, Colo.....	167
Big Thompson River at Estes Park, Colo.....	168
Alva B. Adams tunnel at east portal, near Estes Park, Colo.....	169
Marys Lake near Estes Park, Colo.....	170
Fish Creek near Estes Park, Colo.....	170
Lake Estes near Estes Park, Colo.....	171
Big Thompson River near Estes Park, Colo.....	171
North Fork Big Thompson River at Drake, Colo.....	172
Big Thompson River below powerhouse, near Drake, Colo.....	173
Horsetooth Reservoir near Fort Collins, Colo.....	174
Big Thompson River at mouth of canyon, near Drake, Colo.....	175
Buckhorn Creek near Masonville, Colo.....	176
Dry Creek near Pinewood, Colo.....	176
Cottonwood Creek:	
Rattlesnake Creek near Pinewood, Colo.....	177
Cottonwood Creek near Pinewood, Colo.....	177
Big Thompson River near Loveland, Colo.....	178
Little Thompson River near Berthoud, Colo.....	179
Dry Creek:	
Carter Lake near Berthoud, Colo.....	180
Dry Creek below Carter Lake, Colo.....	180
Little Thompson River at Milliken, Colo.....	181
Big Thompson River at mouth, near La Salle, Colo.....	182
Cache la Poudre River:	
La Poudre Pass Creek:	
Grand River ditch at La Poudre, Colo.....	183
Joe Wright Creek:	
Cameron Pass ditch at Cameron Pass, Colo.....	184
Michigan ditch at Cameron Pass, Colo.....	184
Skyline ditch at Chambers Lake, Colo.....	185
Laramie-Poudre tunnel near Chambers Lake, Colo.....	185
Roaring Creek:	
Bob Creek ditch near Glendevy, Colo.....	186
Cache la Poudre River near Rustic, Colo.....	186
South Fork Cache la Poudre River near Rustic, Colo.....	187

## Gaging-station records--Continued

## Missouri River--Continued

## Platte River basin--Continued

## South Platte River--Continued

	Page
Cache la Poudre River below Elkhorn Creek, Colo.....	188
North Fork Cache la Poudre River:	
Columbine ditch at Deadman Hill, Colo.....	189
Sheep Creek:	
Wilson supply ditch near Eaton Reservoir, Colo.....	189
North Fork Cache la Poudre River near Livermore, Colo.....	190
Cache la Poudre River at mouth of canyon, near Fort Collins, Colo.....	191
Cache la Poudre River near Greeley, Colo.....	192
Lonetree Creek near Nunn, Colo.....	193
South Platte River near Kersey, Colo.....	194
Middle Crow Creek (head of Crow Creek) near Hecla, Wyo.....	195
South Crow Creek near Hecla, Wyo.....	196
Crow Creek near Cheyenne, Wyo.....	197
Crow Creek near Barnesville, Colo.....	198
South Platte River at Sublette, Colo.....	198
Kiowa Creek at K-79 Reservoir, near Eastonville, Colo.....	199
Kiowa Creek at Elbert, Colo.....	200
Kiowa Creek at Kiowa, Colo.....	201
Kiowa Creek at Bennett, Colo.....	201
South Platte River near Weldona, Colo.....	202
Bijou Creek near Wiggins, Colo.....	203
South Platte River at Fort Morgan, Colo.....	204
South Platte River at Balzac, Colo.....	205
South Platte River near Crook, Colo.....	206
Lodgepole Creek at Bushnell, Nebr.....	207
Lodgepole Creek at Ralton, Nebr.....	208
South Platte River at Julesburg, Colo.....	209
South Platte River at Paxton, Nebr.....	210
South Platte River at North Platte, Nebr.....	211
Platte River at Brady, Nebr.....	212
Platte River near Cozad, Nebr.....	213
Plum Creek near Smithfield, Nebr.....	214
Platte River near Overton, Nebr.....	215
Buffalo Creek near Darr, Nebr.....	216
Buffalo Creek near Overton, Nebr.....	217
Elm Creek near Overton, Nebr.....	218
Platte River near Odessa, Nebr.....	219
Platte River near Grand Island, Nebr.....	220
Wood River near Riverdale, Nebr.....	221
Wood River near Gibbon, Nebr.....	222
Wood River near Alda, Nebr.....	223
Prairie Creek:	
Dry Creek at Cairo, Nebr.....	224
Prairie Creek near Silver Creek, Nebr.....	224
Platte River near Duncan, Nebr.....	225
Middle Loup River (head of Loup River) at Seneca, Nebr.....	226
Middle Loup River at Dunning, Nebr.....	227
Dismal River near Gam, Nebr.....	228
Dismal River at Dunning, Nebr.....	229
Middle Loup River near Milburn, Nebr.....	230
Middle Loup River at Walworth, Nebr.....	231
Middle Loup River at Sargent, Nebr.....	232
Middle Loup River at Arcadia, Nebr.....	233
Middle Loup River at Loup City, Nebr.....	234
Middle Loup River at Rockville, Nebr.....	235
Boelus power canal near Boelus, Nebr.....	236
Middle Loup River at Boelus, Nebr.....	237
South Loup River near Cumro, Nebr.....	237
South Loup River at Ravenna, Nebr.....	238
Mud Creek near Broken Bow, Nebr.....	239
Mud Creek near Sweetwater, Nebr.....	240
South Loup River at St. Michael, Nebr.....	241
Oak Creek near Loup City, Nebr.....	242
Oak Creek near Dannebrog, Nebr.....	243
Middle Loup River at St. Paul, Nebr.....	244
North Loup River at Brewster, Nebr.....	245
North Loup River at Taylor, Nebr.....	246
North Loup River at Burwell, Nebr.....	247
Galamus River near Burwell, Nebr.....	248
North Loup River at Ord, Nebr.....	249
North Loup River at Scotia, Nebr.....	250
Davis Creek near Cotesfield, Nebr.....	251
North Loup River near Cotesfield, Nebr.....	252
North Loup River near St. Paul, Nebr.....	253
Loup River:	
Spring Creek at Cushing, Nebr.....	254
Cedar River near Spalding, Nebr.....	255
Spalding power canal at Spalding, Nebr.....	256
Cedar River at Primrose, Nebr.....	256
Cedar River at Belgrade, Nebr.....	256
Cedar River near Fullerton, Nebr.....	257
Fullerton power canal at Fullerton, Nebr.....	257
Loup River power canal near Genoa, Nebr.....	258

## Gaging-station records--Continued

## Missouri River--Continued

Platte River basin--Continued	Page
Loup River near Genoa, Nebr.	259
Beaver Creek at Loretto, Nebr.	260
Beaver Creek at Genoa, Nebr.	261
Loup River at Columbus, Nebr.	262
Shell Creek at Newman Grove, Nebr.	263
Shell Creek near Columbus, Nebr.	264
Platte River at North Bend, Nebr.	265
Elkhorn River at Ewing, Nebr.	266
South Fork Elkhorn River at Ewing, Nebr.	267
Elkhorn River at Neligh, Nebr.	268
Elkhorn River near Norfolk, Nebr.	269
Logan Creek near Uehling, Nebr.	270
Maple Creek near Nickerson, Nebr.	271
Elkhorn River at Waterloo, Nebr.	272
Platte River near Ashland, Nebr.	273
Salt Creek:	
Salt Creek subwatershed No. 3 near Sprague, Nebr.	273
Salt Creek subwatershed No. 1 near Roca, Nebr.	274
Salt Creek subwatershed No. 12 at Roca, Nebr.	275
Salt Creek subwatershed No. 34 near Roca, Nebr.	276
Salt Creek at Roca, Nebr.	277
Antelope Creek at Lincoln, Nebr.	278
Salt Creek at Lincoln, Nebr.	279
Dee Creek at Greenwood, Nebr.	279
Wahoo Creek at Ithaca, Nebr.	280
Silver Creek at Ithaca, Nebr.	281
Salt Creek near Ashland, Nebr.	282
Platte River at Louisville, Nebr.	283
Waubonsie Creek basin	
Waubonsie Creek near Bartlett, Iowa.	284
Weeping Water Creek basin	
Weeping Water Creek at Union, Nebr.	285
Missouri River at Nebraska City, Nebr.	286
Nishnabotna River basin	
West Nishnabotna River (head of Nishnabotna River) at Hancock, Iowa.	287
Silver Creek:	
Mule Creek near Malvern, Iowa.	287
Spring Valley Creek near Tabor, Iowa.	288
West Nishnabotna River at Randolph, Iowa.	289
East Nishnabotna River:	
Dauids Creek near Hamlin, Iowa.	290
East Nishnabotna River at Red Oak, Iowa.	291
Nishnabotna River above Hamburg, Iowa.	292
Little Nemaha River basin	
Little Nemaha River near Syracuse, Nebr.	293
Little Nemaha River at Auburn, Nebr.	294
Tarkio River basin	
Tarkio River at Stanton, Iowa.	295
Tarkio River at Fairfax, Mo.	296
Missouri River at Rulo, Nebr.	297
Nemaha River basin	
Nemaha River:	
Turkey Creek near Seneca, Kans.	298
North Fork Nemaha River at Humboldt, Nebr.	299
Nemaha River at Falls City, Nebr.	300
Muddy Creek at Verdon, Nebr.	301
Mill Creek basin	
Mill Creek at Oregon, Mo.	302
Nodaway River basin	
Nodaway River at Clarinda, Iowa.	303
Nodaway River near Burlington Junction, Mo.	304
Missouri River at St. Joseph, Mo.	305
Platte River basin (Iowa-Missouri)	
Platte River at Ravenwood, Mo.	306
One Hundred and Two River:	
East Fork One Hundred and Two River near Bedford, Iowa.	306
One Hundred and Two River near Maryville, Mo.	307
White Cloud Creek near Maryville, Mo.	308
Platte River near Agency, Mo.	309
Castile Creek:	
Jenkins Branch at Gower, Mo.	310
Kansas River basin	
Arikaree River (head of Kansas River) at Haigler, Nebr.	311
North Fork Republican River near Wray, Colo.	312
North Fork Republican River at Colorado-Nebraska State line.	313
Republican River (continuation of Arikaree River):	
Buffalo Creek near Haigler, Nebr.	314
Rock Creek at Parks, Nebr.	315
Republican River at Benkelman, Nebr.	316
South Fork Republican River near Idalia, Colo.	317
Landsman Creek near Hale, Colo.	318
Bonny Reservoir near Hale, Colo.	319
South Fork Republican River near Hale, Colo.	320
South Fork Republican River near Colorado-Kansas State line.	321
South Fork Republican River near Benkelman, Nebr.	322

## Gaging-station records--Continued

## Missouri River--Continued

Kansas River basin--Continued	Page
Republican River at Stratton, Nebr.	323
Swanson Lake near Trenton, Nebr.	324
Republican River at Trenton, Nebr.	325
Frenchman Creek below Champion, Nebr.	326
Frenchman Creek near Imperial, Nebr.	327
Enders Reservoir near Enders, Nebr.	328
Frenchman Creek near Enders, Nebr.	329
Frenchman Creek near Hamlet, Nebr.	330
Frenchman Creek at Palisade, Nebr.	331
Stinking Water Creek near Palisade, Nebr.	332
Frenchman Creek at Culbertson, Nebr.	333
Blackwood Creek near Culbertson, Nebr.	334
Driftwood Creek near McCook, Nebr.	335
Republican River at McCook, Nebr.	336
Red Willow Creek near Red Willow, Nebr.	337
Dry Creek near Bartley, Nebr.	338
Medicine Creek at Maywood, Nebr.	339
Brushy Creek near Maywood, Nebr.	340
Fox Creek at Curtis, Nebr.	341
Dry Creek near Curtis, Nebr.	342
Medicine Creek above Harry Strunk Lake, Nebr.	343
Mitchell Creek above Harry Strunk Lake, Nebr.	344
Harry Strunk Lake near Cambridge, Nebr.	345
Medicine Creek below Harry Strunk Lake, Nebr.	346
Medicine Creek at Cambridge, Nebr.	347
Republican River at Cambridge, Nebr.	348
Muddy Creek at Arapahoe, Nebr.	349
Republican River near Orleans, Nebr.	350
South Fork Sappa Creek near Achilles, Kans.	351
Sappa Creek near Oberlin, Kans.	351
Sappa Creek near Beaver City, Nebr.	352
Beaver Creek at Ludell, Kans.	353
Beaver Creek at Cedar Bluffs, Kans.	354
Beaver Creek near Beaver City, Nebr.	355
Sappa Creek near Stamford, Nebr.	356
Prairie Dog Creek at Norton, Kans.	357
Prairie Dog Creek near Woodruff, Kans.	358
Harlan County Reservoir near Republican City, Nebr.	358
Republican River below Harlan County Dam, Nebr.	359
Turkey Creek at Naponee, Nebr.	360
Cottonwood Creek near Bloomington, Nebr.	360
Republican River near Bloomington, Nebr.	361
Center Creek at Franklin, Nebr.	362
Thompson Creek at Riverton, Nebr.	363
Elm Creek at Amboy, Nebr.	363
Courtland Canal at Nebraska-Kansas State line	364
Republican River near Guide Rock, Nebr.	365
Republican River near Hardy, Nebr.	366
White Rock Creek near Burr Oak, Kans.	367
Lovewell Reservoir near Lovewell, Kans.	367
White Rock Creek at Lovewell, Kans.	368
Republican River at Scandia, Kans.	369
Buffalo Creek near Jamestown, Kans.	369
Republican River at Concordia, Kans.	370
Republican River at Clay Center, Kans.	371
Republican River at Milford, Kans.	372
Smoky Hill River:	
Rose Creek near Wallace, Kans.	373
North Fork Smoky Hill River near McAllaster, Kans.	373
Ladder Creek below Chalk Creek, near Scott City, Kans.	374
Smoky Hill River at Elkader, Kans.	375
Hackberry Creek near Gove, Kans.	376
Smoky Hill River near Arnold, Kans.	377
Cedar Bluff Reservoir near Ellis, Kans.	378
Smoky Hill River at Cedar Bluff Dam, Kans.	379
Smoky Hill River near Ellis, Kans.	380
Big Creek near Ogallah, Kans.	380
Big Creek near Hays, Kans.	381
Smoky Hill River near Russell, Kans.	382
Smoky Hill River at Ellsworth, Kans.	383
Kanopolis Reservoir near Kanopolis, Kans.	384
Smoky Hill River near Langley, Kans.	385
Smoky Hill River at Lindsborg, Kans.	386
Smoky Hill River near Mentor, Kans.	387
Saline River near Wakeeney, Kans.	388
Saline River near Russell, Kans.	388
Paradise Creek near Paradise, Kans.	389
Saline River near Wilson, Kans.	390
Wolf Creek near Lucas, Kans.	391
Wolf Creek near Sylvan Grove, Kans.	391
Saline River at Tescott, Kans.	392
Gypsum Creek near Gypsum, Kans.	393
Smoky Hill River near New Cambria, Kans.	393
North Fork Solomon River at Glade, Kans.	394
Bow Creek near Stockton, Kans.	394



## Gaging-station records--Continued

## Missouri River--Continued

## Kansas River basin--Continued

## Smoky Hill River--Continued

	Page
Kirwin Reservoir at Kirwin, Kans.....	395
North Fork Solomon River at Kirwin, Kans.....	396
North Fork Solomon River near Downs, Kans.....	397
South Fork Solomon River above Webster Reservoir, Kans.....	398
Webster Reservoir near Stockton, Kans.....	399
South Fork Solomon River below Webster Reservoir, Kans.....	399
South Fork Solomon River at Alton, Kans.....	400
South Fork Solomon River at Osborne, Kans.....	401
Solomon River at Beloit, Kans.....	402
Salt Creek near Ada, Kans.....	403
Solomon River at Niles, Kans.....	403
Turkey Creek near Abilene, Kans.....	404
Smoky Hill River at Enterprise, Kans.....	405
Chapman Creek near Chapman, Kans.....	406
Lyon Creek near Woodbine, Kans.....	407
Smoky Hill River at Junction City, Kans.....	408
Kansas River:	
Clark Creek near Junction City, Kans.....	409
Kansas River at Odgen, Kans.....	409
Big Blue River:	
Lincoln Creek near Seward, Nebr.....	410
Big Blue River at Seward, Nebr.....	411
West Fork Big Blue River near Dorchester, Nebr.....	411
Big Blue River near Crete, Nebr.....	412
Turkey Creek near Wilber, Nebr.....	412
Big Blue River at Barneston, Nebr.....	413
Little Blue River near Dewese, Nebr.....	414
Little Blue River at Angus, Nebr.....	415
Little Blue River near Gilead, Nebr.....	415
Little Blue River near Fairbury, Nebr.....	416
Mill Creek at Washington, Kans.....	416
Little Blue River at Waterville, Kans.....	417
Black Vermillion River:	
Snipe Creek near Beattie, Kans.....	418
Black Vermillion River near Frankfort, Kans.....	419
Big Blue River at Randolph, Kans.....	420
Fancy Creek at Winkler, Kans.....	421
Big Blue River near Manhattan, Kans.....	422
Kansas River at Wamego, Kans.....	423
Vermillion Creek near Wamego, Kans.....	424
Rock Creek near Louisville, Kans.....	425
Mill Creek near Paxico, Kans.....	425
Kansas River at Topeka, Kans.....	426
Soldier Creek near Delia, Kans.....	427
Soldier Creek near Topeka, Kans.....	427
Delaware River:	
Little Delaware River near Horton, Kans.....	428
Delaware River at Valley Falls, Kans.....	429
Kansas River at Leocompton, Kans.....	430
Wakarusa River near Lawrence, Kans.....	431
Stranger Creek near Tonganoxie, Kans.....	432
Kansas River at Bonner Springs, Kans.....	433
Missouri River at Kansas City, Mo.....	434
Blue River basin	
Blue River near Kansas City, Mo.....	435
Little Blue River basin	
Little Blue River near Lake City, Mo.....	436
Fishing River basin	
Fishing River:	
East Fork Fishing River at Excelsior Springs, Mo.....	437
Crooked River basin	
Crooked River near Richmond, Mo.....	438
Missouri River at Waverly, Mo.....	439
Wakenda Creek basin	
Wakenda Creek at Carrollton, Mo.....	440
Grand River basin	
Grand River:	
East Fork Big Creek:	
Thompson Branch near Albany, Mo.....	441
East Fork Big Creek near Bethany, Mo.....	441
Grand River near Gallatin, Mo.....	442
Thompson River at Davis City, Iowa.....	443
Weldon River near Leon, Iowa.....	444
Weldon River near Mercer, Mo.....	444
Weldon River at Mill Grove, Mo.....	445
Thompson River at Trenton, Mo.....	446
Shoal Creek near Braymer, Mo.....	447
Medicine Creek near Galt, Mo.....	447
Locust Creek near Linneus, Mo.....	448
Grand River near Sumner, Mo.....	449
West Yellow Creek (head of Yellow Creek) near Brookfield, Mo.....	450
Yellow Creek:	
East Yellow Creek:	
Winnegan Creek:	
Hamilton Branch near New Boston, Mo.....	450

## Gaging-station records--Continued

## Missouri River--Continued

## Grand River basin--Continued

Yellow Creek near Rothville, Mo.....	451
--------------------------------------	-----

Chariton River basinChariton River:

Honey Creek near Russell, Iowa.....	451
-------------------------------------	-----

Chariton River near Rathbun, Iowa.....	452
--	-----

Chariton River near Centerville, Iowa.....	453
--	-----

Chariton River at Novinger, Mo.....	454
-------------------------------------	-----

Chariton River near Prairie Hill, Mo.....	455
---	-----

Mussel Fork near Mussel Fork, Mo.....	456
---------------------------------------	-----

Missouri River at Glasgow, Mo.....	456
------------------------------------	-----

Slough Creek basinSlough Creek:

Burge Branch near Arrow Rock, Mo.....	457
---------------------------------------	-----

Lamine River basin

Flat Creek (head of Lamine River) near Sedalia, Mo.....	457
---	-----

Lamine River at Clifton City, Mo.....	458
---------------------------------------	-----

South Fork Blackwater River:

East Branch South Fork Blackwater River near Elm, Mo.....	459
---	-----

Blackwater River at Valley City, Mo.....	459
--	-----

Blackwater River at Blue Lick, Mo.....	460
--	-----

Salt Fork:Camp Creek:

Shiloh Branch near Marshall, Mo.....	461
--------------------------------------	-----

Missouri River at Boonville, Mo.....	462
--------------------------------------	-----

Moniteau Creek basin

Moniteau Creek near Payette, Mo.....	463
--------------------------------------	-----

Petite Saline Creek basin

Petite Saline Creek near Boonville, Mo.....	464
---	-----

Moreau River basin

Moreau River near Jefferson City, Mo.....	465
---	-----

Osage River basin

Marais des Cygnes River (head of Osage River) at Melvern, Kans.....	466
---	-----

Salt Creek near Lyndon, Kans.....	467
-----------------------------------	-----

Hundred and Ten Mile Creek:

Dragon Creek near Burlingame, Kans.....	468
---	-----

Switzler Creek at Burlingame, Kans.....	468
---	-----

Hundred and Ten Mile Creek near Quenemo, Kans.....	469
--	-----

Marais des Cygnes River near Ottawa, Kans.....	470
--	-----

Pottawatomie Creek near Garnett, Kans.....	471
--	-----

Marais des Cygnes River at Trading Post, Kans.....	472
--	-----

Big Sugar Creek at Farlinville, Kans.....	473
---	-----

Marais des Cygnes River near Kansas-Missouri State line.....	473
--	-----

Little Osage River at Fulton, Kans.....	474
---	-----

Marmaton River near Fort Scott, Kans.....	475
---	-----

Sac River:Little Sac River:

Dry Fork Sac River:	
---------------------	--

Oak Grove Branch near Brighton, Mo.....	476
---	-----

Sac River near Stockton, Mo.....	477
----------------------------------	-----

Cedar Creek near Pleasant View, Mo.....	478
---	-----

Osage River at Osceola, Mo.....	479
---------------------------------	-----

Pomme de Terre River near Bolivar, Mo.....	480
--	-----

Lindley Creek near Polk, Mo.....	481
----------------------------------	-----

Pomme de Terre River at Hermitage, Mo.....	481
--	-----

South Grand River near Brownington, Mo.....	482
---	-----

West Fork Niangua River:

Niangua Branch at Marshfield, Mo.....	483
---------------------------------------	-----

Niangua River near Decaturville, Mo.....	484
--	-----

Little Niangua River:

Starks Creek at Preston, Mo.....	485
----------------------------------	-----

Lake of the Ozarks near Bagnell, Mo.....	485
--	-----

Osage River near Bagnell, Mo.....	486
-----------------------------------	-----

Tavern Creek:Little Tavern Creek:Camp Ground Creek:

Van Cleave Branch near Meta, Mo.....	486
--------------------------------------	-----

Osage River near St. Thomas, Mo.....	487
--------------------------------------	-----

Maries River at Westphalia, Mo.....	488
-------------------------------------	-----

Auxvasse Creek basinAuxvasse Creek:Stinson Creek:Young Creek:

Big Hollow near Fulton, Mo.....	489
---------------------------------	-----

Gasconade River basin

Gasconade River near Hazlegreen, Mo.....	489
--	-----

Gasconade River near Waynesville, Mo.....	490
---	-----

Big Piney River:Brushy Creek:

Coyle Branch at Houston, Mo.....	491
----------------------------------	-----

Big Piney River near Big Piney, Mo.....	492
---	-----

Little Piney Creek:

Beaver Creek near Rolla, Mo.....	493
----------------------------------	-----

Little Beaver Creek near Rolla, Mo.....	494
---	-----

Gaging-station records--Continued	Page
Missouri River--Continued	
Gasconade River basin--Continued	Page
Little Piney Creek at Newburg, Mo.....	495
Mill Creek:	
Wilkins Spring near Newburg, Mo.....	496
Gasconade River at Jerome, Mo.....	497
Gasconade River near Rich Fountain, Mo.....	498
Missouri River at Hermann, Mo.....	499
Loutre River basin	
Loutre River:	
Clear Fork:	
Rumbo Branch at Danville, Mo.....	500
Loutre River at Mineola, Mo.....	500
Coldwater Creek basin	
Coldwater Creek near St. Louis, Mo.....	501
Revisions and corrections to records for stations discontinued prior to September 30, 1950.....	502
Index.....	505

---

 ILLUSTRATIONS
 

---

Plate 1. Map showing location of gaging stations.....	Page
Figure 1. Map of conterminous United States showing area covered by this report.....	In pocket
2. Yearly discharge at three representative gaging stations.....	5
	7



COMPILATION OF RECORDS OF SURFACE WATERS OF THE MISSOURI RIVER BASIN  
BELOW SIOUX CITY, IOWA, 1951-60

---

PURPOSE AND SCOPE

This volume is one of a series of reports presenting monthly and yearly summaries of streamflow and reservoir data collected by the Geological Survey during the period October 1, 1950, to September 30, 1960. Included with these data are some records furnished by other Federal, State, and private agencies. This series of reports is a condensation of the detailed streamflow information presented in the annual series of reports known as "Surface Water Supply of the United States" for each of the years 1951 through 1960. The area covered by this report is the Missouri River basin below Sioux City, Iowa.

The purpose of the present series of reports is to make available in summarized form all of the surface-water records collected October 1, 1950, to September 30, 1960, and to continue the series of reports known as Water-Supply Papers 1301-19 and 1372 which summarized all surface-water records through September 30, 1950. The present series of reports includes corrections of errors which have been found in the earlier series. Also included are some records collected prior to October 1, 1950, that were omitted from the 1950 compilation series.

The Geological Survey collected the records mainly in cooperation with State, municipal, and other Federal agencies, and published them in detail in the series of annual reports known as "Surface Water Supply of the United States." Some records furnished by other agencies have been included in the annual reports and in the present series of reports; such records are identified in the station description.

The data presented consist of records of discharge of streams and contents of reservoirs summarized on a monthly and yearly basis. Results of miscellaneous discharge measurements and, in general, stage records have been excluded. Also included is a map of the area showing the location of each station (pl. 1). The reports of the present series are generally similar in the type of data they contain and in the form of presentation; moreover, they conform in style with the earlier series of compilation reports so that the entire record for any station up to September 30, 1960, is available in one or two volumes.

All records compiled for these summary reports were examined for major errors. A few revisions were made and the revised figures, noted as such, are included. Some previously unpublished information is included, as well as a few estimates of discharge that were made to fill short gaps in an otherwise complete period of record.

DESCRIPTION OF DATA

The gaging-station records are arranged in downstream order. The order used in this report is the same as that adopted for use in the annual series of reports on surface-water supply beginning with the water year 1951. In a downstream direction along the main stem, all stations on a tributary entering above a main-stem station are listed before that station. If a tributary enters between two main-stem stations, it is listed between them. A similar order is followed in listing stations on first rank, second rank, and other ranks of tributaries. To indicate the rank of any tributary on which a gaging

station is situated and the stream to which it is immediately tributary, each indentation in the listing of gaging stations in the table of contents represents one rank. This downstream order and system of indentation show 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 station was assigned a number which is shown on the index map and which is a part of the station name in the heading of the description in the text. The numbers are assigned in downstream order in each part (see explanation of "parts" under the heading "Publications," p. 4) beginning with the most upstream station. The numbers are not consecutive because gaps are left to allow for new stations that may be established.

The data presented for most of the gaging stations comprise a description of the station, a table of monthly discharge in cubic feet per second, a table of monthly discharge in acre-feet, and a yearly summary table. The station description gives the name of the river basin, the station number and name, the location, drainage area, records available, types and datums of gages, average discharge, extremes of discharge, general remarks concerning the data, and a credit statement if records were furnished by another agency.

The location of the gaging station and the drainage area are obtained from the best available maps. When more than one site was used during water years 1951-60 and the difference in drainage areas is significant, the area for the latest site is shown first followed by the areas for other sites in chronological order. In some instances drainage-area figures have not been obtained because of the lack of suitable maps or because the boundaries cannot be defined or the effective drainage area determined.

The paragraph "Records available" lists all periods for which there are published records generally equivalent to those at the present site. If equivalent records have been published under another station name, that fact is also noted.

The gage described first is the present gage or the one used most recently. Information is then given in chronological order for all gages used earlier, giving changes in location, type of gage, or datum. The location or datum of all earlier gages is given with reference to the present or most recently used gage. The datum of the gage is the elevation of the zero of the gage above mean sea level. Where information as to datum is not available, the altitude of the gage is given.

The average discharge for a station is the average of all complete water years and is published only if there are five or more complete water years of record. The years used to determine the average are not necessarily consecutive. The average discharge is not published for some stations because of extensive changes in diversion or storage, or other water development, that have occurred upstream.

In general, the momentary maximum and minimum discharges and stages for the entire period of record are published in the "Extremes" paragraph. These are qualified if necessary according to the type of gage used and the completeness of the record. Maximum and minimum discharges at nonrecording gaging stations are qualified as "observed" unless determined from a graph drawn through actual gage heights which approximates the actual hydrograph.

Under "Remarks" information is given on factors which affect the basin runoff characteristics. These include upstream regulation, diversion, and utilization--a history of

changes in these items during the period 1951-60 is given when known. Also, references are made to the records of storage or diversion upstream and to records concerning quality of water, if published.

When discharge records are furnished by another agency, credit is given under "Cooperation."

The streamflow data summarized in this report generally are contained in two monthly tables and one yearly table. The first monthly table is a tabulation of monthly and yearly mean discharges in cubic feet per second. These figures represent discharge passing the station; they are unadjusted for storage or diversion upstream unless otherwise specified under "Remarks" for the individual station. Each monthly figure is the mean flow for the entire month; generally no record for part of a month is tabulated. Likewise, each yearly figure is the mean flow for a full year, and no figure is shown for a partial year. Usually the months are arranged on a water-year basis. Exceptions to this rule are made in connection with seasonal records wherein the months are grouped to give a complete season for each calendar year.

The second monthly table is a tabulation of monthly and yearly discharge in acre-feet.

The third table contains a yearly summary of the streamflow data. The column headed "WSP" lists the number of the water-supply paper in which the figures of daily and monthly discharge are published. If a part of the record has been revised and the revision published, then reference is made to both the original report and the one containing the revised record; if the daily discharge record for the entire year has been republished to include the revisions, then only the later report is listed. However, there is no reference in this column for revisions published for the first time in this report, as the corresponding revised figures of daily discharge will be published in a water-supply paper which will contain daily records for the period 1961-65. For some stations the third table is omitted; however, the report containing records for any particular year can generally be found by referring to the table given on page 6.

In the third table the momentary maximum discharge for each water year and the date of its occurrence is given if known. For nonrecording gage records, momentary maximums were obtained from graphs drawn through the gage readings. The momentary maximum discharge, however obtained, is not qualified in any way if it is believed to be representative of the absolute maximum for the water year.

The minimum daily discharge for each water year is listed if known. Other data listed in this table are the annual mean discharge and discharge in inches or acre-feet, or both, for both the water year and the calendar year. The figures listed for the water year are the same as those given in the yearly columns of the preceding tables.

Most canal and diversion records are given in a single table. There are some records for large canals, however, that are published in the same detail as those for streams. Records of reservoirs also are given in a single table which shows the contents at the end of each month.

Revised figures of discharge for water years 1951-60 are not so indicated if they have been published in an annual report, but are noted as "Revised" if they have not been published in an annual report. Revised daily figures which have not been published in annual reports will be published in the water-supply paper containing records for water years 1961-65, except for special cases involving only a few figures which are included in this

series of reports. Figures that represent corrections of typographical or computational errors whereas no figures of daily discharge have been revised or changed are indicated as "corrected" in this report. Estimates of discharge made to complete months or years for this report are noted as estimated and as "not previously published."

Revisions or corrections of records published in WSP 1310 are included in this report. For stations operated during at least part of the period 1951-60, the revisions or corrections are published with the rest of the data for the station; for stations not operated since the end of the 1950 water year, the revisions or corrections are published in a special section under the heading "Revisions and corrections to records published in WSP 1310 for stations discontinued prior to September 30, 1950."

Stations for which the entire period of record previously published has been discredited are omitted from this report. The following is the only station so omitted:

9150. Big Bull Creek near Hillsdale, Kans..... 1948-53.

In addition to the above, records for some other stations in the area covered by this report, previously published by the Geological Survey in the 1951-60 annual series of reports, are omitted from this compilation. In general, the records for such stations either did not measure streamflow, total diversions, or return flow and were considered not important enough to warrant publication in this report. These stations are listed in the following table:

Previously published records which are not compiled in this report		
Station number	Station name	Period of record
6485	Douglas Canal near Orpha, Wyo.....	1935-51
7370	Horseshoeth Reservoir Canal below Big Thompson siphon, near Drake, Colo.....	1950-55
8225	Pioneer Canal at Colorado-Nebraska State line.....	1950-51

#### PUBLICATIONS

This series of reports comprises 20 volumes of water-supply papers (WSP) as numbered below. The "Part" numbers and the areas covered are the same as those used for the annual series of reports on surface water supply of the United States since 1951. The boundaries of the parts are indicated in figure 1.

Numbers of water-supply papers for 1960 series of compilation reports		
WSP	Part	Area
1721	1-A	North Atlantic slope basins, Maine to Connecticut.
1722	1-B	North Atlantic slope basins, New York to York River.
1723	2-A	South Atlantic slope basins, James River to Savannah River.
1724	2-B	South Atlantic slope and eastern Gulf of Mexico basins, Ogeechee River to Pearl River.
1725	3-A	Ohio River basin except Cumberland and Tennessee River basins.
1726	3-B	Cumberland and Tennessee River basins.
1727	4	St. Lawrence River basin.
1728	5	Hudson Bay and upper Mississippi River basins.
1729	6-A	Missouri River basin above Sioux City, Iowa.
1730	6-B	Missouri River basin below Sioux City, Iowa.
1731	7	Lower Mississippi River basin.
1732	8	Western Gulf of Mexico basins.
1733	9	Colorado River basin.
1734	10	The Great Basin.
1735	11	Pacific slope basins in California.
1736	12	Pacific slope basins in Washington and upper Columbia River basin.
1737	13	Snake River basin.
1738	14	Pacific slope basins in Oregon and lower Columbia River basin.
1739	-	Hawaii.
1740	-	Alaska.



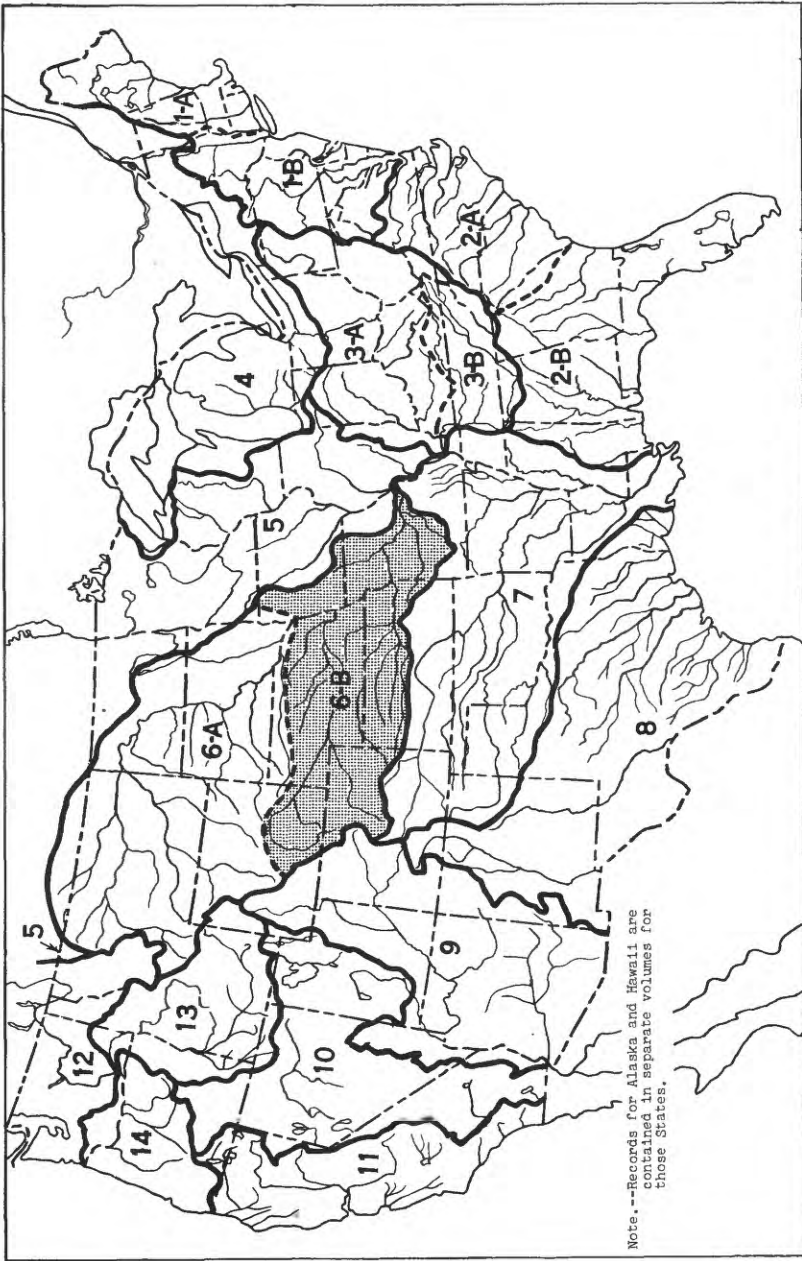


Figure 1.--Map of conterminous United States showing areas covered by 18 of the 20 volumes on surface water supply. The area covered by this report is shaded.

Records prior to September 30, 1950, were summarized in a series of water-supply papers as listed below. Each of these volumes contains a list of the annual reports from which data prior to 1951 were summarized.

Numbers of water-supply papers for 1950 series of compilation reports

WSP	Part	WSP	Part	WSP	Part
1301	1-A	1306	5	1315-A	11-B
1302	1-B	1309	6-A	1315-B	11-A
1303	2-A	1310	6-B	1316	12
1304	2-B	1311	7	1317	13
1305	3-A	1312	8	1318	14
1306	3-B	1313	9	1319	Hawaii
1307	4	1314	10	1372	Alaska

This report is summarized from the following 10 annual reports which contain records of daily discharge for each of the water years from 1951 to 1960.

Annual water-supply papers, Part 6B, 1951-60

Water year	WSP	Water year	WSP
1951	1210	1956	1440
1952	1240	1957	1510
1953	1280	1958	1560
1954	1340	1959	1630
1955	1390	1960	1710

In addition to the customary records of discharge collected during the systematic operation of gaging stations, there is much additional hydrologic information available, both published and unpublished.

Lists of flood reports and other special reports are contained in the introductory pages of each of the annual reports listed above.

Records for many stations have been analyzed by an electronic computer to give: the number of days in each year that the discharge was between selected limits (duration tables); the lowest and highest mean discharges for selected numbers of consecutive days in each year; and other statistical summaries.

Data on low flow or peak flows or both are available for many sites other than gaging stations.

Specific information on unpublished data available can be obtained by writing directly to the district engineer for the State in which the site or gaging station is located.

#### HYDROLOGIC CONDITIONS

Streamflow, a residual of precipitation after other demands have been met, varies considerably from year to year and from place to place. Figure 2 shows yearly discharge for three widely-separated gaging stations in the report area. The pattern of yearly runoff shown by these streams is generally representative of hydrologic conditions in their part of the report area. Outstanding floods occurred over large parts of the area each year during the period 1951-60 except in 1954, 1955, and 1956; however, some local flooding also occurred during these years. During the years 1952-57, drought conditions existed at times in widely scattered areas, particularly in the southeastern and far western parts of the report area.

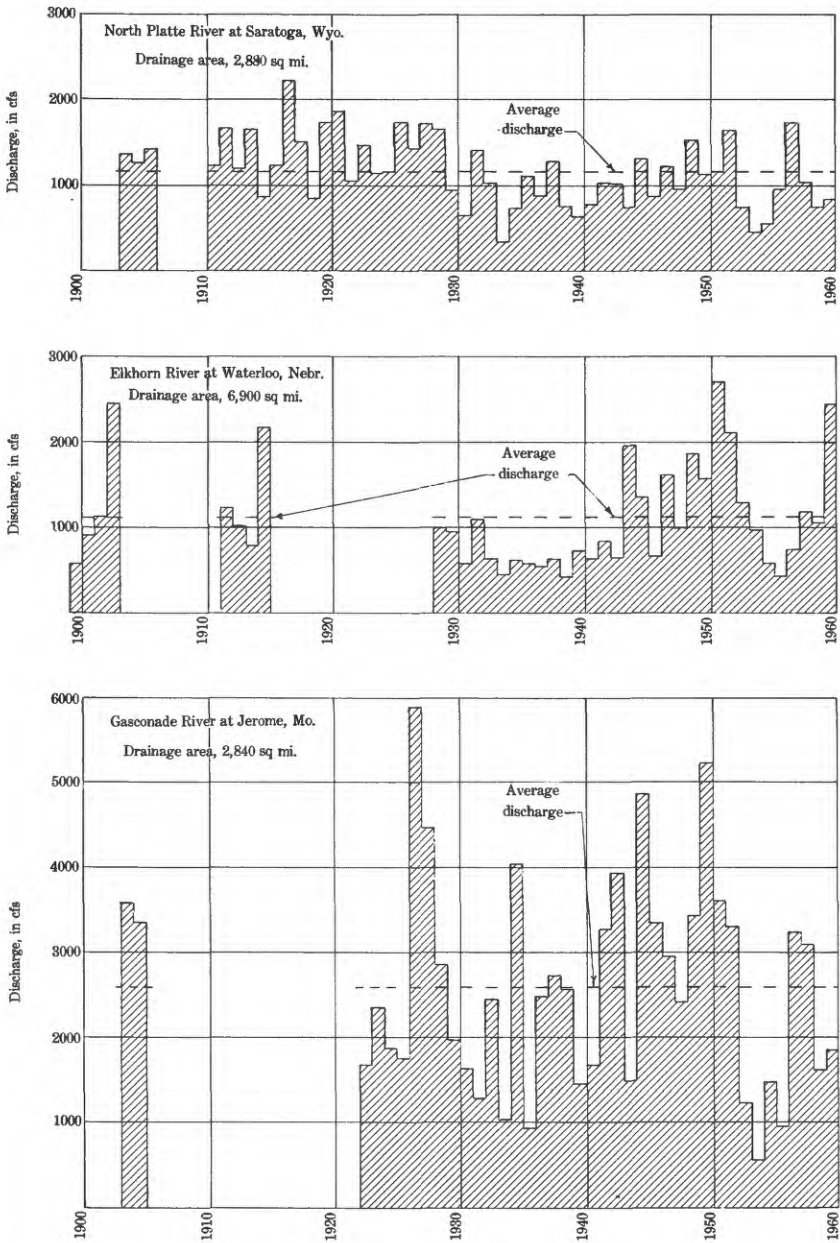


Figure 2.—Yearly discharge at three representative gaging stations

## 4860. Missouri River at Sioux City, Iowa

Location.--Lat 42°29'10", long 96°24'45", in NW¼ sec.16, T.29 N., R.9 E., sixth principal meridian, on right bank on upstream side of bridge on U. S. Highway 77 at Sioux City, 2.0 miles downstream from Big Sioux River.

Drainage area.--314,600 sq mi, approximately.

Records available.--October 1897 to September 1960 in reports of Geological Survey.

Monthly discharge only for some periods, published in WSP 1310. Gage-height records collected in this vicinity September 1878 to December 1899 are contained in reports of Missouri River Commission and since July 1889 are contained in reports of U. S. Weather Bureau.

Gage.--Water-stage recorder. Datum of gage is 1,076.96 ft above mean sea level, datum of 1929. Sept. 2, 1878, to Dec. 31, 1905, staff, cable, and chain gages at various locations within 1.7 miles of present site at various datums. Jan. 1, 1906, to Feb. 14, 1935, chain gage at present site and datum.

Average discharge.--63 years (1897-1960), 32,660 cfs (23,640,000 acre-ft per year).

Extremes.--1928-31, 1938-60: Maximum discharge, 441,000 cfs Apr. 14, 1952; maximum gage height, 24.28 ft Apr. 14, 1952; minimum discharge, 2,500 cfs Dec. 29, 1941; minimum gage height observed, -3.34 ft Dec. 27, 1946.

Remarks.--Flow partly regulated by upstream main stem reservoirs.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	34,920	29,860	10,720	16,590	15,290	24,310	75,630	40,090	60,970	50,750	45,160	49,410	37,630
1952	45,340	36,890	14,560	13,320	26,730	32,780	166,900	59,570	54,070	37,130	30,350	29,840	47,250
1953	29,690	24,720	9,077	13,210	15,850	36,290	30,120	42,460	65,070	39,710	32,990	33,610	31,280
1954	32,680	16,810	13,420	10,570	16,050	24,600	27,160	28,700	32,620	31,050	30,750	31,290	24,670
1955	29,740	12,330	11,720	6,820	9,160	19,090	25,640	29,330	29,290	28,300	29,460	33,190	22,250
1956	31,900	12,220	9,460	9,005	9,359	23,740	29,820	29,580	30,450	30,460	33,520	33,650	23,640
1957	27,000	12,250	9,217	8,690	9,061	9,135	17,450	27,520	26,780	30,060	30,810	28,420	19,770
1958	29,190	12,660	6,445	9,149	9,696	10,130	24,510	26,610	27,940	26,690	27,360	26,380	20,150
1959	29,620	10,970	9,464	10,240	10,670	11,700	25,640	25,430	25,270	27,040	29,660	30,580	20,610
1960	27,860	11,530	9,187	9,090	8,772	13,530	42,400	24,070	23,270	27,220	30,590	29,160	21,590

Monthly and yearly discharge, in thousands of acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	2,147	776	659.3	1,020	849.1	1,495	4,512	2,465	3,628	3,120	2,777	2,940	27,390
1952	2,788	2,314	895.1	819.2	1,537	2,016	11,120	3,663	3,217	2,283	1,866	1,776	34,290
1953	1,826	1,471	558.1	812.2	680.1	2,354	1,792	2,612	3,672	2,442	2,028	2,000	22,650
1954	2,009	1,119	824.9	680.2	891.4	1,525	1,616	1,764	1,941	1,909	1,891	1,661	16,000
1955	1,829	735.7	720.9	542.3	506.6	1,174	1,526	1,803	1,743	1,740	1,811	1,975	16,110
1956	1,961	727.2	581.7	553.7	536.3	1,460	1,774	1,619	1,612	1,873	2,061	2,002	17,160
1957	1,660	728.7	566.7	534.3	503.2	561.7	1,038	1,692	1,594	1,849	1,895	1,691	14,310
1958	1,795	753.1	519.3	562.5	536.5	622.9	1,458	1,648	1,662	1,654	1,684	1,689	14,590
1959	1,821	652.6	541.9	629.4	603.6	719.6	1,537	1,564	1,504	1,663	1,824	1,820	14,920
1960	1,714	666.3	564.9	556.9	504.6	619.6	2,523	1,460	1,385	1,674	1,861	1,735	15,530

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	37,780	27,350,000
1951	1209	152,000	Apr. 6, 1951	4,000	37,630	27,390,000	39,790	26,600,000
1952	1239	441,000	Apr. 14, 1952	6,800	47,250	34,290,000	44,290	32,150,000
1953	1279	109,000	June 25, 1953	7,000	31,280	22,650,000	31,420	22,750,000
1954	1339	51,300	June 21, 1954	6,000	24,670	16,000,000	23,940	17,330,000
1955	1369	56,200	Mar. 12, 1955	6,200	22,250	16,110,000	22,250	16,090,000
1956	1439	36,900	Aug. 18, 1956	8,100	23,640	17,160,000	23,210	16,650,000
1957	1509	36,200	Oct. 3, 1956	6,000	19,770	14,310,000	19,920	14,430,000
1958	1559	39,500	July 2, 1958	4,000	20,150	14,590,000	20,130	14,570,000
1959	1629	33,600	May 31, 1959	6,500	20,610	14,920,000	20,460	14,630,000
1960	1709	101,000	Apr. 3, 1960	6,600	21,390	15,530,000	-	-

6000. Perry Creek at 38th Street, Sioux City, Iowa

Location.--Lat 42°32'05", long 96°24'35", in SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec.8, T.89 N., R.47 W., on right upstream abutment of bridge on 38th Street in Sioux City, 3.6 miles upstream from mouth.

Drainage area.--65.1 sq mi (revised).

Records available.--October 1945 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 1,117.04 ft above mean sea level (city of Sioux City bench mark). Prior to May 20, 1954, wire-weight gage with supplementary high-water recorder operating above 5.0 ft gage height, both at same site and datum.

Average discharge.--15 years (1945-60), 17.3 cfs (12,520 acre-ft per year).

Extremes.--1945-60: Maximum discharge, 7,780 cfs Sept. 10, 1949 (gage height, 21.80 ft), from rating curve extended above 1,700 cfs on basis of slope-area measurement of peak flow; no flow at times in 1946, 1958-60.  
Flood of July 7, 1944, reached a stage of about 25.5 ft, from floodmarks (discharge, 9,600 cfs, by contracted-opening measurement, by Corps of Engineers).

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	5.46	5.97	2.62	1.93	2.68	139	20.6	19.4	90.0	20.5	85.5	68.9	38.6
1952	16.5	11.6	6.77	47.5	41.3	126	30.3	18.5	36.4	99.6	9.13	7.32	37.7
1953	6.56	7.29	7.05	7.40	9.65	58.3	19.6	35.5	87.7	10.6	12.0	5.89	22.3
1954	8.41	11.9	10.7	4.61	24.0	24.7	12.3	29.2	56.5	7.67	7.98	5.33	16.8
1955	7.60	5.95	5.10	4.38	3.86	28.6	11.8	14.7	3.61	26.3	.73	.65	9.56
1956	3.72	2.09	1.80	1.87	2.30	18.5	3.55	5.64	.94	3.91	17.6	.19	5.24
1957	.83	1.42	1.25	1.01	1.51	4.23	2.41	3.70	20.9	16.7	1.66	6.90	5.21
1958	1.66	3.02	1.91	1.13	8.31	4.79	14.7	19.4	5.64	2.72	1.20	.08	5.35
1959	.38	.87	.48	.66	1.31	7.50	2.30	47.6	3.78	.80	1.05	.16	5.65
1960	1.17	1.31	1.50	.82	1.54	114	66.0	10.0	4.58	5.28	35.2	1.46	22.2

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	336	236	161	119	149	8,520	1,240	1,200	5,350	1,260	5,260	4,100	27,930
1952	1,020	692	416	2,920	2,380	7,750	1,800	1,140	2,170	6,120	561	438	27,400
1953	403	434	434	455	536	3,590	1,170	2,180	5,220	655	741	350	16,170
1954	517	709	660	283	1,330	1,520	731	1,790	3,360	471	491	317	12,180
1955	468	354	314	269	215	1,760	705	905	227	1,620	45	38	6,920
1956	229	124	111	115	132	1,140	211	347	56	240	1,080	11	3,800
1957	51	84	77	62	84	260	144	227	1,240	1,030	102	411	3,770
1958	102	180	117	70	462	294	876	1,180	336	167	74	5.0	3,870
1959	23	52	29	41	73	461	157	2,930	225	49	64	9.3	4,090
1960	72	78	92	50	88	7,040	5,240	616	273	325	2,170	87	16,130

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30										Calendar year		
		Momentary maximum					Runoff					Runoff		
		Discharge	Date	Minimum day	Mean	Per square mile	Inches	Acre-feet	Mean	Inches	Acre-feet	Mean	Inches	Acre-feet
1950	-	-	-	-	-	-	-	-	-	-	-	24.7	5.17	17,920
1951	1210	5,480	June 19, 1951	0.9	38.6	0.593	8.03	27,930	40.5	8.42	29,330			
1952	1240	5,480	July 7, 1952	3.0	37.7	.579	7.88	27,400	56.6	7.63	26,550			
1953	1280	3,470	June 7, 1953	4.2	22.3	.343	4.64	16,170	23.2	4.82	16,780			
1954	1340	4,010	June 19, 1954	1.5	16.8	.258	3.51	12,180	15.8	3.29	11,430			
1955	1390	4,880	July 9, 1955	.2	9.56	.147	1.99	6,920	8.63	1.81	6,250			
1956	1440	2,440	Aug. 18, 1956	.1	5.24	.080	1.10	3,800	4.89	1.01	3,540			
1957	1510	1,920	July 8, 1957	.1	5.21	.080	1.08	3,770	5.47	1.14	3,960			
1958	1560	1,540	May 31, 1958	0	5.35	.082	1.10	3,870	4.95	1.02	3,500			
1959	1630	2,660	May 30, 1959	0	5.65	.087	1.16	4,090	5.84	1.20	4,230			
1960	1710	3,020	Apr. 1, 1960	0	22.2	.341	4.65	16,130	-	-	-			

## 6001. Floyd River at Alton, Iowa

Location.--Lat 42°58'40", long 96°00'00", in NE $\frac{1}{4}$  sec.11, T.94 N., R.44 W., on left bank at downstream side of Chicago and North Western Railway Co. bridge at east edge of Alton, 22 miles upstream from confluence with West Floyd River and 4 $\frac{1}{2}$  miles upstream from mouth.

Drainage area.--265 sq mi.

Records available.--October 1955 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 1,269.55 ft above mean sea level, datum of 1929.

Average discharge.--5 years (1955-60), 20.0 cfs (14,480 acre-ft per year).

Extremes.--1955-60: Maximum discharge, 4,150 cfs Mar. 28, 1960 (gage height, 17.27 ft); no flow at times in 1956, 1958-59.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1956	#2.0	#1.5	0.52	0.21	0.24	10.4	11.6	8.51	4.38	4.38	14.8	0.96	#4.99
1957	.06	1.49	.64	.36	.25	22.9	12.0	10.5	31.9	39.8	2.94	3.40	10.6
1958	6.75	11.3	5.82	2.11	3.49	6.64	24.3	9.39	28.3	3.29	.44	.08	8.45
1959	.16	.30	.07	.06	.29	1.77	3.67	68.4	71.8	7.32	17.4	1.39	14.4
1960	2.78	2.65	7.53	5.11	3.07	201	222	117	32.4	11.2	74.5	58.5	61.7

\* Not previously published; partly estimated on basis of records for nearby stations.

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1956	#123	#89	32	13	14	640	692	523	260	269	910	57	#3,620
1957	3.6	89	39	24	14	1,410	712	645	1,900	2,450	181	203	7,670
1958	415	670	358	130	194	408	1,440	577	1,690	202	27	4.8	6,120
1959	9.9	18	4.6	3.0	16	109	218	4,210	4,270	450	1,070	85	10,460
1960	171	157	463	314	177	12,390	13,240	7,220	1,930	688	4,580	3,480	44,810

\* Not previously published; partly estimated on basis of records for nearby stations.

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30						Calendar year					
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff		Inches	Acre-feet
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet		
1956	1560	287	July 11, 1956	#0.1	#4.99	#0.019	#0.26	#3,620	4.84	0.26	3,510		
1957	1560	440	July 4, 1957	0	10.6	.040	.53	7,670	12.4	.63	8,980		
1958	1560	336	June 3, 1958	0	8.45	.032	.43	6,120	6.50	.32	4,710		
1959	1630	1,130	June 1, 1959	0	14.4	.064	.75	10,460	15.5	.80	11,220		
1960	1710	4,150	Mar. 28, 1960	1.3	61.7	.233	3.17	44,810	-	-	-		

\* Not previously published.

## 6003. West Branch Floyd River near Struble, Iowa

Location.--Lat 42°55'15", long 96°10'30", in NE $\frac{1}{4}$  sec.32, T.94 N., R.45 W., on right bank at downstream side of highway bridge, 0.2 mile west of U. S. Highway 75, 2.2 miles northeast of Struble, and 14 miles upstream from confluence with Floyd River.

Drainage area.--181 sq mi.

Records available.--October 1955 to September 1960.

Gage.--Water-stage recorder.

Average discharge.--5 years (1955-60), 13.3 cfs (9,530 acre-ft per year).

Extremes.--1955-60: Maximum discharge, 3,880 cfs Mar. 29, 1960 (gage height, 14.72 ft); no flow for many days in 1956-59.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1956	*1.5	*0.9	0.63	0.42	0.05	4.39	2.93	2.31	9.54	13.8	13.6	0.50	*4.25
1957	.74	1.14	.74	.18	.46	3.74	2.51	4.80	18.3	41.5	3.72	2.66	6.76
1958	3.26	5.06	4.36	1.17	2.32	4.37	14.7	4.07	6.33	.89	.24	.17	3.90
1959	.22	.35	.11	0	0	1.61	1.21	31.1	15.0	1.71	9.58	.68	5.18
1960	.92	1.77	1.96	.98	.40	233	193	63.6	21.4	6.18	14.1	17.0	46.2

\* Not previously published; partly estimated on basis of records for nearby stations.

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1956	*91	*54	38	26	3.0	270	175	142	568	848	839	30	*3,080
1957	46	66	45	11	26	230	149	295	1,090	2,550	229	158	4,900
1958	201	301	270	72	129	269	873	250	377	55	14	10	2,820
1959	13	21	6.7	0	0	111	72	1,910	891	105	577	40	3,750
1960	56	105	122	60	23	14,320	11,490	3,850	1,270	380	864	1,010	33,550

\* Not previously published; partly estimated on basis of records for nearby stations.

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30						Calendar year					
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff		Mean	Runoff
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet		
1956	1560	463	July 12, 1956	0	*4.25	*0.023	*0.35	*3,080	4.22	0.35	3,060	4.22	0.35
1957	1560	840	July 4, 1957	0	6.76	.037	.50	4,900	7.61	.56	5,510	7.61	.56
1958	1560	218	Apr. 6, 1958	0	3.90	.022	.30	2,820	2.89	.22	2,090	2.89	.22
1959	1630	646	May 31, 1959	0	5.18	.029	.38	3,750	5.51	.41	3,990	5.51	.41
1960	1710	3,880	Mar. 29, 1960	.1	46.2	.255	3.46	33,550	-	-	-	-	-

\* Not previously published.

## FLOYD RIVER BASIN

6005. Floyd River at James, Iowa

Location.--Lat 42°34'30", long 96°18'45", in SE<sup>1</sup>/<sub>4</sub> sec.30, T.90 N., R.46 W., on right bank at downstream side of highway bridge at James, 10.7 miles upstream from mouth and 15.1 miles downstream from West Branch Floyd River.

Drainage area.--882 sq mi (revised).

Records available.--December 1934 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 1,102.59 ft above mean sea level, datum of 1929. Prior to Sept. 11, 1938, June 9 to Nov. 15, 1953, and Oct. 1, 1955, to May 22, 1957, wire-weight gage; Sept. 11, 1938, to June 8, 1953 (destroyed by flood), and Nov. 16, 1953, to Sept. 30, 1955, water-stage recorder, all at same site and datum.

Average discharge.--25 years (1935-60), 181 cfs (131,000 acre-ft per year).

Extremes.--1934-60: Maximum discharge, 71,500 cfs June 8, 1953 (gage height, 25.3 ft, from floodmarks), from rating curve extended above 15,600 cfs on basis of contracted-opening and flow-over-embankment measurement of peak flow; minimum daily, 1 cfs Aug. 20, 27, 1936, Feb. 10-23, 1959.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	61.0	33.7	19.8	15.8	25.9	1,035	1,254	825	942	1,053	1,151	1,353	650
1952	437	285	215	187	970	1,568	908	280	230	592	124	89.7	488
1953	52.9	42.4	43.4	37.1	38.3	390	267	446	2,187	175	288	72.5	336
1954	58.2	67.3	73.4	35.7	247	564	173	164	1,138	179	98.5	68.7	239
1955	82.8	58.7	41.7	38.9	24.0	173	181	113	50.1	56.6	17.4	10.6	70.9
1956	16.7	11.5	6.68	5.92	7.19	39.0	32.8	34.3	17.0	24.8	35.5	5.67	19.9
1957	6.03	8.78	4.77	3.42	9.45	29.9	30.8	22.8	89.5	198	38.2	37.3	40.1
1958	23.7	36.1	28.4	10.5	30.2	41.1	65.4	42.6	60.7	13.9	6.12	5.40	30.0
1959	4.55	4.54	3.05	1.63	1.62	53.6	18.7	138	190	23.6	52.7	8.72	41.9
1960	11.5	13.8	16.7	16.7	7.72	996	926	400	150.	51.1	190	121	242

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	3,750	2,000	1,220	972	1,440	63,660	74,600	50,730	56,060	64,740	70,780	80,530	470,500
1952	26,850	16,840	13,190	11,490	55,800	95,770	54,030	17,220	13,660	36,400	7,630	5,340	354,300
1953	3,250	2,520	2,670	2,280	2,130	23,980	15,870	27,450	130,100	10,740	17,710	4,320	243,000
1954	3,580	4,000	4,510	2,200	13,720	35,890	10,310	10,100	67,700	11,010	6,060	4,090	173,200
1955	5,090	3,490	2,570	2,390	1,330	10,630	10,750	6,960	2,960	3,480	1,070	629	51,370
1956	1,020	685	411	364	414	2,400	1,950	2,110	1,010	1,530	2,180	337	14,410
1957	371	523	293	210	525	1,840	1,830	1,400	5,330	12,170	2,350	2,220	29,060
1958	1,460	2,150	1,740	644	1,680	2,520	3,890	2,620	3,610	852	376	203	21,740
1959	280	270	188	100	90	3,300	1,110	8,500	11,300	1,450	3,240	519	30,350
1960	710	821	1,150	1,030	444	61,260	55,090	24,590	8,950	3,140	11,660	7,190	176,000

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30							Calendar year		
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff	
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet
1950	-	-	-	-	-	-	-	-	154	2.37	111,200
1951	1210	8,320	Mar. 28, 1951	12	650	0.737	10.00	470,500	719	11.06	520,500
1952	1240	13,900	Mar. 31, 1952	51	488	.553	7.53	354,300	421	6.50	305,800
1953	1280	71,500	June 8, 1953	14	336	.381	5.18	243,000	341	5.27	246,700
1954	1340	6,250	June 22, 1954	29	239	.271	3.69	173,200	238	3.65	172,200
1955	1390	2,260	July 10, 1955	8.4	70.9	.080	1.06	51,370	58.5	.89	42,340
1956	1440	318	July 13, 1956	4.1	19.9	.023	.29	14,410	18.6	.26	13,480
1957	1510	1,330	July 5, 1957	1.7	40.1	.045	.62	29,060	45.9	.71	33,220
1958	1560	970	May 31, 1958	2.9	30.0	.034	.47	21,740	23.7	.37	17,130
1959	1630	1,920	June 1, 1959	1.0	41.9	.048	.64	30,350	44.6	.68	32,290
1960	1710	15,100	Mar. 29, 1960	7.0	242	.274	3.74	176,000	-	-	-



## 6010. Omaha Creek at Homer, Nebr.

Location.--Lat 42°20', long 96°29', in SE $\frac{1}{4}$  sec.11, T.27 N., R.8 E., on right pier on downstream side of bridge on main street of Homer.

Drainage area.--170 sq mi, approximately.

Records available.--October 1945 to September 1960. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 1,082.45 ft above mean sea level, datum of 1929, adjusted. Prior to Aug. 4, 1952, at bridge half a mile downstream at datum 8.03 ft lower.

Average discharge.--15 years (1945-60), 34.8 cfs (25,190 acre-ft per year).

Extremes.--1945-60: Maximum discharge, 14,400 cfs July 2, 1958 (gage height, 23.62 ft), from rating curve extended above 3,700 cfs on basis of slope-area measurements at gage heights 16.38 and 23.62 ft; minimum daily, 0.1 cfs Sept. 16, 18, 19, 1948, Sept. 9, 13, 14, 1955, Oct. 7, 8, 1957.

Greatest flood known occurred June 4, 1940 (stage, about 32.5 ft, present site and datum).

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	8.61	9.40	6.66	4.16	21.9	115	38.3	49.6	64.1	51.1	95.4	77.2	45.3
1952	59.2	27.5	19.6	22.4	47.6	97.8	62.7	145	65.0	82.2	49.8	22.1	60.3
1953	19.2	19.3	17.8	19.1	27.7	49.6	49.9	54.2	140	25.2	19.5	9.54	37.5
1954	8.79	16.4	10.0	8.21	44.1	29.2	24.5	26.9	258	26.5	20.5	13.0	40.3
1955	29.1	18.1	16.0	12.8	8.22	27.6	25.6	13.8	16.4	11.3	6.03	1.08	15.6
1956	1.72	2.36	3.10	2.07	1.49	6.33	4.14	25.8	122	67.7	11.8	1.19	20.8
1957	1.17	2.71	2.52	1.99	3.54	7.14	4.41	13.3	334	17.1	57.4	17.1	48.4
1958	9.08	25.7	10.6	8.23	70.3	21.0	38.6	19.0	11.7	171	13.0	7.50	33.6
1959	7.52	8.09	6.89	4.02	3.70	32.1	19.4	167	39.6	16.0	33.8	9.88	29.3
1960	11.9	12.8	11.7	8.90	12.5	45.9	159	79.3	41.7	36.2	87.8	31.1	44.9

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	529	559	410	256	1,210	7,100	2,280	3,050	3,810	3,140	5,870	4,590	32,800
1952	3,640	1,640	1,210	1,370	2,740	6,010	3,730	8,940	5,060	5,050	3,060	1,320	43,770
1953	1,180	1,150	1,090	1,180	1,540	3,050	2,970	3,330	8,340	1,550	1,200	567	27,150
1954	540	974	616	505	2,450	1,800	1,460	1,780	15,370	1,630	1,260	772	29,160
1955	1,790	1,080	982	789	457	1,700	1,520	850	976	694	371	64	11,270
1956	106	140	191	128	85	389	247	1,590	7,250	4,160	725	71	15,080
1957	72	161	155	122	197	439	262	618	19,690	8,490	1,050	3,410	35,070
1958	558	1,530	654	506	3,910	1,290	2,300	1,170	696	10,480	798	446	24,340
1959	462	481	424	247	206	1,970	1,150	10,250	2,360	983	2,080	568	21,200
1960	732	762	719	547	721	2,820	9,490	4,870	2,480	2,230	5,400	1,850	32,620

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	43.9	31,820
1951	1210	2,900	Aug. 15, 1951	-	45.3	32,800	52.2	37,800
1952	1240	5,950	May 23, 1952	9.2	60.3	43,770	56.1	40,700
1953	1280	4,760	June 8, 1953	5.2	37.5	27,150	35.7	25,860
1954	1340	10,200	June 21, 1954	3.5	40.3	29,160	42.6	30,880
1955	1390	1,350	Aug. 9, 1955	.1	15.6	11,270	10.9	7,860
1956	1440	7,580	June 26, 1956	.2	20.8	15,080	20.7	15,030
1957	1510	10,100	June 14, 1957	.1	48.4	35,070	51.7	37,420
1958	1560	14,400	July 2, 1958	3.0	33.6	24,340	31.7	22,960
1959	1630	4,150	May 31, 1959	1.2	29.3	21,200	30.5	22,050
1960	1710	3,460	Aug. 28, 1960	5.2	44.9	32,620	-	-

## MONONA-HARRISON DITCH BASIN

6020. West Fork ditch at Holly Springs, Iowa

Location.--Lat 42°15'34", long 96°04'41", in SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec.16, T.86 N., R.45 W., on right bank 10 ft downstream from bridge on county road, three-quarters of a mile south of Holly Springs, 11.4 miles upstream from Wolf Creek, 15.7 miles north of Onawa, and 22 miles southeast of Sioux City.

Drainage area.--399 sq mi (revised).

Records available.--April 1939 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 1,052.82 ft above mean sea level, datum of 1929 (Corps of Engineers bench mark). Prior to June 16, 1959, wire-weight gage at bridge three-quarters of a mile upstream at same datum.

Average discharge.--21 years (1939-60), 94.9 cfs (68,700 acre-ft per year).

Extremes.--1939-60: Maximum discharge, about 10,000 cfs Mar. 30, 1960 (gage height, 22.43 ft, after levees broke in vicinity of gage; 25.2 ft, from floodmark, at former site three-quarters of a mile upstream), estimated on basis of records at former site three-quarters of a mile upstream; minimum daily, 0.2 cfs July 30, Aug. 17, 1956.

Remarks.--West Fork ditch is a dredged channel which diverts flow of West Fork Little Sioux River at Holly Springs and carries it 5.5 miles south, thence southeast 6.5 miles to a point 1.5 miles west of Kennebec, where Wolf Creek enters from left. From this point ditch roughly parallels Little Sioux River and becomes known as Monona-Harrison ditch 3 miles southwest of Turin.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	31.4	17.4	13.5	9.71	54.2	746	274	504	334	307	605	422	279
1952	168	99.6	83.9	127	399	546	288	137	218	490	99.5	46.5	227
1953	35.0	36.7	24.1	29.1	35.5	221	155	139	382	68.7	96.5	26.5	104
1954	22.5	28.1	33.1	13.7	55.2	138	76.0	74.1	765	93.1	46.3	30.0	114
1955	50.2	28.2	21.9	14.5	10.0	162	71.7	31.1	29.6	108	16.0	9.22	46.5
1956	9.82	9.65	5.83	5.00	7.34	15.0	12.9	21.2	7.71	11.5	2.92	2.23	9.28
1957	2.08	4.31	3.58	2.65	5.06	8.41	9.80	48.4	404	123	20.0	35.4	55.3
1958	24.5	37.3	16.8	11.1	51.5	33.5	51.5	20.8	47.3	17.9	8.75	5.06	26.9
1959	3.17	4.06	2.60	2.26	3.25	29.1	10.9	333	124	50.0	43.9	14.2	52.3
1960	12.4	18.2	27.4	23.7	13.6	484	375	319	115	66.5	196	69.5	144

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1,930	1,040	833	597	3,010	45,860	16,330	31,000	19,900	18,880	37,170	25,080	201,600
1952	11,550	5,920	5,160	7,830	22,930	33,590	17,130	8,450	12,980	30,160	6,120	2,760	164,600
1953	2,150	2,180	1,480	1,790	1,970	13,570	9,200	8,520	22,710	4,220	5,930	1,700	75,420
1954	1,390	1,670	2,040	845	3,070	8,480	4,520	4,550	45,520	5,720	2,850	1,780	82,440
1955	3,090	1,680	1,340	693	553	9,990	4,270	1,910	1,760	6,660	984	549	33,680
1956	604	574	358	307	422	920	766	1,310	459	708	180	132	6,740
1957	128	257	220	163	281	517	583	2,970	24,030	7,570	1,230	2,110	40,060
1958	1,500	2,220	1,040	680	2,860	2,060	3,060	1,280	2,810	1,100	538	301	19,450
1959	195	242	160	139	180	1,790	646	20,500	7,400	3,070	2,700	846	37,870
1960	764	1,080	1,680	1,460	780	29,750	22,340	19,590	6,830	4,090	12,030	4,140	104,500

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30							Calendar year			
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff		
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet	
1950	-	-	-	-	-	-	-	101	3.44	-	72,940	
1951	1210	6,450	Mar. 28, 1951	7.6	279	0.699	9.49	201,600	304	10.37	220,500	
1952	1240	5,000	July 8, 1952	32	227	.569	7.75	164,600	204	6.96	177,800	
1953	1280	5,050	June 9, 1953	21	104	.281	3.54	75,420	103	3.52	77,710	
1954	1340	7,860	June 20, 1954	9	114	.286	3.87	82,440	115	3.91	83,440	
1955	1390	1,640	July 10, 1955	7.8	46.5	.117	1.59	33,680	40.2	1.38	29,110	
1956	1440	390	May 29, 1956	.2	9.28	.023	.31	6,740	8.00	.26	5,810	
1957	1510	2,300	June 14, 22, 1957	1.0	55.3	.139	1.88	40,060	61.1	2.08	44,210	
1958	1560	a700	Feb. 25, 1958	2.5	26.9	.067	.90	19,450	21.1	.71	15,290	
1959	1630	4,320	(b)	1.1	52.3	.131	1.77	37,870	56.4	1.92	40,800	
1960	1710	a10,000	Mar. 30, 1960	10	144	.361	4.92	104,500	-	-	-	

a About.

b May 28 or 29, 1959.

## 6024. Monona-Harrison ditch near Turin, Iowa

Location.--Lat 41°57'55", long 95°59'30", in NE 1/4 NW 1/4 sec. 32, T.83 N., R.44 W., on right pier at downstream side of bridge on Brown's grade, 1.0 mile west of gaging station on Little Sioux River near Turin, 4 miles southwest of Turin, 5.2 miles northeast of Blencoe, and 12.5 miles upstream from mouth.

Drainage area.--900 sq mi. Prior to Jan. 15, 1958, 4,426 sq mi, revised (combined area above this station and above station on Little Sioux River 1.0 mile east).

Records available.--January 1958 to September 1960. Records for April 1939 to January 1958 not equivalent owing to diversion from Little Sioux River through equalizer ditch 1.5 miles upstream. Prior to May 1942, published as "near Blencoe." See also Remarks.

Gage.--Water-stage recorder. Datum of gage is 1,020.00 ft above mean sea level, datum of 1929 (Corps of Engineers bench mark). Prior to May 7, 1942, wire-weight gage at site 4.8 miles downstream at datum 10.40 ft lower. May 7, 1942, to Oct. 13, 1953, wire-weight gage at present site and datum.

Average discharge.--18 years (1939-57), 975 cfs (705,900 acre-ft per year).

Extremes.--1958-60: Maximum discharge, 10,400 cfs Mar. 30, 1960 (gage height, 16.32 ft); minimum daily, 8.5 cfs Jan. 3-11, 1959.

1939-57: Maximum discharge, 21,000 cfs June 20, 1954 (gage height, 23.40 ft); maximum gage height, 25.6 ft, from floodmarks, Mar. 4, 1949 (ice jam); minimum daily discharge, 3 cfs Sept. 8, 1941.

Remarks.--Monona-Harrison ditch is a dug channel and is a continuation of West Fork ditch, paralleling Little Sioux River, and empties into the Missouri River 1 1/2 miles upstream from mouth of Little Sioux River. At times, prior to Jan. 15, 1958, part or all of flow of Little Sioux River (see p. 23 ) was diverted into Monona-Harrison ditch through an equalizer ditch which connected the two channels 1.5 miles above station. The equalizer ditch was permanently closed on Jan. 14, 1958, and the new Little Sioux River and Monona-Harrison ditch became separate drainage systems.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	343	203	146	103	309	3,481	7,406	4,788	4,687	4,420	4,978	4,321	2,940
1952	2,254	1,197	1,072	1,101	3,851	4,836	5,908	2,161	2,157	3,493	865	554	2,447
1953	371	351	297	270	543	1,941	1,552	1,791	5,067	1,574	1,431	396	1,264
1954	280	312	300	115	653	1,508	949	1,255	7,210	1,812	809	675	1,316
1955	985	602	408	311	172	1,633	1,232	718	350	832	162	75.7	628
1956	98.2	102	64.3	49.0	54.7	265	276	232	162	155	70	45.7	131
1957	37.1	85.3	63.5	34.9	72.4	183	345	310	2,299	1,231	271	48.0	450
1958	298	535	196	83.5	117	90.6	120	50.9	95.1	169	48.9	20.9	152
1959	16.0	18.0	11.4	10.5	13.9	78.1	60.7	879	589	100	66.7	35.5	158
1960	56.8	42.5	47.0	46.2	41.5	699	1,384	700	274	157	496	153	342

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	21,060	12,090	9,000	6,310	17,150	214,000	440,700	294,400	278,900	271,800	306,100	257,100	2,129,000
1952	138,600	71,230	65,910	67,700	221,500	297,400	351,600	132,900	128,400	214,800	53,210	32,970	1,776,000
1953	22,810	20,900	18,290	16,610	19,080	19,300	92,330	110,100	1,003,500	96,780	87,980	23,550	929,200
1954	15,960	18,570	18,440	7,100	36,280	92,710	56,460	77,140	429,000	111,400	49,750	40,170	953,000
1955	60,600	35,810	25,090	19,150	9,570	100,400	73,320	44,170	20,820	51,180	9,970	4,510	454,600
1956	6,040	6,080	3,950	3,010	3,150	16,320	16,430	14,260	9,650	9,530	4,310	2,720	95,450
1957	2,280	5,080	3,930	2,140	4,020	11,260	20,540	19,050	36,800	75,700	16,100	28,570	326,000
1958	18,330	31,850	12,060	5,140	6,470	5,570	7,120	3,130	5,660	10,410	3,010	1,220	110,000
1959	984	1,070	703	645	772	4,800	3,610	54,020	35,070	6,170	4,100	2,110	114,100
1960	3,490	2,530	2,690	2,840	2,390	42,980	82,330	43,020	16,330	9,670	30,510	9,100	248,100

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30								Calendar year			
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff			
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet		
1950	-	-	-	-	-	-	-	-	826	-	-	598,200	
1951	1210	17,000	Mar. 27, 1951	72	2,940	-	-	-	2,129,000	3,263	-	-	2,362,000
1952	1240	14,900	July 7, 1952	350	2,447	-	-	-	1,776,000	2,152	-	-	1,562,000
1953	1280	12,200	June 10, 1953	250	1,284	-	-	-	929,200	1,271	-	-	920,200
1954	1340	21,000	June 20, 1954	60	1,316	-	-	-	953,000	1,411	-	-	1,022,000
1955	1390	9,340	July 11, 1955	59	628	-	-	-	454,600	482	-	-	349,200
1956	1440	2,340	June 6, 1956	25	131	-	-	-	95,450	125	-	-	90,670
1957	1510	8,630	June 14, 22, 1957	23	450	-	-	-	326,000	521	-	-	377,000
1958	1560	1,400	July 2, 1958	13	152	-	-	-	110,000	-	-	-	-
1959	1630	9,120	May 31, 1959	8.5	158	0.176	2.38	-	114,100	166	2.51	-	120,200
1960	1710	10,400	Mar. 30, 1960	26	342	.380	5.18	-	248,100	-	-	-	-

## LITTLE SIOUX RIVER BASIN

6030. Little Sioux River near Lakefield, Minn.

Location.--Lat 43°37'10", long 95°16'30", in SE $\frac{1}{4}$  sec.21, T.102 N., R.37 W., on left bank at upstream side of highway bridge, a quarter of a mile upstream from Jackson County ditch 11 and 6.7 miles southwest of Lakefield.

Drainage area.--17.1 sq mi.

Records available.--July 1948 to September 1960.

Gage.--Water-stage recorder and concrete control. Datum of gage is 1,405.28 ft above mean sea level, datum of 1929.

Average discharge.--12 years (1948-60), 3.60 cfs (2,610 acre-ft per year).

Extremes.--Maximum discharge, 2,550 cfs June 7, 1953 (gage height, 10.20 ft), from rating curve extended above 170 cfs on basis of contracted-opening measurement of combined flow of Little Sioux River and Jackson County ditch 11; no flow for many days in each year.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	0	0	0	0	0.12	0.1	47.9	6.24	20.0	15.6	1.47	9.98	6.39
1952	1.94	1.25	.99	0	.39	21.6	16.8	1.77	16.8	3.73	0	0	5.43
1953	0	0	0	0	0	6.39	5.00	17.0	75.8	8.11	5.30	0	9.93
1954	0	0	0	0	1.60	12.2	3.36	3.72	11.1	1.69	3.77	1.27	2.94
1955	3.32	1.33	.37	.003	0	6.34	4.33	.87	.07	0	0	0	1.39
1956	0	0	0	0	0	.05	2.02	.84	0	0	.06	0	.25
1957	0	0	0	0	0	1.04	2.54	2.02	16.0	5.04	.21	.35	2.26
1958	.59	2.41	1.12	.01	.12	2.64	.75	.03	0	0	0	0	.64
1959	0	0	0	0	0	0	0	9.31	10.8	.11	0	0	1.68
1960	0	0	1.36	.97	0	11.3	22.5	20.4	7.26	10.0	1.21	11.4	7.21

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	0	0	0	0	6.9	6.0	2,850	384	1,190	959	90.4	594	6,080
1952	119	74	61	0	22	1,330	1,000	109	997	229	0	0	3,940
1953	0	0	0	0	0	516	297	1,040	4,510	499	326	0	7,190
1954	0	0	0	0	89	748	200	228	663	104	23	75	2,130
1955	204	79	23	.2	0	390	258	54	.4	0	0	0	1,010
1956	0	0	0	0	0	3.0	120	52	0	0	4.0	0	179
1957	0	0	0	0	0	64	151	124	951	310	13	21	1,630
1958	36	143	69	.6	0	7.5	157	46	2.0	0	0	0	461
1959	0	0	0	0	0	0	0	572	641	6.5	0	0	1,220
1960	0	0	84	60	0	692	1,340	1,250	432	617	74	681	5,230

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet		
		Discharge	Date							
1950	-	-	-	-	-	-	0.47	339		
1951	1210	224	Apr. 5, 1951	0	8.39	6,080	8.74	6,330		
1952	1240	494	June 17, 1952	0	5.43	3,940	5.08	3,690		
1953	1280	2,550	June 7, 1953	0	9.93	7,190	9.93	7,190		
1954	1340	51	June 21, 1954	0	2.94	2,130	3.37	2,440		
1955	1390	130	Mar. 11, 1955	0	1.39	1,010	.97	703		
1956	1440	8.2	Apr. 3, 1956	0	.25	179	.25	179		
1957	1510, 1630	81	June 22, 1957	0	2.26	1,630	2.60	1,880		
1958	1560	5.6	Apr. 23, 1958	0	.64	461	.30	213		
1959	1630	324	May 31, 1959	0	1.08	1,220	1.80	1,300		
1960	1710	136	Mar. 28, 1960	0	7.21	5,230	-	-		

a Maximum recorded.

b Maximum daily.

6035. Jackson County ditch 11 near Lakefield, Minn.

Location.--Lat 43°37'10", long 95°16'10", in SW $\frac{1}{4}$  sec.22, T.102 N., R.37 W., on left bank 600 ft upstream from mouth and 6.5 miles southwest of Lakefield.

Drainage area.--7.69 sq mi.

Records available.--July 1948 to September 1960.

Gage.--Water-stage recorder and concrete control. Datum of gage is 1,404.47 ft above mean sea level, datum of 1929.

Average discharge.--12 years (1948-60), 1.80 cfs (1,300 acre-ft per year).

Extremes.--1948-60: Maximum discharge, 1,150 cfs June 7, 1953 (gage height, 10.91 ft, from floodmark), from rating curve extended above 120 cfs on basis of contracted-opening measurement of combined flow of Jackson County ditch and Little Sioux River; no flow for many days in each year.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	0	0	0	0	0	0.1	21.5	3.30	11.9	6.45	0.94	6.04	4.16
1952	1.59	0	.54	0	0	7.6	6.23	1.09	5.17	1.33	.08	.02	2.05
1953	0	0	0	0	0	4.25	2.14	4.61	45.6	2.62	2.28	.08	5.10
1954	0	.08	.14	0	.36	3.39	.89	1.60	5.69	.75	.85	1.80	1.29
1955	2.87	1.10	.51	.13	.04	.90	3.46	1.08	.35	.02	.02	0	.88
1956	0	0	0	0	0	.56	1.32	.57	.003	0	.25	0	.23
1957	0	0	0	0	0	.50	.99	4.88	13.6	1.84	.12	.07	1.83
1958	.65	1.52	.62	.06	0	.13	1.47	.65	.51	0	0	0	.47
1959	0	0	0	0	0	0	0	8.76	9.22	.09	0	.02	1.51
1960	.06	.31	.70	.40	0	3.26	7.35	6.67	3.90	2.82	.47	3.15	2.42

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	0	0	0	0	0	6.0	1,280	203	710	397	58	359	3,010
1952	98	56	33	0	0	468	371	67	308	82	4.8	1.0	1,490
1953	0	0	0	0	0	261	127	284	2,710	161	140	4.8	3,690
1954	0	4.6	8.3	0	20	208	53	98	358	46	52	107	935
1955	177	66	32	8.1	2.2	55	206	66	21	1.4	1.2	0	636
1956	0	0	0	0	0	35	79	35	.2	0	16	0	165
1957	0	0	0	0	0	31	59	300	810	113	7.5	4.2	1,320
1958	40	90	38	3.6	0	8.1	88	40	30	0	0	0	338
1959	0	0	0	0	0	0	0	539	549	5.4	0	1.0	1,090
1960	3.6	18	43	25	0	201	437	410	232	173	29	187	1,760

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	0.10	-	74
1951	1210	150	June 27, 1951	0	4.16	3,010	4.41	3,200	
1952	1240	a43	June 15, 1952	0	2.05	1,490	1.79	1,300	
1953	1280	1,150	June 7, 1953	0	5.10	3,690	5.12	3,700	
1954	1340	26	June 21, 1954	0	1.29	935	1.65	1,200	
1955	1390	12	Apr. 25, 1955	0	.88	636	.50	361	
1956	1440	7.1	Apr. 1, 1956	0	.23	165	.23	165	
1957	1510	198	May 29, 1957	0	1.83	1,320	2.06	1,490	
1958	1560	2.6	Nov. 4, 1957	0	.47	338	.23	170	
1959	1630	259	May 30, 1959	0	1.51	1,090	1.60	1,160	
1960	1710	63	Mar. 29, 1960	0	2.42	1,760	-	-	

a Maximum recorded.

## LITTLE SIOUX RIVER BASIN

6056. Little Sioux River at Gillett Grove, Iowa

Location.--Lat 43°01'05", long 95°02'45", in SE¼NW¼ sec.25, T.95 N., R.36 W., on left bank 5 ft downstream from highway bridge, 0.2 mile northwest of Gillett Grove, and 0.9 mile above Elk Creek.

Drainage area.--1,334 sq mi.

Records available.--June 1958 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 1,266.84 ft above mean sea level, datum of 1929.

Extremes.--1958-60: Maximum discharge, 5,140 cfs Mar. 30, 1960 (gage height, 13.78 ft); minimum daily, 1.0 cfs Feb. 3-27, 1959.

Flood of June 9, 1953, reached a stage of 17.87 ft, from floodmark (discharge not determined).

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1958	-	-	-	-	-	-	-	-	100	36.6	10.0	6.25	-
1959	9.43	13.0	5.89	2.44	1.01	55.9	42.2	400	995	97.2	38.4	24.8	140
1960	31.4	35.1	90.5	75.7	32.8	525	1,213	1,351	600	336	105	340	395

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1958	-	-	-	-	-	-	-	-	5,970	2,250	615	372	-
1959	580	774	362	150	56	3,440	2,510	24,600	59,220	5,970	2,360	1,480	101,500
1960	1,930	2,090	5,560	4,660	1,880	32,290	72,210	83,040	35,710	20,660	6,430	20,240	286,700

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1958	1560	-	-	23.7	-	-	-	-
1959	1630	4,500	June 3, 1959	1.0	140	101,500	151	109,400
1960	1710	5,140	Mar. 30, 1960	22	395	286,700	-	-

a Minimum day during period June to September.

## 6066. Little Sioux River at Correctionville, Iowa

Location.--Lat 42°28'20", long 95°47'50", in NE¼NW¼ sec.1, T.88 N., R.43 W., on right bank 10 ft upstream from bridge on State Highway 31, 0.2 mile upstream from Bacon Creek, 0.5 mile west of Correctionville, and 0.8 mile downstream from Pierson Creek.

Drainage area.--2,500 sq mi (revised).

Records available.--May 1918 to July 1925, October 1928 to July 1932, June 1936 to September 1960. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 1,096.49 ft above mean sea level, datum of 1929. May 28, 1918, to July 1, 1925, and Oct. 29, 1928, to July 15, 1929, chain gage 0.2 mile downstream at datum 1.25 ft lower. July 16, 1929, to July 2, 1932, and June 15, 1936, to Nov. 7, 1938, chain gage at present site and datum.

Average discharge.--33 years (1918-24, 1928-31, 1936-60), 652 cfs (472,000 acre-ft per year).

Extremes.--1918-25, 1928-32, 1936-60: Maximum discharge, 20,900 cfs June 21, 1954 (gage height, 23.36 ft); minimum daily, 2.6 cfs July 17, 25, 1936, caused by construction dam above gage.

Flood of June 23 or 24, 1891, reached a stage of 29.34 ft, present datum, from levels to floodmark by Soil Conservation Service (discharge not determined).

Remarks.--Records of chemical analyses for the period November 1954 to June 1955, suspended sediment loads for the period May 1950 to September 1960, and water temperatures for the period May 1951 to September 1960 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	161	86.4	55.2	36.0	96.7	1,491	5,983	2,847	2,291	2,905	2,312	2,343	1,720
1952	128	675	602	505	1,554	2,518	4,089	1,030	759	1,272	315	201	1,217
1953	118	113	77.9	94.1	107	1,145	874	1,041	4,324	1,316	1,063	196	873
1954	119	138	134	60.3	322	985	571	655	5,017	1,263	478	417	843
1955	530	350	209	135	70.8	910	869	498	220	237	44.9	16.6	343
1956	36.6	36.4	17.7	12.4	15.4	121	218	169	58.1	43.4	22.8		66.2
1957	8.33	40.3	26.2	17.2	23.0	154	269	232	1,004	636	126	175	226
1958	160	382	267	126	165	239	482	273	441	112	39.5	14.4	224
1959	13.1	25.3	15.1	8.31	7.08	119	137	904	1,596	415	264	89.5	300
1960	130	135	251	300	152	1,347	2,729	2,874	1,539	664	462	449	920

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	9,910	5,140	3,390	2,210	5,370	91,700	356,000	175,100	136,300	178,600	142,200	139,400	1,245,000
1952	69,380	40,160	36,990	31,080	89,410	54,800	43,300	63,320	45,150	78,130	19,370	11,980	+883,100
1953	7,250	6,730	4,790	5,790	5,960	70,380	51,980	64,000	257,300	80,890	65,330	11,680	632,100
1954	7,290	8,200	8,250	3,710	17,860	60,600	34,000	40,290	298,500	77,640	29,410	24,820	610,600
1955	32,600	20,820	12,840	8,280	3,930	55,950	51,710	30,630	13,110	14,580	2,760	990	248,200
1956	2,250	2,160	1,090	764	889	7,430	12,940	10,380	3,460	2,670	2,650	1,350	48,030
1957	512	2,400	1,610	1,060	1,280	9,480	15,980	14,270	59,720	39,140	7,750	10,440	163,600
1958	9,830	22,720	16,420	7,760	9,170	14,680	28,710	16,800	26,240	6,890	2,430	859	162,500
1959	805	1,510	928	511	393	7,330	8,180	55,560	94,990	25,500	16,210	5,350	217,200
1960	8,000	6,040	15,450	18,430	8,730	82,800	162,400	176,700	91,600	40,840	26,390	26,690	668,100

† Corrected.

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30						Calendar year			
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff	
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet
1950	-	-	-	-	-	-	-	354	1.91	256,400	
1951	1210	17,900	Apr. 7, 1951	27	1,720	0.688	9.35	1,245,000	1,897	10.31	+1,373,000
1952	1240	10,400	Apr. 4, 1952	124	1,217	.487	6.62	+883,100	1,041	5.66	755,400
1953	1290	17,500	June 12, 1953	70	873	.349	4.74	632,100	880	4.77	637,000
1954	1340	20,900	June 21, 1954	40	843	.337	4.57	610,600	902	4.90	653,100
1955	1390	4,280	July 10, 1955	6.8	343	.137	1.87	248,200	259	1.42	187,400
1956	1440	452	May 31, 1956	6.3	66.2	.026	.38	48,030	64.8	.37	47,060
1957	1510	5,700	June 22, 1957	4.0	226	.090	1.23	163,600	287	1.56	208,100
1958	1560	2,060	June 3, 1958	9.1	224	.090	1.23	162,500	161	.89	116,800
1959	1630	8,280	May 31, 1959	6.5	300	.120	1.62	217,200	339	1.84	245,500
1960	1710	16,000	Mar. 29, 1960	80	920	.368	5.03	668,100	-	-	-

† Corrected.

## LITTLE SIOUX RIVER BASIN

6067. Little Sioux River near Kennebec, Iowa

Location.--Lat 42°04'55", long 96°00'50", in SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec.18, T.84 N., R.44 W., near left bank on downstream side of highway bridge, 1.1 miles south of Kennebec, 5.5 miles north-east of Onawa, and 6.2 miles upstream from Maple River.

Drainage area.--2,738 sq mi (revised).

Records available.--April 1939 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 1,027.02 ft above mean sea level (Monona County Highway Department bench mark). Prior to May 24, 1950, wire-weight gage and May 24, 1950, to Oct. 12, 1959, water-stage recorder, at same site at datum 0.87 ft higher.

Average discharge.--21 years (1939-60), 761 cfs (550,900 acre-ft per year).

Extremes.--1939-60: Maximum discharge, 16,400 cfs Mar. 30, 1960 (gage height, 23.26 ft); maximum gage height, 26.63 ft June 21, 1954 (before levees broke in vicinity of gage); minimum daily discharge, 11 cfs Oct. 11, 1956.

Remarks.--Records of suspended sediment loads for the period May 1950 to September 1957 and water temperatures for the period May 1951 to September 1955 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	220	121	73.0	54.8	155	1,688	6,368	3,108	2,712	3,044	2,758	2,782	1,926
1952	1,219	735	668	577	1,675	2,655	4,455	1,212	900	1,579	385	254	1,355
1953	149	149	124	124	156	1,244	964	1,196	4,249	1,346	1,127	219	922
1954	148	157	156	83.9	332	1,081	624	679	5,115	1,471	569	491	906
1955	599	383	243	159	94.5	1,051	886	573	247	301	61.2	31.2	388
1956	46.4	46.1	34.1	30.4	31.6	151	219	181	89.2	69.3	57.0	33.4	82.5
1957	17.9	47.9	39.7	26.9	33.9	194	310	235	1,145	763	181	240	265
1958	174	401	274	154	264	316	490	306	497	156	61.3	29.5	259
1959	22.3	38.5	24.9	19.0	20.1	131	171	990	1,720	456	322	118	537
1960	148	142	251	310	156	1,181	3,090	2,696	1,876	753	562	559	977

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	13,530	7,190	4,490	3,370	8,600	103,800	378,900	191,100	161,400	187,100	169,600	165,500	1,395,000
1952	74,980	43,750	41,060	35,460	96,360	163,300	285,100	74,500	53,560	97,090	23,680	15,120	984,000
1953	9,170	8,880	7,630	7,650	8,660	76,460	57,590	75,530	252,800	82,760	69,280	13,020	667,200
1954	9,080	9,360	9,590	5,160	18,420	66,470	37,140	41,730	304,300	90,470	34,990	29,190	655,900
1955	36,810	22,810	14,950	9,770	5,250	64,600	52,710	35,210	14,700	18,530	3,760	1,860	281,000
1956	2,850	2,750	2,090	1,870	1,820	9,290	13,050	11,150	5,310	4,260	3,500	1,990	59,930
1957	1,100	2,850	2,440	1,650	1,880	8,220	18,450	14,460	68,140	46,910	11,110	14,280	191,500
1958	10,680	23,850	16,850	9,460	14,660	19,410	29,160	18,800	29,580	9,610	3,770	1,760	187,600
1959	1,370	2,290	1,530	1,170	1,120	8,070	10,190	60,850	102,400	28,060	19,790	7,040	243,900
1960	9,120	8,460	15,410	19,050	8,950	72,630	183,800	165,800	111,600	46,290	34,580	33,280	709,000

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30							Calendar year			
		Momentary maximum			Runoff				Mean		Runoff	
		Discharge	Date	Minimum day	Mean	Per square mile	Inches	Acre-feet			Inches	Acre-feet
1950	-	-	-	-	-	-	-	-	449	2.24	324,800	-
1951	1210	12,000	Apr. 11, 1951	38	1,926	0.703	9.54	1,395,000	2,112	10.46	1,529,000	-
1952	1240	9,170	Apr. 5, 1952	155	1,355	.495	6.73	984,000	1,171	5.81	849,800	-
1953	1280	11,500	June 14, 1953	110	922	.337	4.55	667,200	925	4.57	669,600	-
1954	1340	13,500	June 22, 1954	50	906	.331	4.50	655,900	970	4.82	702,400	-
1955	1390	3,430	Mar. 11, 1955	24	388	.142	1.93	281,000	296	1.47	214,100	-
1956	1440	464	June 6, 1956	13	82.5	.030	.40	59,930	80.8	.40	58,630	-
1957	1510	4,300	June 23, 1957	11	265	.097	1.33	191,500	327	1.63	236,500	-
1958	1560	1,900	Feb. 28, 1958	24	259	.095	1.28	187,600	195	.97	141,400	-
1959	1630	7,040	May 31, 1959	17	337	.123	1.68	243,900	375	1.88	271,700	-
1960	1710	16,400	Mar. 30, 1960	90	977	.357	4.87	709,000	-	-	-	-



6070. Odebolt Creek near Arthur, Iowa

Location.--Lat 42°20'05", long 95°22'55", in SE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 21, T.87 N., R.39 W., near center of span on downstream side of county road bridge, 700 ft south of State Highway 175, 2 miles west of Arthur, 4.5 miles east of Ida Grove, and 5 miles upstream from mouth and Maple River.

Drainage area.--39.3 sq mi.

Records available.--October 1957 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 1,258.57 ft above mean sea level, datum of 1929.

Extremes.--1957-60: Maximum discharge, 5,160 cfs May 31, 1959 (gage height, 12.18 ft); maximum gage height, 13.00 ft Mar. 29, 1960 (ice jam); minimum daily discharge, 0.2 cfs Jan. 2 to Feb. 27, 1959.  
Flood of July 3, 1951, reached a stage of 11.96 ft, from floodmark (discharge, 4,320 cfs, from contracted-opening measurement of peak flow).

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1958	1.97	3.41	1.85	1.97	17.4	7.17	5.53	2.83	8.32	5.84	5.65	1.37	5.18
1959	.85	.81	.33	.20	.20	6.07	6.34	78.0	22.1	6.55	2.61	1.93	10.6
1960	1.45	1.91	2.65	2.70	2.91	45.1	40.3	25.7	16.2	12.3	5.05	3.69	13.4

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1958	121	203	115	121	964	441	329	174	495	359	348	82	3,750
1959	52	48	20	12	11	373	377	4,800	1,320	403	161	115	7,690
1960	89	114	163	166	168	2,780	2,400	1,580	966	756	311	220	9,710

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1958	1630	378	Feb. 27, 1958	0.9	5.18	3,750	4.74	3,430
1959	1630	5,160	May 31, 1959	.2	10.6	7,690	11.0	7,940
1960	1710	700	Mar. 29, 1960	.9	13.4	9,710	-	-

6072. Maple River at Mapleton, Iowa

Location.--Lat 42°09'30", long 95°48'25", in SE $\frac{1}{4}$  sec. 23, T.85 N., R.43 W., on right pier on downstream side of bridge on State Highway 175, 80 ft downstream from Chicago & North Western Railway Co. bridge, 0.5 mile southwest of Mapleton, 12.5 miles northeast of Turin, and 16.0 miles upstream from mouth.

Drainage area.--669 sq mi (revised).

Records available.--October 1941 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 1,085.86 ft above mean sea level, datum of 1929. Prior to Aug. 20, 1952, wire-weight gage (June 8, 1949, to Aug. 19, 1952, supplementary water-stage recorder operative above 9.5 ft) and Aug. 20, 1952, to June 20, 1954, water-stage recorder (destroyed by flood), all at present site. June 21, 1954, to Sept. 6, 1955, wire-weight gage at site 1.4 miles upstream at datum 4.05 ft higher. Sept. 7, 1955, to Sept. 20, 1956, wire-weight gage at present site and datum.

Average discharge.--19 years (1941-60), 221 cfs (160,000 acre-ft per year).

Extremes.--1941-60: Maximum discharge, 15,600 cfs June 20, 1954; maximum gage height, 22.1 ft June 12, 1950; no flow Sept. 21, 22, 1945, caused by temporary dam above gage.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	62.0	41.3	26.9	17.3	76.9	1,306	895	906	768	795	1,230	1,034	600
1952	426	264	221	279	701	945	597	473	490	888	246	142	472
1953	113	92.4	81.3	74.6	143	408	302	345	521	97.5	192	54.8	202
1954	46.5	54.7	43.4	28.2	105	85.2	101	278	1,550	222	154	102	230
1955	251	108	88.6	55.5	35.4	305	186	67.2	46.5	308	43.5	24.1	128
1956	24.6	22.5	14.6	12.0	12.0	35.6	29.2	42.7	49.2	33.3	12.6	5.48	24.5
1957	9.36	17.3	7.14	4.70	6.92	25.6	19.9	45.4	260	195	26.6	47.4	55.5
1958	60.5	103	64.7	25.7	170	105	96.4	51.2	148	63.7	50.3	19.3	78.9
1959	14.2	14.6	5.74	3.25	3.64	67.7	52.4	868	552	178	95.4	46.3	160
1960	52.6	46.3	81.7	58.5	34.6	680	572	445	321	200	237	197	245

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	3,810	2,460	1,780	1,060	4,270	80,280	53,260	55,800	45,700	48,900	75,650	61,550	434,500
1952	26,200	15,720	13,570	17,130	40,300	58,100	35,550	29,060	29,180	54,590	15,110	8,440	343,000
1953	6,930	5,500	5,000	4,590	7,940	25,120	17,990	21,190	31,000	6,000	11,820	3,260	146,300
1954	2,980	3,250	2,670	1,740	5,820	5,240	6,000	17,100	92,260	13,660	9,490	6,080	166,300
1955	15,420	6,440	5,450	3,410	1,970	18,760	11,050	4,130	2,680	18,920	2,680	1,430	92,540
1956	1,510	1,340	900	737	690	2,190	1,740	2,620	2,930	2,050	776	326	17,810
1957	575	1,030	439	289	384	1,570	1,180	2,790	15,500	11,960	1,640	2,820	40,180
1958	3,720	6,110	3,980	1,580	9,460	6,450	5,730	3,150	8,810	3,920	3,090	1,150	57,150
1959	875	871	353	200	202	4,160	3,120	53,340	32,850	10,940	5,860	2,760	115,500
1960	3,240	2,760	5,030	3,600	1,990	41,790	34,070	27,390	19,090	12,330	14,560	11,720	177,600

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30						Calendar year			
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff	
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet
1950	-	-	-	-	-	-	-	-	193	3.92	139,900
1951	1210	10,800	Mar. 27, 1951	14	600	0.897	12.18	434,500	666	13.50	482,000
1952	1240	13,400	June 27, 1952	110	472	.706	9.61	343,000	420	8.54	304,900
1953	1280	11,500	June 25, 1953	44	202	.302	4.08	146,300	190	3.84	137,800
1954	1340	15,600	June 20, 1954	6	230	.344	4.66	166,300	255	5.18	184,700
1955	1390	16,800	July 10, 1955	19	128	.191	2.61	92,540	95.3	1.96	68,980
1956	1440	3,260	June 6, 1956	3.2	24.5	.037	.50	17,810	22.2	.45	16,100
1957	1510	2,820	June 14, 1957	3.5	55.5	.083	1.13	40,180	71.8	1.45	51,940
1958	1560	11,800	Feb. 27, 1958	14	78.9	.118	1.60	57,150	62.8	1.27	45,440
1959	1630	14,000	May 31, 1959	2.5	160	.239	3.24	115,500	172	3.50	124,500
1960	1710	11,400	Mar. 30, 1960	20	245	.366	4.99	177,600	-	-	-

a About.

## 6075. Little Sioux River near Turin, Iowa

Location.--Lat 41°57'55", long 95°58'20", in NW¼NE¼ sec.33, T.83 N., R.44 W., on downstream side of left bridge pier on Brown's grade, 1.0 mile east of gaging station on Monona-Harrison ditch near Turin, 2.5 miles downstream from Maple River, 3.8 miles south of Turin, 6.2 miles northeast of Blencoe, and 13.8 miles upstream from mouth.

Drainage area.--3,526 sq mi. Prior to Jan. 15, 1958, 4,426 sq mi, revised (combined area above this station and above Monona-Harrison ditch 1.0 mile west).

Records available.--January 1958 to September 1960. April 1939 to May 1942 at site 4.7 miles downstream published as "near Blencoe." June 1942 to January 1958 at site 1,200 ft east on old river channel; records not equivalent owing to diversion into Monona-Harrison ditch through equalizer ditch 1.5 miles upstream.

Gage.--Water-stage recorder. Datum of gage is 1,019.85 ft above mean sea level, datum of 1929 (Corps of Engineers bench mark). Prior to July 15, 1958, staff gages near present site at different datums. July 15 to Sept. 3, 1958, wire-weight gage at present site and datum.

Average discharge.--18 years (1939-57), 276 cfs (199,800 acre-ft per year), unadjusted.

Extremes.--1958-60: Maximum discharge, 23,900 cfs Mar. 30, 1960 (gage height, 25.08 ft); minimum daily, 22 cfs Feb. 10-22, 1959.

1939-57: Maximum discharge, 7,920 cfs June 22, 1954 (gage height, about 24.2 ft, includes flow over Brown's grade bypassing gage); maximum gage height, 26.0 ft, from floodmark, Mar. 4, 1949 (ice jam); no flow at times during period September 1939 to October 1940, and for several months each year 1948-52, 1956-57, when all of flow was carried by Monona-Harrison ditch.

Remarks.--Prior to Jan. 15, 1958, part or all of flow was diverted above station into Monona-Harrison ditch (see p. 15).

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	11.4	10.58	0	0	98.6	489	887	377	185	123	346	188	225
1952	6.13	0	1.34	7.43	159	187	361	7.86	35.8	90.6	1.06	.12	70.5
1953	.50	.80	.72	.60	1.12	1.84	1.56	3.04	138	.90	1.72	.18	12.4
1954	.12	.27	1.05	.16	3.24	2.61	2.43	2.68	701	10.5	1.45	.46	59.7
1955	.60	.47	.48	.24	.21	21.4	2.60	1.05	.93	3.11	.52	.28	2.67
1956	.22	.38	.26	.10	.04	2.45	.27	4.33	.30	3.83	5.77	.14	1.53
1957	.15	.91	.12	.05	.04	.42	.12	0	.30	2.7	0	0	.46
1958	0	0	0	113	414	499	590	371	705	291	136	52.1	-
1959	37.5	48.0	31.2	24.4	25.1	245	237	1,669	2,673	762	463	166	533
1960	194	207	297	406	165	1,706	4,009	3,219	2,261	1,020	772	758	1,251

+ Corrected.

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	700	23	0	0	5,470	30,076	27,800	23,160	11,000	7,580	21,280	1,160	163,200
1952	377	0	21	457	9,140	11,470	21,480	483	2,130	5,570	65	6.9	51,200
1953	31	48	44	37	62	113	93	187	8,220	55	106	11	9,010
1954	7.3	16	65	10	180	160	144	177	41,730	645	89	27	43,250
1955	37	28	30	15	12	1,310	155	65	56	191	20	15	1,930
1956	14	23	16	6.3	2.6	151	16	266	18	235	358	8.5	1,110
1957	9.1	54	7.5	2.8	2.4	28	7.3	0	54	169	0	0	332
1958	0	0	0	5,960	22,960	30,680	35,130	22,800	41,950	17,890	8,340	100	-
1959	2,300	2,850	1,920	1,500	1,390	15,070	14,100	102,600	159,000	46,870	28,440	890	385,900
1960	1,900	12,300	16,200	24,970	9,480	104,900	238,500	197,900	134,600	62,730	47,470	5,090	908,100

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30						Calendar year			
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff	
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet
1950	-	-	-	-	-	-	-	33.4	d2.64	24,150	
1951	1210	2,850	Mar. 27, 1951	0	225	d0.715	d9.72	163,200	225	d10.71	162,900
1952	1240	a2,200	Feb. 14, 1952	0	70.5	d.569	d7.75	51,200	70.2	d6.85	50,920
1953	1280	788	June 14, 1953	.1	12.4	d.293	d3.98	9,010	12.4	d3.94	8,970
1954	1340	7,920	June 22, 1954	.1	59.7	d.311	d4.21	43,250	59.8	d4.50	43,260
1955	1390	b900	Mar. 8, 1955	.1	2.67	d.143	d1.94	1,930	2.62	d1.50	1,890
1956	1440	b832	Aug. 18, 1956	0	1.53	d.030	d.41	1,110	1.55	d.38	1,130
1957	1510	432	July 13, 1957	0	.46	d.102	d1.39	332	.36	d1.60	262
1958	1560	c3,000	Feb. 28, 1958	35	-	d.094	d1.26	-	-	-	-
1959	1630	14,000	May 31, 1959	22	533	.151	2.06	385,900	582	2.24	421,300
1960	1710	23,900	Mar. 30, 1960	100	1,251	.355	4.83	908,100	-	-	-

a Maximum observed.

b About.

c Maximum day.

d Based on combined flow of Little Sioux River and Monona-Harrison ditch.

6080. Tekamah Creek at Tekamah, Nebr.

Location.--Lat 41°46'30", long 96°13'10", in SE $\frac{1}{4}$  sec.19, T.21 N., R.11 E., on left bank 30 ft upstream from bridge and 1 block east of U. S. Highway 73 in Tekamah.

Drainage area.--23.0 sq mi.

Records available.--July 1949 to September 1960.

Gage.--Water-stage recorder and crest-stage gage. Datum of gage is 1,032.26 ft above mean sea level, unadjusted. Prior to Sept. 15, 1949, wire-weight gage at site 30 ft downstream at same datum.

Average discharge.--11 years (1949-60), 6.30 cfs (4,560 acre-ft per year).

Extremes.--1949-60: Maximum discharge, 4,400 cfs July 15, 1950; maximum gage height, 15.10 ft Aug. 13, 1958; no flow at times in most years.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	2.40	0.88	0.65	0.39	14.7	26.2	11.3	22.2	12.7	16.2	35.5	6.43	12.5
1952	7.45	2.65	2.20	2.69	6.31	15.9	12.6	10.2	14.6	6.79	7.38	2.70	7.88
1953	2.47	2.62	2.66	2.86	4.30	6.94	6.49	9.42	6.48	2.36	1.44	.41	4.04
1954	.42	1.22	1.12	.44	3.93	2.29	20.1	15.3	23.3	1.13	2.21	.97	6.00
1955	1.82	1.02	.94	.54	.74	4.75	5.54	1.06	.66	5.40	.29	.16	1.92
1956	.03	.10	.02	.14	.22	.69	.71	4.31	.27	1.17	1.38	.01	.76
1957	0	.007	.01	0	.02	.27	.11	.05	25.4	26.7	.04	4.13	4.74
1958	3.50	.77	.63	.44	19.3	†2.45	11.1	2.49	1.13	18.3	18.4	.56	6.52
1959	.39	.95	.95	.25	.23	3.05	6.01	43.5	29.7	6.79	4.25	1.48	8.17
1960	2.05	2.67	2.40	1.41	1.48	12.7	35.9	26.1	28.6	7.65	6.65	2.70	10.9

† Corrected.

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	148	52	40	24	816	1,610	671	1,370	757	995	2,180	383	9,050
1952	458	158	135	165	397	980	751	627	870	417	454	161	5,570
1953	152	156	164	176	239	426	386	579	366	145	89	24	2,920
1954	26	73	69	27	218	141	1,200	943	1,360	69	136	58	4,340
1955	112	60	58	33	41	292	330	65	39	332	18	10	1,390
1956	1.6	5.8	1.2	8.5	12	43	42	265	16	72	85	.6	553
1957	0	.4	.6	0	1.4	16	6.5	3.2	1,510	1,640	2.4	246	3,430
1958	215	46	38	27	1,070	150	662	153	67	1,120	1,130	34	4,710
1959	24	57	58	15	13	187	358	2,670	1,760	418	261	88	5,910
1960	126	159	148	86	85	783	2,140	1,600	1,700	469	421	161	7,880

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	6.16	4,450	
1951	1210	4,340	Aug. 20, 1951	0	12.5	9,050	13.2	9,560	
1952	1240	2,450	June 27, 1952	.5	7.88	5,570	7.29	5,290	
1953	1280	662	May 24, 1953	.1	4.04	2,920	†3.62	2,620	
1954	1340	4,140	Apr. 21, 1954	.1	6.00	4,340	6.08	4,400	
1955	1390	564	Apr. 27, 1955	0	1.92	1,390	1.61	1,170	
1956	1440	1,280	May 13, 1956	0	.76	553	.75	545	
1957	1510	3,160	June 22, 1957	0	4.74	3,430	5.15	3,720	
1958	1560	3,070	Aug. 13, 1958	.1	6.52	4,710	6.30	4,550	
1959	1630	2,210	May 28, 1959	0	8.17	5,910	8.58	6,200	
1960	1710	2,470	June 20, 1960	.7	10.9	7,880	-	-	

† Corrected.

## 6085. Soldier River at Pisgah, Iowa

Location.--Lat 41°49'50", long 95°55'50", in NW 1/4 sec. 14, T.81 N., R.44 W., on left bank on downstream side of highway bridge at west edge of Pisgah, 2.8 miles downstream from Stowe Creek and 13.1 miles upstream from mouth.

Drainage area.--407 sq mi (revised).

Records available.--March 1940 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 1,036.53 ft above mean sea level, datum of 1929. Prior to Oct. 11, 1954, wire-weight gage at same site and datum with supplementary water-stage recorder operating above 8.2 ft gage height Mar. 2, 1946, to Sept. 24, 1953.

Average discharge.--20 years (1940-60), 122 cfs (88,320 acre-ft per year).

Extremes.--1940-60: Maximum discharge, 22,500 cfs June 12, 1950 (gage height, 28.17 ft); minimum daily, 2 cfs Jan. 2-10, 1945.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	55.6	21.8	16.3	13.9	287	814	329	332	700	348	562	366	320
1952	233	159	98.2	431	272	384	248	269	531	368	166	94.7	271
1953	81.4	78.2	72.7	60.2	199	207	167	173	212	79.5	234	33.2	133
1954	29.8	54.5	47.4	20.1	130	58.6	120	194	462	86.0	89.7	69.8	113
1955	66.3	44.8	42.9	25.4	28.1	271	69.5	35.1	34.7	43.4	18.0	16.8	58.5
1956	12.4	17.0	7.90	6.76	9.43	40.2	14.5	74.1	22.1	76.9	37.0	6.70	27.3
1957	9.61	17.1	9.54	5.84	30.4	27.8	12.5	13.6	202	126	30.3	50.2	44.4
1958	37.2	49.9	29.3	24.0	169	54.5	54.1	28.7	68.5	161	48.5	16.8	61.0
1959	10.6	12.8	6.05	3.29	23.9	118	46.5	306	157	51.9	58.2	24.0	68.7
1960	32.3	29.1	40.5	16.8	24.0	257	315	249	197	110	114	36.8	123

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	3,420	1,300	1,000	855	15,950	50,060	19,560	20,390	41,650	21,380	34,560	21,770	231,900
1952	14,300	9,440	6,040	26,530	15,640	23,610	14,780	16,520	31,590	22,600	10,230	5,640	196,900
1953	5,010	4,650	4,470	3,700	11,070	12,740	9,940	10,650	12,800	4,890	14,400	1,970	96,100
1954	1,830	3,240	2,910	1,240	7,240	3,600	7,120	11,940	27,510	5,290	5,520	4,150	81,590
1955	4,080	2,660	2,640	1,560	1,560	16,690	4,140	2,160	2,070	2,670	1,110	998	42,340
1956	782	1,010	486	416	542	2,470	860	4,560	1,320	4,730	2,280	399	19,840
1957	591	1,020	587	359	1,690	1,710	744	837	12,010	7,720	1,860	2,990	32,120
1958	2,280	2,970	1,800	1,480	9,380	3,350	3,220	1,760	4,080	9,680	2,990	998	44,190
1959	653	761	372	202	1,330	7,290	2,760	18,820	9,330	3,190	3,580	1,430	49,710
1960	1,980	1,730	2,490	1,030	1,380	15,780	18,750	15,310	11,710	6,770	7,010	5,170	89,110

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30						Calendar year			
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff	
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet
1950	-	-	-	-	-	-	-	169	5.61	122,000	-
1951	1210	20,400	June 17, 1951	8	320	0.786	10.68	231,900	354	11.78	256,000
1952	1240	17,500	June 27, 1952	60	271	.666	9.07	196,900	250	8.35	181,300
1953	1280	7,860	June 25, 1953	25	133	.327	4.43	96,100	124	4.14	89,940
1954	1340	15,200	June 19, 1954	7	113	.278	3.75	81,590	115	3.82	82,990
1955	1390	3,890	Mar. 8, 1955	7.7	58.5	.144	1.95	42,340	48.6	1.63	35,220
1956	1440	2,880	July 11, 1956	5.1	27.3	.067	.91	19,840	27.2	.91	19,780
1957	1510	9,000	June 16, 1957	2.8	44.4	.109	1.50	32,120	51.1	1.72	36,970
1958	1560	5,260	July 2, 1958	8.4	61.0	.150	2.05	44,190	53.8	1.81	36,920
1959	1630	8,060	May 31, 1959	2.5	68.7	.169	2.31	49,710	74.8	2.50	54,120
1960	1710	5,580	June 16, 1960	11	123	.302	4.10	89,110	-	-	-

6090. New York Creek at Herman, Nebr.

Location.--Lat 41°39'40", long 96°12'10", in NW $\frac{1}{4}$  sec.32, T.20 N., R.11 E., on left bank about 350 ft downstream from bridge on U. S. Highway 73 and half a mile southeast of Herman.

Drainage area.--25.4 sq mi.

Records available.--May 1946 to September 1960.

Gage.--Water-stage recorder and concrete control. Datum of gage is 1,021.67 ft above mean sea level, datum of 1929.

Average discharge.--14 years (1946-60), 6.56 cfs (4,750 acre-ft per year).

Extremes.--1946-60: Maximum discharge, 5,500 cfs July 15, 1950, from rating curve extended above 600 cfs on basis of slope-area measurement of peak flow; maximum gage height, 19.93 ft, June 20, 1960; no flow at times in 1947, 1955-58.  
Flood of June 11, 1944, reached a stage of 20.8 ft, from floodmarks (discharge, 4,700 cfs by slope-area measurement).

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	2.09	1.27	0.83	0.82	31.9	28.8	16.6	38.1	22.7	36.6	36.0	6.20	18.5
1952	4.85	2.99	3.02	2.10	6.87	14.2	12.4	9.65	31.2	8.05	11.4	3.91	9.20
1953	3.37	3.53	2.58	2.84	5.06	7.61	6.31	6.39	4.03	2.08	1.61	.97	3.86
1954	1.09	1.91	1.64	.87	4.18	3.17	3.91	5.81	5.06	1.01	1.15	.49	2.51
1955	1.83	1.56	1.19	.85	1.24	2.81	1.55	.68	1.38	4.10	1.72	.81	1.65
1956	.33	.32	.19	.22	.29	1.07	1.15	1.98	.36	.62	.30	3.35	.85
1957	.14	.49	.25	.11	.44	1.10	.55	.54	55.0	8.97	1.91	5.92	6.23
1958	2.21	2.09	1.18	.88	4.86	3.70	12.0	3.10	1.73	16.1	7.22	1.14	4.69
1959	.68	1.11	.66	.46	1.94	3.87	5.70	19.2	20.5	5.86	3.44	1.88	5.45
1960	2.45	2.08	2.80	2.13	2.45	8.99	20.6	15.7	35.2	7.42	6.69	3.56	9.22

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	129	75	51	50	1,770	1,770	990	2,340	1,350	2,250	2,210	369	13,350
1952	298	178	185	129	395	876	740	594	1,860	495	702	233	6,680
1953	207	210	159	175	281	468	375	393	240	128	99	58	2,790
1954	67	114	101	53	232	195	233	357	301	62	71	29	1,820
1955	112	93	73	52	69	173	92	42	82	252	106	48	1,190
1956	20	19	12	14	17	66	68	122	21	38	18	200	615
1957	8.5	29	15	6.9	24	68	33	33	3,270	552	117	352	4,510
1958	136	124	73	54	270	227	716	191	103	990	444	68	3,400
1959	42	66	40	28	108	238	339	1,180	1,220	360	211	112	3,940
1960	151	124	172	131	141	614	1,220	965	2,090	456	412	212	6,690

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	9.76	-	7,080
1951	1210	4,130	July 3, 1951	0.1	18.5	13,350	19.0	-	13,760
1952	1240	1,830	June 27, 1952	.3	9.20	6,680	9.08	-	6,600
1953	1280	18	Mar. 10, 1953	.8	3.86	2,790	3.45	-	2,500
1954	1340	395	June 21, 1954	.1	2.51	1,820	2.50	-	1,810
1955	1390	646	July 13, 1955	0	1.65	1,190	1.34	-	967
1956	1440	640	Sept. 4, 1956	0	.85	615	.85	-	617
1957	1510	4,230	June 15, 1957	0	6.23	4,510	6.62	-	4,790
1958	1560	1,550	July 30, 1958	.1	4.69	3,400	4.44	-	3,210
1959	1630	1,270	June 28, 1959	0	5.45	3,940	5.87	-	4,240
1960	1710	4,420	June 20, 1960	.8	9.22	6,690	-	-	-

## 6095. Boyer River at Logan, Iowa

Location.--Lat 41°38'30", long 95°47'00", in SE¼NW¼ sec.19, T.79 N., R.42 W., on downstream handrail of county bridge, 300 ft downstream from Illinois Central Railroad bridge at Logan, 10.5 miles upstream from Willow Creek, and 15.8 miles upstream from mouth.

Drainage area.--871 sq mi (revised).

Records available.--May 1918 to July 1925, November 1937 to September 1960. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Wire-weight gage. Datum of gage is 1,009.38 ft above mean sea level (Chicago and North Western Railway Co. bench mark). Prior to Apr. 17, 1925, chain gage at present site; Apr. 17 to July 1, 1925, chain gage at site 300 ft downstream; Nov. 4, 1937, to Mar. 16, 1952, wire-weight gage at present site; Mar. 17, 1952, to Sept. 30, 1957, wire-weight gage 400 ft upstream on bridge on U. S. Highway 30; all at same datum. Supplementary water-stage recorder operating above 4.8 ft gage height Oct. 22, 1946, to Oct. 7, 1954, at site 400 ft upstream and since Oct. 8, 1954, at site 300 ft upstream, both at same datum.

Average discharge.--28 years (1918-24, 1938-60), 299 cfs (216,500 acre-ft per year).

Extremes.--1918-25, 1937-60; Maximum discharge, 23,600 cfs June 16, 1957 (gage heights: 23.32 ft, from floodmark, site then in use; 22.67 ft, in gage well; 21.5 ft, present site); minimum daily, 1.5 cfs July 16, 1938.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	94.5	44.2	38.0	19.3	330	1,784	788	1,278	1,764	1,088	1,636	775	807
1952	684	362	214	672	622	668	533	1,087	921	355	194	594	594
1953	141	139	135	98.9	495	471	421	441	507	155	160	38.5	265
1954	37.3	45.5	64.3	19.8	168	99.9	301	258	1,064	119	244	107	209
1955	224	108	107	63.1	40.1	614	215	80.6	69.8	321	51.5	48.3	163
1956	22.6	18.4	11.0	7.81	11.4	51.7	25.4	227	33.3	101	135	52.5	58.7
1957	11.1	30.8	15.8	8.53	51.1	57.4	23.3	143	1,178	213	50.5	71.7	154
1958	92.7	113	114	61.8	299	170	128	83.3	179	406	86.1	38.9	147
1959	24.4	30.7	11.9	6.85	42.1	211	110	690	586	169	84.2	66.1	170
1960	63.1	102	117	58.5	57.6	610	733	602	348	297	244	158	283

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	5,810	2,630	2,330	1,190	18,330	109,700	46,900	78,570	105,000	66,880	100,600	46,120	584,100
1952	42,070	21,520	13,190	41,340	35,760	50,520	39,740	32,760	64,670	56,640	21,810	11,570	431,600
1953	8,670	8,290	8,320	6,080	27,490	28,980	25,080	27,130	30,160	9,520	9,830	2,280	191,800
1954	2,290	2,710	3,950	1,220	9,320	6,140	7,900	15,860	63,320	7,300	14,990	6,350	151,400
1955	13,790	6,440	6,560	3,860	2,230	37,770	12,820	4,960	4,150	19,740	3,170	2,880	118,400
1956	1,390	1,090	679	480	658	3,180	1,510	13,970	1,980	6,190	8,330	3,120	42,580
1957	680	1,830	970	525	2,840	3,530	1,390	8,790	70,110	13,110	3,110	4,260	111,100
1958	5,700	6,710	7,020	3,800	16,630	10,440	7,640	5,120	10,640	24,990	5,290	2,310	106,300
1959	1,500	1,830	732	421	2,340	12,950	6,560	42,420	34,890	10,380	5,180	3,930	123,100
1960	3,880	6,050	7,210	3,600	3,310	37,530	43,640	37,040	20,720	18,270	15,020	9,430	205,700

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30							Calendar year			
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff		
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet	
1950	-	-	-	-	-	-	-	-	312	4.87	225,900	
1951	1210	23,000	Mar. 28, 1951	13	807	0.927	12.58	584,100	898	13.99	650,100	
1952	1240	19,000	June 21, 1952	140	594	.682	9.30	431,600	524	8.20	380,100	
1953	1280	11,300	June 10, 1953	31	265	.304	4.12	191,800	242	3.77	175,500	
1954	1340	17,700	June 21, 1954	7	209	.240	3.27	151,400	234	3.65	169,200	
1955	1390	8,450	July 10, 1955	11	163	.187	2.55	118,400	131	2.03	94,760	
1956	1440	7,440	May 13, 1956	5.0	58.7	.067	.90	42,580	59.1	.91	42,900	
1957	1510	23,600	June 16, 1957	4.0	154	.177	2.39	111,100	176	2.73	127,100	
1958	1560	17,400	July 2, 1958	23	147	.169	2.27	106,300	126	1.95	90,920	
1959	1630	13,100	May 31, 1959	5.7	170	.195	2.64	123,100	188	2.92	136,200	
1960	1710	10,200	Mar. 29, 1960	36	283	.325	4.43	205,700	-	-	-	

6100. Missouri River at Omaha, Nebr.

Location.--Lat 41°15'30", long 95°55'20", in SE<sup>1</sup>/<sub>4</sub> NW<sup>1</sup>/<sub>4</sub> sec.23, T.15 N., R.13 E., on right bank on left side of concrete flood wall, beneath Ak-Sar-Ben Bridge in Omaha, at mile 632.1.

Drainage area.--322,800 sq mi, approximately.

Records available.--September 1928 to September 1960. April 1872 to December 1899 (gage heights only) in reports of the Missouri River Commission and since January 1875 (gage heights only) in reports of U. S. Weather Bureau.

Gage.--Water-stage recorder. Datum of gage is 958.24 ft above mean sea level, datum of 1929. Apr. 10, 1872, to Aug. 31, 1928, staff, cable, and chain gages at several sites within 0.6 mile of present site not more than 0.43 ft below present datum. Sept. 1, 1928, to Nov. 30, 1929, chain gage attached to Illinois Central Railroad bridge 2 miles upstream at datum 2.97 ft higher. Dec. 1, 1929, to May 26, 1930, chain gage and May 27, 1930, to Oct. 18, 1931, wire-weight gage, at present site and datum. Oct. 19, 1931, to Sept. 30, 1936, water-stage recorder 0.4 mile downstream at present datum.

Average discharge.--32 years (1928-60), 28,280 cfs (20,470,000 acre-ft per year).

Extremes.--1928-60: Maximum discharge, 396,000 cfs Apr. 18, 1952; maximum gage height, 30.20 ft Apr. 18, 1952; minimum discharge, about 2,200 cfs Jan. 6, 1937; minimum gage height observed, -2.77 ft Jan. 10, 1957, result of freezeup.

Remarks.--Flow partly regulated by upstream main stem reservoirs.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	35,340	31,070	11,660	18,430	16,760	31,710	88,520	48,960	67,560	57,960	54,140	54,180	43,050
1952	45,790	39,920	15,840	14,790	31,790	35,470	88,800	61,660	55,830	41,700	30,660	30,280	49,150
1953	30,530	26,700	9,948	13,050	17,460	40,890	33,890	43,470	71,450	43,880	34,690	33,910	33,350
1954	32,430	20,500	13,950	9,123	16,520	26,990	28,620	29,860	42,520	33,440	32,310	32,110	26,560
1955	32,340	14,510	12,710	9,067	10,410	21,470	29,220	30,100	30,290	31,550	28,660	34,400	23,800
1956	32,140	13,950	9,047	9,219	9,784	24,930	30,250	30,230	30,560	30,830	33,400	33,590	24,040
1957	27,930	13,460	8,831	8,521	8,981	10,170	16,480	28,020	31,640	31,060	30,620	29,310	20,490
1958	30,150	14,900	9,322	9,578	10,400	12,090	25,080	26,550	28,130	27,150	27,280	28,290	20,790
1959	29,430	12,430	9,251	9,789	10,590	12,730	24,630	28,720	30,290	28,300	30,380	31,030	21,520
1960	28,420	13,890	10,090	8,690	9,720	13,510	54,570	29,860	27,590	28,220	31,570	29,580	23,800

Monthly and yearly discharge, in thousands of acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	2,173	1,849	716.7	1,133	930.8	1,950	5,267	3,010	4,020	3,564	3,329	3,224	31,170
1952	2,815	2,375	973.7	909.5	829	2,131	11,230	3,791	3,322	2,564	1,885	1,802	35,680
1953	1,865	1,589	611.7	802.5	969.9	2,514	12,017	2,673	4,252	2,698	2,133	2,018	24,140
1954	1,994	1,220	857.5	560.9	917.8	1,660	1,703	1,836	2,530	2,056	1,987	1,911	19,230
1955	1,988	863.2	781.7	557.5	578.3	1,320	1,739	1,851	1,803	1,940	1,762	2,047	17,230
1956	1,976	829.8	556.3	566.9	562.8	1,533	1,800	1,859	1,818	1,896	2,053	1,999	17,450
1957	1,717	800.9	543.0	524.0	498.8	625.6	980.7	1,723	1,883	1,910	1,883	1,744	14,830
1958	1,854	886.4	573.2	589.0	577.5	743.2	1,492	1,632	1,674	1,669	1,677	1,683	15,050
1959	1,810	759.8	568.8	601.9	588.0	782.9	1,485	1,766	1,802	1,740	1,868	1,846	15,580
1960	1,747	826.7	620.7	534.3	559.0	830.6	3,247	1,836	1,642	1,735	1,941	1,760	17,280

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	39,130	28,330,000
1951	1210	152,000	Apr. 11, 1951	4,740	43,050	31,170,000	45,020	32,590,000
1952	1240	396,000	Apr. 18, 1952	6,780	49,150	35,680,000	46,260	33,580,000
1953	1280	112,000	June 26, 1953	7,700	33,350	24,140,000	33,350	24,150,000
1954	1340	87,400	June 21, 1954	5,800	26,560	19,230,000	25,860	18,790,000
1955	1390	51,500	Mar. 13, 1955	6,320	23,800	17,230,000	23,430	16,960,000
1956	1440	42,600	Mar. 18, 1956	2,970	24,040	17,450,000	23,620	17,150,000
1957	1510	59,000	June 16, 1957	4,160	20,490	14,830,000	20,840	15,090,000
1958	1560	45,400	July 2, 1958	5,300	20,790	15,050,000	20,520	14,860,000
1959	1650	57,000	June 1, 1959	4,400	21,520	15,580,000	21,620	15,650,000
1960	1710	120,000	Apr. 1, 1960	4,430	23,800	17,280,000	-	-



## 6105. Indian Creek at Council Bluffs, Iowa

Location.--Lat 41°17'40", long 95°49'55", in NW $\frac{1}{4}$ SE $\frac{1}{4}$  sec.18, T.75 N., R.43 W., on downstream side of left pile bent of bridge on Mud Hollow Road at north edge of Council Bluffs, 8.8 miles upstream from mouth.

Drainage area.--7.99 sq mi.

Records available.--July 1954 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 1,038.86 ft above mean sea level (city of Council Bluffs bench mark). Prior to Apr. 12, 1955, wire-weight gage at site a quarter of a mile downstream at different datum.

Average discharge.--6 years (1954-60), 1.32 cfs (956 acre-ft per year).

Extremes.--1954-60: Maximum discharge, 2,200 cfs July 29, 1958 (gage height, 14.16 ft); no flow at times in most years.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	-	-	-	-	-	-	-	-	-
1952	-	-	-	-	-	-	-	-	-	-	-	-	-
1953	-	-	-	-	-	-	-	-	-	-	-	-	-
1954	-	-	-	-	-	-	-	-	-	0.01	1.96	0.14	-
1955	1.05	0.21	0.19	0.17	0.19	8.46	0.62	0.21	0.78	1.64	0	.99	1.22
1956	0	.01	.02	0	.31	.65	.25	.15	.02	4.11	1.83	1.11	.71
1957	.32	.11	.18	.04	.15	.59	.38	2.01	6.35	.09	2.35	.28	1.07
1958	.13	.32	.20	.19	1.76	.87	.57	.45	.20	5.09	2.89	.83	1.13
1959	.36	.53	.44	.10	2.26	.75	.62	8.14	.99	2.47	4.80	.59	1.83
1960	.52	.50	.59	.45	.57	1.83	3.63	3.15	3.57	1.50	4.75	2.20	1.94

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	-	-	-	-	-	-	-	-	-
1952	-	-	-	-	-	-	-	-	-	-	-	-	-
1953	-	-	-	-	-	-	-	-	-	-	-	-	-
1954	-	-	-	-	-	-	-	-	-	0.6	121	8.3	-
1955	64	12	12	11	11	520	37	13	46	101	0	59	886
1956	0	.6	1.4	0	.18	.40	.15	9.1	1.0	253	112	66	516
1957	20	6.5	11	2.2	8.5	36	23	124	378	5.4	144	17	776
1958	7.9	19	12	12	98	54	34	28	12	313	178	49	817
1959	22	32	27	6.1	126	46	37	500	59	152	295	23	1,330
1960	32	30	36	28	33	112	216	194	212	92	292	131	1,410

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30						Calendar year			
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff	
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet
1950											
1951											
1952											
1953											
1954	1340	a600	Aug. 21, 1954	0	-	-	-	-	-	-	-
1955	1390	543	July 8, 1955	0	1.22	0.153	2.09	886	1.10	1.88	800
1956	1440	769	July 7, 1956	0	.71	.089	1.20	516	.76	1.29	552
1957	1510	2,050	June 15, 1957	0	1.07	.134	1.84	776	1.07	1.83	777
1958	1560	2,200	July 29, 1958	0	1.13	.141	1.93	817	1.18	2.02	859
1959	1630	2,160	May 2, 1959	0	1.83	.229	3.09	1,330	1.85	3.14	1,340
1960	1710	1,050	June 20, 1960	.1	1.94	.243	3.31	1,410	-	-	-

a Maximum for period July to September.



6150. South Fork Michigan River near Gould, Colo.

Location.--Lat 40°27'44", long 106°00'29", in sec.26, T.6 N., R.77 W., on left bank 1 mile upstream from Porcupine Creek, 4½ miles southeast of Gould, and 9½ miles east of Rand.

Drainage area.--14.9 sq mi (revised).

Records available.--October 1950 to September 1958.

Gage.--Water-stage recorder and Parshall flume. Datum of gage is 9,274 ft above mean sea level, unadjusted.

Average discharge.--8 years (1950-58), 17.2 cfs (12,450 acre-ft per year).

Extremes.--1950-58: Maximum discharge, 450 cfs June 29, 1957 (gage height, 4.77 ft), from rating curve extended above 200 cfs; minimum not determined.

Remarks.--No diversion above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	2.80	2.49	2.16	1.88	2.18	1.86	4.17	42.6	77.5	54.3	14.3	4.37	17.6
1952	4.50	2.6	2.4	2.2	2.4	2.8	15.1	40.8	123	31.5	14.6	5.45	20.6
1953	3.25	1.93	1.8	1.9	2.1	2.2	2.97	24.0	96.2	20.6	9.67	2.81	14.1
1954	2.15	2.16	2.1	2.0	1.7	1.9	9.54	36.8	45.2	16.3	6.77	6.51	11.1
1955	5.38	2.67	1.85	1.6	1.4	1.6	5.68	31.6	65.6	26.4	9.08	4.60	13.1
1956	3.41	3.0	2.4	2.0	1.8	2.0	5.90	64.0	84.3	13.3	6.94	2.49	16.0
1957	2.16	2.1	2.4	2.3	2.2	2.6	4.5	29.0	127	117	22.8	6.15	26.8
1958	5.46	3.3	2.4	2.5	2.8	2.5	4.2	73.8	94.5	13.0	6.06	3.58	17.9
1959													
1960													

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	172	148	133	115	121	114	248	2,620	4,610	3,340	882	260	12,760
1952	277	155	148	135	138	172	898	2,510	7,350	1,930	896	324	14,930
1953	200	115	111	117	117	135	177	1,480	5,720	1,270	595	167	10,200
1954	132	129	129	123	94	117	568	2,260	2,690	1,000	417	388	8,050
1955	331	159	113	98	78	98	338	1,940	3,900	1,620	559	274	9,510
1956	210	179	148	123	104	123	351	3,940	5,020	821	427	148	11,590
1957	133	125	148	141	122	160	268	1,780	7,560	7,220	1,400	366	19,420
1958	336	196	148	154	156	154	250	4,540	5,620	800	372	213	12,940
1959													
1960													

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950								
1951	1210	231	June 19, 1951	1.6	17.6	12,760	17.8	12,890
1952	1240	277	June 10, 1952	-	20.6	14,930	20.4	14,780
1953	1280	266	June 13, 1953	-	14.1	10,200	14.0	10,170
1954	1340	86	May 21, 1954	-	11.1	8,050	11.4	8,260
1955	1390	172	June 23, 1955	-	13.1	9,510	13.0	9,440
1956	1440	221	June 2, 1956	-	16.0	11,590	15.8	11,460
1957	1510	450	June 29, 1957	-	26.8	19,420	27.2	19,700
1958	1560	224	May 28, 1958	-	17.9	12,940	-	-
1959								
1960								

6160. North Fork Michigan River near Gould, Colo.

Location.--Lat 40°33'10", long 106°00'36", in NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec.27, T.7 N., R.77 W., on right bank 2 miles northeast of Gould, 3 $\frac{1}{2}$  miles upstream from mouth, and 19 miles southeast of Walden.

Drainage area.--20.2 sq mi.

Records available.--October 1950 to September 1960.

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

Average discharge.--10 years (1950-60), 16.5 cfs (11,950 acre-ft per year).

Extremes.--1950-60: Maximum discharge, 260 cfs June 13, 1957 (gage height, 3.07 ft), from rating curve extended above 150 cfs; maximum gage height, 3.35 ft Apr. 8, 1954 (ice jam); minimum discharge not determined.

Remarks.--One diversion above station for irrigation of hay meadows below.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	3.54	3.26	3.54	2.86	2.95	3.06	7.24	53.7	66.7	25.5	8.98	4.57	15.5
1952	5.02	3.8	3.4	3.2	3.3	3.9	19.9	75.0	97.9	16.9	10.8	4.92	20.6
1953	3.86	3.77	3.2	2.8	3.0	3.3	8.27	45.6	60.5	12.9	6.51	3.04	13.1
1954	3.89	3.26	2.87	2.8	2.5	2.6	14.8	30.8	14.5	5.91	3.84	4.71	7.73
1955	6.14	4.0	3.0	2.2	2.1	2.1	15.9	37.5	42.2	11.7	6.22	3.39	11.4
1956	3.81	4.74	4.42	2.81	2.12	2.60	12.2	78.7	49.3	9.52	7.28	4.46	15.2
1957	4.98	3.39	3.13	3.05	3.45	3.55	9.87	72.1	145	57.2	16.1	7.74	27.5
1958	7.59	5.51	3.54	3.20	3.7	3.5	8.35	99.6	60.0	12.5	5.98	4.72	18.3
1959	3.77	4.33	3.5	3	2.5	3	7.50	70.1	58.9	12.8	7.23	4.64	15.2
1960	7.80	5.90	4.2	3.6	3.2	6.58	34.2	77.3	78.9	16.5	6.46	5.17	20.8

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	218	194	217	176	164	188	431	3,300	3,970	1,560	552	272	11,240
1952	309	226	209	197	190	240	1,190	4,610	5,830	1,040	655	293	14,990
1953	237	224	197	172	167	203	492	2,800	3,600	792	400	181	9,460
1954	239	194	177	172	139	160	879	1,900	863	363	236	280	5,600
1955	378	238	184	135	117	129	946	2,310	2,510	721	382	202	8,250
1956	234	282	272	173	122	160	729	4,840	2,930	585	448	265	11,040
1957	306	202	192	188	191	219	587	4,440	8,650	3,520	990	460	19,940
1958	467	328	218	197	205	215	497	6,130	3,570	770	368	281	13,250
1959	232	258	215	184	139	184	446	4,310	3,500	786	444	276	10,970
1960	480	351	258	221	184	405	2,040	4,750	4,690	1,020	397	307	15,100

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950								
1951	1210	148	June 21, 1951	2.2	15.5	11,240	15.7	11,360
1952	1240	218	June 4, 1952	-	20.6	14,990	20.5	14,900
1953	1280	158	(a)	-	13.1	9,460	13.0	9,420
1954	1390	88	May 22, 1954	-	7.73	5,600	7.99	5,790
1955	1390	119	Apr. 26, 1955	-	11.4	8,250	11.4	8,240
1956	1440	156	May 8, 1956	1.9	15.2	11,040	15.1	10,950
1957	1510	260	June 13, 1957	2.4	27.5	19,940	28.0	20,260
1958	1560	214	May 25, 1958	-	18.3	13,250	17.9	12,940
1959	1630	179	May 12, 1959	-	15.2	10,970	15.7	11,360
1960	1710	236	June 7, 1960	-	20.8	15,100	-	-

a May 28 or 29, 1953.

6200. North Platte River near Northgate, Colo.

Location.--Lat 40°56'38", long 106°20'26", in SW¼ sec. 11, T. 11 N., R. 80 W., on right bank 50 ft downstream from abandoned highway bridge, 0.1 mile upstream from Camp Creek, 0.8 mile downstream from bridge on State Highway 125, 3.8 miles south of Colorado-Wyoming State line, and 4½ miles northwest of Northgate.

Drainage area.--1,431 sq mi (revised).

Records available.--May to November 1904 (published as "near Pinkhampton"), May 1915 to September 1960. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 7,806.98 ft above mean sea level, adjustment of 1912. May 11 to Nov. 9, 1904, staff gage near present site 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 Sept. 18, 1933, water-stage recorder, 50 ft upstream at same datum.

Average discharge.--45 years (1915-60), 437 cfs (316,400 acre-ft per year).

Extremes.--1904, 1915-60: Maximum discharge, 6,720 cfs June 11, 1923 (gage height, 6.24 ft, site then in use); maximum gage height, 8.80 ft Apr. 21, 1945 (ice jam); minimum daily discharge, 19 cfs July 17-19, 1934.

Remarks.--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).

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	97.7	130	148	86.4	93.0	148	697	1,020	1,682	794	381	136	452
1952	198	153	105	108	114	123	1,578	2,148	2,485	581	414	161	680
1953	87.6	93.3	75.0	103	111	150	389	411	1,182	349	257	70.1	273
1954	69.7	115	90.8	86.8	105	131	362	250	233	141	91.2	65.9	145
1955	122	117	76.7	62.3	65.2	102	653	439	602	155	221	60.0	223
1956	63.9	118	104	97.4	89.1	180	875	1,092	1,262	361	200	55.2	374
1957	55.4	70.0	58.8	52.8	87.9	110	697	1,866	3,141	2,367	572	224	778
1958	182	149	111	97.4	121	163	573	1,407	1,242	287	149	78.9	378
1959	89.7	66.1	78.2	77.1	88.0	108	494	658	1,224	399	268	110	303
1960	247	275	152	97.8	82.6	476	885	516	1,092	400	142	66.9	377

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	6,010	7,740	9,070	5,310	5,160	9,080	41,450	62,740	100,100	48,850	23,430	8,100	327,000
1952	12,160	9,090	6,490	6,650	6,590	7,550	93,880	132,100	148,400	35,710	25,430	9,600	493,600
1953	5,590	5,550	4,610	6,350	6,160	9,220	23,130	25,300	70,320	21,430	15,800	4,170	197,400
1954	4,290	6,840	5,580	5,340	5,850	8,080	21,550	15,380	13,870	8,640	5,610	3,920	105,000
1955	7,480	6,940	4,720	3,830	3,620	6,290	38,830	26,970	35,810	9,510	13,600	3,570	161,200
1956	3,930	7,020	6,380	5,990	5,130	11,050	52,050	67,120	75,070	22,170	12,290	3,280	271,500
1957	3,400	4,170	3,620	3,250	4,880	6,740	41,470	14,800	18,900	45,500	35,170	13,330	563,200
1958	16,220	8,860	6,810	5,990	6,730	10,010	34,110	86,520	73,890	15,830	9,160	4,700	273,800
1959	4,280	3,930	4,810	4,740	4,890	6,620	29,420	40,430	72,850	24,550	16,350	6,550	219,400
1960	15,200	16,390	9,370	6,020	4,750	29,260	58,630	31,700	65,000	24,620	8,730	3,980	273,600

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	330	258,900
1951	1210	2,940	June 23, 1951	70	452	327,000	458	332,000
1952	1240	4,290	June 6, 1952	90	680	493,600	663	481,500
1953	1280	2,710	June 21, 1953	44	273	197,400	274	198,600
1954	1340	953	May 23, 1954	40	145	105,000	148	107,400
1955	1390	3,000	Apr. 16, 1955	40	223	161,200	220	159,400
1956	1440	2,640	June 7, 1956	30	374	271,500	365	285,300
1957	1510	6,500	June 15, 1957	32	778	563,200	800	578,900
1958	1560	2,650	May 29, 1958	51	378	273,800	559	260,000
1959	1630	1,780	June 22, 1959	44	303	219,400	342	247,400
1960	1710	5,840	Mar. 28, 1960	51	377	273,600	-	-

a About.

6204. Douglas Creek above Keystone, Wyo.

Location.--Lat 41°11'10", long 106°16'20", in NE $\frac{1}{4}$  sec.16, T.14 N., R.79 W., on right bank a quarter of a mile upstream from Horse Creek,  $1\frac{1}{4}$  miles northwest of Keystone,  $1\frac{1}{2}$  miles upstream from Keystone Creek, and 8 miles west of Albany.

Drainage area.--22.1 sq mi (revised).

Records available.--May 1955 to September 1960.

Gage.--Water-stage recorder. Altitude of gage is 9,300 ft (from topographic map).

Average discharge.--5 years (1955-60), 35.2 cfs (25,480 acre-ft per year).

Extremes.--1955-60: Maximum discharge, 865 cfs June 7, 1957; maximum gage height, 4.78 ft May 29, 1958; minimum discharge not determined.

Remarks.--No regulation and practically no diversion above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952													
1953													
1954													
1955	-	-	-	-	-	-	-	123	66.9	13.6	8.40	3.52	-
1956	3.67	3.5	3.5	4.0	3.5	4.0	9.82	224	101	11.4	5.54	3.10	31.6
1957	3.83	3.2	2.8	2.2	2.0	1.8	2.2	41.8	369	66.7	10.7	4.93	42.4
1958	6.65	3.5	3	2.5	1.8	1.3	20.0	277	165	10.6	4.77	4.20	42.0
1959	2.87	2.55	2.1	1.8	1.7	1.6	3.17	101	240	18.0	6.14	4.98	32.1
1960	11.7	6	3.5	3	2.5	2.5	22.3	157	105	11.6	4.25	3.31	27.8

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952													
1953													
1954													
1955	-	-	-	-	-	-	-	7,570	3,980	834	516	210	-
1956	226	208	215	246	201	248	584	13,760	6,010	698	341	184	22,920
1957	235	190	172	135	111	111	131	2,570	21,960	4,100	661	293	30,670
1958	409	208	184	154	100	80	1,190	17,050	9,820	651	293	250	30,390
1959	106	152	129	111	94	98	188	6,210	14,310	1,100	378	296	23,240
1960	721	357	215	184	144	154	1,330	9,650	6,270	714	261	197	20,200

Yearly discharge, in cubic feet per second

Daily discharge, in cubic feet per second								
Year	WSP	Water year ending Sept. 30				Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950								
1951								
1952								
1953								
1954								
1955	1390	-	-	-	-	-	-	-
1956	1440	615	May 24, 1956	-	31.6	22,920	31.5	22,870
1957	1510	865	June 7, 1957	-	42.4	30,670	42.6	30,870
1958	1560	828	May 29, 1958	-	42.0	30,390	41.5	30,040
1959	1630	655	June 7, 1959	-	32.1	23,240	33.3	24,080
1960	1710	440	May 13, 1960	-	27.8	20,200	-	-

6210. Douglas Creek near Foxpark, Wyo.

Location.--Lat 41°04'45", long 106°18'40", in S $\frac{1}{2}$  sec.19, T.13 N., R.79 W., on left bank 600 ft downstream from Beaver Creek and 8 $\frac{1}{2}$  miles west of Foxpark.

Drainage area.--120 sq mi (revised).

Records available.--July 1946 to September 1960.

Gage.--Water-stage recorder. Altitude of gage is 8,200 ft (from topographic map).

Average discharge.--14 years (1946-60), 77.8 cfs (56,320 acre-ft per year).

Extremes.--1946-60: Maximum discharge, 1,630 cfs June 7, 1957 (gage height, 4.66 ft); minimum not determined.

Remarks.--Only minor diversion above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	14.6	13.8	13	12	11	11	26.5	599	412	51.1	18.4	9.83	100
1952	26.0	15	13	11	10	13	75	648	332	29.8	12.4	6.92	99.8
1953	8.09	8.37	8.0	10	10	12	24.7	208	291	38.3	20.0	7.27	53.8
1954	9.06	12.8	11	10	9.0	11	63.6	246	55.7	11.7	5.85	6.20	38.0
1955	9.42	8.0	8.0	7.0	6.5	7.0	32.2	180	101	18.6	12.2	4.97	33.1
1956	7.34	7.5	7.5	8	7.5	12	66.3	454	136	18.1	10.9	5.43	62.1
1957	7.07	8.99	8.5	8	7.5	9	17	362	757	124	22.9	12.5	112
1958	21.0	15.1	15	14	13	12	47.1	617	255	23.4	9.54	8.65	88.2
1959	8.31	11.0	9.5	9	9.5	12	43.2	435	367	35.9	13.2	11.4	80.7
1960	30.9	25.5	14	12	11	26	131	334	163	22.5	6.27	6.14	65.2

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	899	819	799	738	611	676	1,580	36,860	24,540	3,140	1,130	585	72,380
1952	1,600	893	799	676	575	799	4,460	39,860	19,750	1,830	765	412	72,420
1953	497	498	492	615	555	738	1,470	12,770	17,300	2,350	1,230	432	38,950
1954	557	762	676	615	500	676	3,780	15,150	3,310	718	360	369	27,470
1955	579	476	492	430	361	430	1,920	11,070	5,990	1,140	749	296	23,900
1956	451	446	461	492	431	738	3,940	27,920	8,080	1,120	670	323	45,070
1957	435	535	523	492	417	553	1,010	22,250	45,070	7,630	1,410	742	81,070
1958	1,290	899	922	861	722	738	2,800	37,940	15,160	1,440	587	515	63,870
1959	511	657	584	553	528	738	2,570	26,740	21,830	2,210	810	678	58,410
1960	1,900	1,520	861	738	633	1,580	7,780	20,550	9,670	1,380	386	365	47,360

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	84.9	61,450
1951	1210	1,400	May 28, 1951	-	100	72,380	101	73,150
1952	1240	1,150	May 5, 1952	-	99.8	72,420	97.3	70,610
1953	1280	872	June 19, 1953	-	53.8	38,950	54.5	39,460
1954	1340	510	May 22, 1954	2.4	38.0	27,470	37.3	27,020
1955	1390	303	May 15, 1955	-	33.1	23,900	32.8	23,740
1956	1440	1,140	May 23, 1956	-	62.1	45,070	62.3	45,210
1957	1510	1,630	June 7, 1957	-	112	81,070	114	82,680
1958	1560	1,310	May 25, 1958	5.0	88.2	63,870	86.3	62,520
1959	1630	811	June 7, 1959	5.0	80.7	58,410	84.2	60,940
1960	1710	736	May 13, 1960	4.1	65.2	47,360	-	-

## 6227. North Brush Creek near Saratoga, Wyo.

Location.--Lat 41°22'15", long 106°31'10", in NE $\frac{1}{4}$  sec.8, T.16 N., R.81 W., on right bank 120 ft downstream from logging road bridge, 0.3 mile downstream from Lincoln Creek, 1.6 miles upstream from South Brush Creek, and 16 miles southeast of Saratoga.

Drainage area.--37.4 sq mi.

Records available.--May to September 1960.

Gage.--Water-stage recorder. Altitude of gage is 8,060 ft (from topographic map).

Extremes.--May to September 1960: Maximum discharge, 465 cfs May 13 (gage height, 4.73 ft); minimum daily, 7.8 cfs Sept. 13.

Remarks.--No diversion above gage.

## Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1960	-	-	-	-	-	-	-	168	168	21.1	11.1	8.73	-

## Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1960	-	-	-	-	-	-	-	11,540	10,010	1,300	680	519	-

## 6229. South Brush Creek near Saratoga, Wyo.

Location.--Lat 41°20'40", long 106°31'30", in NW $\frac{1}{4}$  sec.20, T.16 N., R.81 W., on left bank 300 ft upstream from bridge on State Highway 130, 1.6 miles upstream from North Brush Creek, and 17 miles southeast of Saratoga.

Drainage area.--22.8 sq mi.

Records available.--May to September 1960.

Gage.--Water-stage recorder. Altitude of gage is 8,100 ft (from topographic map).

Extremes.--May to September 1960: Maximum discharge, 382 cfs June 3 (gage height, 3.89 ft), from rating curve extended above 190 cfs; minimum daily, 3.4 cfs July 21.

Remarks.--One small diversion for irrigation above station. One diversion 0.3 mile above station for irrigation in North Brush Creek basin.

## Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1960	-	-	-	-	-	-	-	70.7	128	15.3	9.95	8.26	-

## Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1960	-	-	-	-	-	-	-	4,350	7,620	942	612	492	-

## 6239. Encampment River near Encampment, Wyo.

Location.--Lat 41°01'50", long 106°49'30", in NW $\frac{1}{4}$  sec.10, T.12 N., R.84 W., on right bank 500 ft downstream from Hog Park Creek and 12 $\frac{1}{2}$  miles south of Encampment.

Drainage area.--105 sq mi.

Records available.--October 1956 to September 1960.

Gage.--Water-stage recorder. Altitude of gage is 8,200 ft (from topographic map).

Extremes.--1956-60: Maximum discharge, 2,290 cfs June 13, 1957 (gage height, 6.56 ft), from rating curve extended above 1,700 cfs; minimum not determined.

## Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1957	22.6	25	23	22	25	28	43.3	306	1,423	625	85.1	41.1	222
1958	33.3	32	30	26	23	20	50.7	714	710	96.1	33.5	32.7	151
1959	23.7	23.7	21	20	21	23	45.4	369	699	117	47.1	35.1	120
1960	71.9	45.8	28	25	23	31.2	149	527	714	127	38.1	26.2	150

## Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1957	1,390	1,490	1,410	1,350	1,390	1,720	2,570	18,820	84,700	38,410	5,230	2,440	160,900
1958	2,040	1,900	1,840	1,600	1,280	1,230	3,020	43,930	42,250	5,910	2,050	1,950	109,000
1959	1,460	1,410	1,290	1,230	1,170	1,410	2,700	22,680	41,600	7,170	2,900	2,090	87,110
1960	4,420	2,730	1,720	1,540	1,320	1,920	8,870	32,400	42,480	7,830	2,340	1,560	109,100

## Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1957	1510	2,290	June 13, 1957	-	222	160,900	224	162,400
1958	1560	-	May 28, 1958	-	151	109,000	148	107,400
1959	1630	1,280	June 8, 1959	-	120	87,110	127	91,820
1960	1710	1,390	June 3, 1960	-	150	109,100	-	-



6250. Encampment River at mouth, near Encampment, Wyo.

Location.--Lat 41°18'10", long 106°43'00", in NW<sup>1</sup> sec.3, T.15 N., R.83 W., on left bank half a mile upstream from mouth and 8 miles northeast of Encampment.

Drainage area.--265 sq mi (revised).

Records available.--April 1940 to September 1960. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Altitude of gage is 6,970 ft (from topographic map).

Average discharge.--20 years (1940-60), 233 cfs (168,700 acre-ft per year).

Extremes.--1940-60: Maximum discharge, 4,510 cfs June 1, 1943, from rating curve extended above 3,100 cfs; maximum gage height, 8.33 ft June 4, 1952; minimum daily discharge, 5.2 cfs Aug. 15, 16, 1940.

Remarks.--Diversions for irrigation of about 12,000 acres, part of which is above station and part below. Five small reservoirs above station for irrigation (total capacity, about 400 acre-ft).

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	71.1	70.9	71.4	60.5	54.3	62.7	107	917	1,116	288	79.2	39.8	245
1952	92.7	56.2	52.0	46.5	43.1	48.2	204	1,258	1,937	216	51.4	45.9	337
1953	42.2	49.9	50.8	51.7	58.1	58.7	91.8	411	1,190	95.0	55.1	26.6	181
1954	36.8	66.4	70.5	74.6	57.1	54.6	188	603	516	38.4	23.3	14.2	129
1955	41.8	43.4	56.7	41.0	35.8	48.5	91.6	604	585	71.3	41.9	27.8	141
1956	42.7	67.6	63.7	49.5	51.8	69.8	172	1,043	995	55.2	25.8	25.5	222
1957	40.1	66.0	54.8	52.0	62.8	57.9	82.9	510	1,943	871	80.5	52.1	323
1958	62.6	72.4	75.6	66.3	66.2	55.6	96.4	990	855	48.9	22.3	29.6	204
1959	48.6	57.9	53.5	50.9	55.0	52.4	85.1	434	832	109	26.3	38.8	153
1960	112	83.5	61.3	50.7	47.1	64.1	228	645	920	98.9	27.9	29.2	197

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	4,370	4,220	4,390	3,720	3,010	3,850	6,370	56,360	66,390	17,710	4,870	2,370	177,600
1952	5,700	3,340	3,200	2,860	2,480	2,960	12,160	77,330	115,300	13,270	3,160	2,730	244,500
1953	2,600	2,970	3,120	3,180	3,230	3,610	5,460	25,260	70,800	5,720	3,390	1,580	130,900
1954	2,260	3,950	4,330	4,590	3,170	3,360	11,210	37,050	18,830	2,360	1,430	842	95,380
1955	2,570	2,580	3,490	2,520	1,990	2,980	5,450	37,150	34,800	4,390	2,580	1,660	102,200
1956	2,620	4,020	3,920	3,040	2,980	4,290	10,220	64,120	59,180	3,390	1,590	1,520	160,900
1957	2,470	3,950	3,370	3,200	3,490	3,560	4,930	11,350	115,600	53,570	4,950	3,100	233,500
1958	3,850	4,310	4,650	4,080	3,680	3,420	5,730	60,900	50,860	3,010	1,370	1,760	147,600
1959	2,990	3,450	3,290	3,130	3,050	3,220	5,080	26,710	49,500	6,710	1,610	2,310	111,000
1960	6,890	4,970	3,770	3,120	2,710	3,940	13,550	39,660	54,730	6,080	1,720	1,740	142,900

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	275	199,200
1951	1210	2,290	May 29, 1951	28	245	177,600	244	176,900
1952	1240	4,420	June 4, 1952	27	337	244,500	332	249,900
1953	1280	2,670	June 13, 1953	20	181	130,900	183	132,800
1954	1340	1,330	May 22, 1954	8.0	129	93,380	126	91,480
1955	1390	1,140	June 9, 1955	22	141	102,200	144	104,100
1956	1440	2,670	June 5, 1956	14	222	160,900	221	160,100
1957	1510	3,560	June 8, 1957	27	323	233,500	327	236,600
1958	1560	2,360	May 30, 1958	17	204	147,600	200	144,500
1959	1630	1,550	June 15, 1959	17	153	111,000	162	117,000
1960	1710	1,710	June 4, 1960	21	197	142,900	-	-

## 6270. North Platte River at Saratoga, Wyo.

Location.--Lat 41°27'20", long 106°48'15" (revised), in sec.11, T.17 N., R.84 W., on left bank 1,000 ft upstream from bridge on State Highway 130 in Saratoga and 1 mile downstream from Spring Creek.

Drainage area.--2,840 sq mi (revised).

Records available.--June 1903 to October 1906, April to December 1909, October 1910 to September 1960. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 6,772.69 ft above mean sea level, datum of 1929. Prior to Apr. 25, 1911, staff gage at site 250 ft downstream at different datum. Apr. 25, 1911, to Nov. 1, 1930, chain gage at bridge 35 ft upstream at same datum.

Average discharge.--53 years (1903-6, 1910-60), 1,163 cfs (842,000 acre-ft per year).

Extremes.--1903-6, 1909, 1910-60: Maximum discharge, 18,000 cfs June 8, 1909 (gage height, 11.06 ft, present datum, from floodmarks), from rating curve extended above 14,000 cfs; minimum daily, 38 cfs July 18-20, 1934.

Remarks.--Diversions above station for irrigation of about 290,000 acres, part of which is above station and part below.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	346	387	382	287	314	375	1,082	3,340	4,786	1,583	657	291	1,154
1952	491	341	296	320	307	361	2,649	5,559	7,205	1,092	632	318	1,627
1953	219	204	179	303	318	396	716	1,226	3,901	620	471	174	725
1954	184	291	242	261	293	337	984	1,480	830	260	162	146	456
1955	296	264	266	200	196	234	948	1,580	1,920	329	376	127	562
1956	196	291	260	261	262	427	1,509	3,794	3,419	575	334	120	954
1957	163	219	242	222	287	345	1,093	3,594	8,516	4,737	947	429	1,736
1958	443	402	331	268	363	442	938	4,455	3,729	493	246	179	1,026
1959	205	243	308	282	257	288	831	1,799	3,410	727	378	224	745
1960	544	496	280	267	247	792	1,701	1,853	2,943	633	218	126	840

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	21,260	23,040	23,500	17,640	17,420	23,040	65,400	205,400	284,800	97,360	40,410	17,310	835,600
1952	30,210	20,290	18,180	19,660	17,680	22,200	157,700	341,800	428,700	67,150	38,860	18,900	1,181,000
1953	13,440	12,160	10,980	18,660	17,640	24,330	42,630	75,380	232,100	58,150	28,990	10,380	524,800
1954	11,310	17,340	14,890	16,060	16,280	20,690	58,580	91,000	49,420	16,000	9,960	8,660	330,200
1955	18,170	15,740	16,370	12,320	10,910	14,370	56,390	97,150	114,200	20,230	23,100	7,550	406,500
1956	12,020	17,330	16,010	16,080	15,050	26,260	89,740	233,300	203,400	35,330	20,550	7,150	692,200
1957	10,000	13,040	14,890	13,640	15,930	21,190	65,060	221,000	506,700	291,300	58,230	25,510	1,256,000
1958	27,240	23,910	20,330	16,470	20,150	27,210	55,830	273,900	221,900	30,290	15,110	10,630	743,000
1959	12,600	14,460	18,930	17,340	14,250	17,690	49,450	110,600	202,900	44,700	23,220	13,320	539,500
1960	33,440	29,490	17,240	16,440	14,220	48,670	101,200	113,900	175,100	38,950	13,400	7,490	609,500

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	1,115	807,500
1951	1210	7,320	May 31, 1951	214	1,154	835,600	1,155	836,500
1952	1240	12,600	June 7, 1952	212	1,627	1,181,000	1,583	1,149,000
1953	1280	8,280	June 20, 1953	130	725	524,800	735	531,800
1954	1340	3,600	May 23, 1954	88	456	330,200	465	336,900
1955	1390	3,300	Apr. 17, 1955	90	562	406,500	555	401,600
1956	1440	8,150	June 5, 1956	85	954	692,200	943	684,800
1957	1510	13,600	June 14, 1957	116	1,736	1,256,000	1,782	1,290,000
1958	1560	9,940	May 30, 1958	134	1,026	743,000	991	717,500
1959	1630	5,270	June 15, 1959	138	745	539,500	792	573,600
1960	1710	6,070	Mar. 28, 1960	98	840	609,500	-	-

6276. Jack Creek below Willow Creek, near Saratoga, Wyo.

Location.--Lat 41°25'30", long 106°59'20", in SW $\frac{1}{4}$  sec.20, T.17 N., R.85 W., on left bank 1 mile downstream from Willow Creek and 10 miles west of Saratoga.

Drainage area.--98.5 sq mi.

Records available.--October 1956 to September 1958.

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

Extremes.--1956-58: Maximum discharge, 546 cfs May 23, 1958 (gage height, 5.50 ft), from rating curve extended above 200 cfs; minimum daily, 0.4 cfs Sept. 12, 1958.

Remarks.--Diversion for irrigation for about 2,020 acres above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1957	2.24	5.20	6.96	6.59	8.15	9.91	23.4	83.0	169	54.4	8.52	5.51	31.9
1958	11.2	9.33	8.86	7.52	9.24	14.1	36.4	111	71.2	8.15	2.53	1.91	24.4

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1957	138	309	428	405	453	609	1,390	5,110	10,050	3,340	524	328	23,080
1958	687	555	545	462	513	867	2,170	6,810	4,230	562	155	114	17,670

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1957	1510	326	June 14, 1957	1.3	31.9	23,080	33.1	24,000	
1958	1560	546	May 23, 1958	.4	24.4	17,670	-	-	

6289. Pass Creek near Elk Mountain, Wyo.

Location.--Lat 41°35'10", long 106°36'37", in SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec.27, T.19 N., R.82 W., on right bank 250 ft downstream from Lone Tree Creek, 1,000 ft upstream from Brush Creek, 12 miles southwest of Elk Mountain, and 14 miles northeast of Saratoga.

Drainage area.--91.5 sq mi.

Records available.--April 1957 to September 1960.

Gage.--Water-stage recorder. Altitude of gage is 7,230 ft (from topographic map).

Extremes.--1957-60: Maximum discharge, 854 cfs June 13, 1957 (gage height, 5.21 ft), from rating curve extended above 400 cfs; minimum daily, 1.5 cfs Sept. 11, 12, 1959.

Remarks.--Diversions above station for irrigation of about 3,900 acres.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1957	-	-	-	-	-	-	62.8	240	259	60.8	19.5	10.9	-
1958	15.7	14.0	12.1	11.7	11.5	11.3	77.2	225	71.1	21.6	7.67	6.54	40.7
1959	5.93	8.46	7.5	7.2	7.8	9.2	40.5	63.1	62.0	21.6	4.32	5.17	20.2
1960	9.44	8.71	7.5	6.5	7	44.5	80.1	78.1	72.0	22.6	5.53	4.11	28.8

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1957	-	-	-	-	-	-	-	3,730	14,760	15,390	3,740	1,200	648
1958	966	835	744	720	637	695	4,600	13,830	4,230	1,330	472	389	29,540
1959	364	503	461	443	433	566	2,410	3,880	3,690	1,350	266	308	14,650
1960	580	518	461	400	403	2,740	4,760	4,800	4,290	1,390	340	245	20,930

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1957	1510	854	June 13, 1957	-	-	-	-	-	
1958	1560	619	Apr. 18, 1958	3.8	40.7	29,540	39.0	28,230	
1959	1630	120	June 30, 1959	1.5	20.2	14,650	20.5	14,880	
1960	1710	344	Apr. 5, 1960	-	28.8	20,930	-	-	

6300. North Platte River above Seminoe Reservoir, near Sinclair, Wyo.

Location.--Lat 41°52'20", long 107°03'25", in SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec.13, T.22 N., R.86 W., on left bank  $\frac{1}{2}$  miles northeast of Sinclair and 14 miles upstream from water line of Seminoe Reservoir at elevation 6,357 ft.

Drainage area.--8,124 sq mi (revised), of which 4,064 sq mi (including 3,950 sq mi in, Great Divide Basin in southern Wyoming) is probably noncontributing.

Records available.--July 1939 to September 1960. Prior to October 1943, published as near Parco.

Gage.--Water-stage recorder. Datum of gage is 6,400.75 ft above mean sea level, datum of 1929.

Average discharge.--21 years (1939-60), 1,049 cfs (759,400 acre-ft per year).

Extremes.--1939-60: Maximum discharge, 14,500 cfs June 15, 1957 (gage height, 9.72 ft); minimum daily, 70 cfs Sept. 17, 1944.

Remarks.--Diversions for irrigation of about 293,000 acres above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	378	424	417	316	334	407	1,122	3,165	4,629	1,574	679	290	1,146
1952	528	428	379	389	376	432	3,046	6,003	7,056	1,115	632	322	1,720
1953	220	240	226	352	352	456	794	1,245	3,964	678	558	168	770
1954	181	317	246	262	309	387	1,066	1,445	830	274	160	130	467
1955	308	290	282	225	212	259	1,034	1,521	1,890	308	414	122	572
1956	176	282	270	285	268	514	1,561	3,678	3,515	581	385	117	969
1957	157	244	267	242	321	447	1,124	3,659	8,709	5,023	1,072	462	1,814
1958	515	473	397	316	405	556	1,112	4,554	4,000	544	261	168	1,111
1959	222	298	352	290	282	318	956	1,807	3,533	821	382	235	790
1960	591	563	349	282	275	884	1,746	1,875	3,016	666	211	138	881

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	23,240	25,200	25,640	19,460	18,550	25,010	66,750	194,600	275,400	96,790	41,740	17,270	829,600
1952	32,490	25,440	23,310	22,700	21,600	26,560	181,200	369,100	419,900	68,540	38,880	19,180	1,249,000
1953	13,500	14,280	13,870	21,650	19,570	28,070	47,240	76,550	237,100	41,710	34,290	9,980	557,800
1954	11,150	18,890	15,150	16,090	17,160	23,800	63,410	88,850	49,390	16,840	9,820	7,750	338,300
1955	18,960	17,240	17,360	13,840	11,800	15,950	61,550	93,500	112,500	18,950	25,450	7,290	414,400
1956	10,810	16,790	16,600	17,550	15,430	31,620	92,870	226,200	209,100	35,730	23,690	6,960	703,300
1957	9,640	14,490	16,440	14,900	17,850	27,460	66,850	225,000	518,200	308,800	65,890	27,520	1,313,000
1958	31,650	28,120	24,420	19,460	22,490	34,200	66,170	280,000	238,000	33,420	16,060	9,970	804,000
1959	13,670	17,160	21,620	17,820	15,660	19,540	56,880	111,100	210,200	50,510	23,470	13,990	571,600
1960	36,360	33,480	21,450	17,370	15,800	54,350	103,900	115,300	179,500	40,950	12,990	8,200	639,600

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	1,179	853,800	
1951	1210	7,260	May 31, 1951	210	1,146	829,600	1,156	836,800	
1952	1240	12,200	June 8, 1952	210	1,720	1,249,000	1,666	1,209,000	
1953	1280	8,000	June 20, 1953	109	770	557,800	775	561,300	
1954	1340	3,400	May 23, 1954	82	467	338,300	479	346,700	
1955	1390	3,270	June 18, 1955	91	572	414,400	559	405,000	
1956	1440	7,800	June 6, 1956	76	969	703,300	964	699,700	
1957	1510	14,500	June 15, 1957	100	1,814	1,313,000	1,874	1,357,000	
1958	1560	9,700	May 31, 1958	132	1,111	804,000	1,067	772,200	
1959	1630	5,340	June 15, 1959	136	790	571,600	843	610,500	
1960	1710	5,900	Mar. 29, 1960	90	881	639,600	-	-	

6315. Medicine Bow River above Rock Creek, near Medicine Bow, Wyo.

Location.--Lat 41°52'55", long 106°09'05", in NE $\frac{1}{4}$  sec.15, T.22 N., R.78 W., on right bank 50 ft upstream from bridge on U. S. Highways 30 and 287, 1 $\frac{1}{2}$  miles downstream from Foote Creek, 2 $\frac{1}{2}$  miles upstream from Rock Creek, and 2 $\frac{1}{2}$  miles southeast of Medicine Bow.

Drainage area.--436 sq mi, of which 35 sq mi is probably noncontributing.

Records available.--October 1951 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 6,564.70 ft above mean sea level, datum of 1929, supplementary adjustment of 1940.

Average discharge.--9 years (1951-60), 50.8 cfs (36,780 acre-ft per year).

Extremes.--1951-60: Maximum discharge, 1,340 cfs June 15, 1957 (gage height, 7.10 ft); no flow at times in each year.

Remarks.--Diversions for irrigation of about 37,000 acres above station. Five small reservoirs above station for irrigation (combined capacity, about 200 acre-ft).

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952	16	17	15	14	19	26	200	382	429	8.18	9.00	0.79	94.3
1953	.85	8.27	12.4	11.9	14.1	35.2	44.0	68.4	322	7.48	14.2	.04	44.6
1954	.84	5.82	9.12	14.8	23.9	25.0	35.2	38.8	9.89	.97	0	0	13.4
1955	0	1.28	3.24	3.24	4.07	9.49	49.3	9.92	70.9	20.3	12.5	.07	15.3
1956	.15	5.99	5.05	9.79	11.1	26.7	63.7	133	126	2.32	8.86	0	32.7
1957	.14	5.47	8.31	9.93	20.3	36.3	77.7	193	584	308	47.8	11.1	109
1958	14.3	14.8	18.8	18.3	29.0	54.9	81.4	366	282	11.1	6.76	.10	75.0
1959	1.92	5.97	13.5	18	17	18	72.4	83.5	199	22.8	1.84	0	37.7
1960	8.09	15.2	13.0	10.9	14.2	50.4	75.5	35.1	185	14.8	.46	0	35.0

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952	984	1,010	922	861	1,090	1,600	11,910	23,460	25,530	503	553	47	68,470
1953	52	492	762	732	783	2,160	2,620	4,200	19,160	460	871	2.4	32,290
1954	52	346	561	908	1,330	1,410	2,090	2,580	589	60	0	0	9,730
1955	0	76	199	199	226	583	2,930	610	4,220	1,250	771	4.4	11,070
1956	9.1	356	310	602	637	1,640	3,790	8,200	7,510	142	545	0	23,740
1957	8.7	325	511	611	1,130	2,230	4,620	11,880	34,730	18,940	2,940	658	78,580
1958	877	881	1,160	1,120	1,610	3,380	4,840	22,480	16,810	684	416	6.0	54,260
1959	118	355	833	1,110	944	1,110	4,310	5,140	11,850	1,400	113	0	27,280
1960	498	902	797	667	819	3,100	4,490	2,160	11,000	908	28	0	25,370

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950								
1951								
1952		910	June 7, 1952	0	94.3	68,470	92.1	66,860
1953	1240	878	June 16, 1953	0	44.6	32,290	44.1	31,950
1954	1340	296	May 23, 1954	0	13.4	9,730	12.5	9,040
1955	1380	423	July 24, 1955	0	15.3	11,070	15.8	11,470
1956	1440	564	May 27, 1956	0	32.7	23,740	32.9	23,910
1957	1510	1,340	June 15, 1957	0	109	78,580	111	80,660
1958	1560	928	June 1, 1958	0	75.0	54,260	72.7	52,650
1959	1630	447	June 16, 1959	0	37.7	27,280	38.9	28,170
1960	1710	439	June 10, 1960	0	35.0	25,370	-	-

6325. Rock Creek at Arlington, Wyo.

Location.--Lat 41°35'12", long 106°13'16", in NW 1/4 sec. 25, T.19 N., R.79 W., on left bank 10 ft downstream from county road bridge, half a mile downstream from Overland Creek, 0.8 mile southwest of Arlington, and 6.8 miles southwest of McFadden.

Drainage area.--64.5 sq mi (revised).

Records available.--October 1910 to September 1918, September 1939 to September 1960. Monthly discharge only for some periods, published in WSP 1310. Published as "near Arlington" 1911-13, 1916-18.

Gage.--Water-stage recorder. Altitude of gage is 7,780 ft (from topographic map). Prior to July 12, 1912, staff gage and July 12, 1912, to Jan. 11, 1916, water-stage recorder, at site 1 mile downstream at different datum. Jan. 12, 1916, to Sept. 30, 1918, water-stage recorder at site 40 ft upstream at present datum.

Extremes.--1910-18, 1939-60: Maximum discharge, 1,720 cfs June 19, 1953 (gage height, 4.96 ft), from rating curve extended above 1,400 cfs; minimum daily, 1 cfs Jan. 5, 6, 1915.

Remarks.--Diversions above station for irrigation of about 4,900 acres above and below station. King Canyon Canal diverts water from right bank 300 ft above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	17.5	13.5	12.1	10.8	10.3	10.1	15.9	226	393	125	28.9	15.4	73.4
1952	19.4	11.8	11.2	11.5	11.7	11.4	27.2	288	604	68.6	25.9	12.8	91.5
1953	9.65	8.34	9.44	9.24	8.27	8.97	17.2	85.5	609	93.9	27.7	12.9	74.4
1954	10.3	9.96	9.70	9.40	8.34	7.82	17.5	229	172	30.6	10.3	9.10	43.9
1955	9.74	4.65	6.64	6.01	5.56	6.65	15.6	144	281	53.8	19.4	8.62	46.9
1956	8.85	8.28	7.97	8.34	6.98	8.51	17.8	268	267	34.3	15.7	8.97	55.1
1957	7.29	7.98	8.02	8.12	9.08	8.02	12.2	103	605	262	25.6	14.2	89.1
1958	10.4	10.8	11.4	10.0	10.1	10.0	15.1	338	288	41.7	16.4	12.5	64.8
1959	7.76	8.00	8.08	7.10	6.89	8.29	16.3	116	422	46.7	18.1	12.1	56.3
1960	17.2	9.64	8.28	7.42	7.19	8.11	29.0	156	258	47.5	14.2	9.04	47.6

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1,070	805	744	666	574	623	948	13,910	23,380	7,700	1,780	916	53,120
1952	1,190	705	686	705	670	700	1,620	17,680	35,910	4,220	1,590	760	66,440
1953	593	496	580	568	459	551	1,030	5,140	36,210	5,770	1,700	770	53,870
1954	632	593	596	578	463	481	1,040	14,080	10,230	1,880	632	542	31,750
1955	599	276	408	370	309	409	929	8,890	16,740	3,310	1,190	513	33,950
1956	544	492	490	513	402	523	1,060	18,460	15,870	2,110	968	534	39,970
1957	448	475	493	499	504	493	728	6,350	36,010	16,110	1,570	846	64,530
1958	637	642	702	617	561	613	900	20,770	17,150	2,560	1,010	746	46,910
1959	477	535	497	436	383	510	972	7,110	25,140	2,870	1,110	717	40,760
1960	1,060	574	509	456	414	498	1,720	9,620	15,360	2,920	873	538	34,540

Monthly and yearly discharge, in acre-feet (adjusted)

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1,070	805	744	666	574	623	948	13,910	23,380	7,700	1,780	916	53,120
1952	1,190	705	686	705	670	700	1,620	17,680	35,910	4,220	1,590	760	66,440
1953	593	496	580	568	459	551	1,030	5,140	36,210	5,770	1,700	770	53,870
1954	632	593	596	578	463	481	1,040	14,080	10,230	1,880	632	542	31,750
1955	652	336	408	370	309	409	929	8,890	17,470	3,360	1,200	513	34,850
1956	544	492	490	513	402	523	1,080	19,060	19,600	2,240	1,200	576	46,720
1957	474	475	493	499	504	493	728	6,350	42,370	20,940	2,780	1,580	77,690
1958	945	835	702	617	561	613	900	22,670	20,960	2,670	1,030	1,040	53,540
1959	479	535	497	436	383	510	972	7,560	32,060	4,140	2,060	816	50,450
1960	1,060	574	509	456	414	498	1,730	10,120	19,390	2,920	888	538	39,100

Note.--Records prior to October 1954 not adjusted for diversion by King Canyon Canal.

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30						Calendar year					
		Observed			Adjusted			Observed			Adjusted		
		Momentary	maximum	Date	Mean	Runoff in acre-feet	Mean	Runoff in acre-feet	Mean	Runoff in acre-feet	Mean	Runoff in acre-feet	
1950	-	-	-	-	-	-	-	-	-	-	-	-	-
1951	1210	1,020	May 28, 1951	7.4	73.4	53,120	-	-	72.9	52,790	-	-	-
1952	1240	1,480	June 8, 1952	8.0	91.5	66,440	-	-	73.3	53,080	-	-	-
1953	1280	1,720	June 19, 1953	5.2	74.4	53,870	-	-	90.3	65,520	-	-	-
1954	1340	804	May 21, 1954	4.4	43.9	31,750	-	-	74.6	54,020	-	-	-
1955	1390	660	June 14, 1955	3.0	46.9	33,950	48.1	34,850	47.2	34,180	48.3	34,980	-
1956	1440	946	June 2, 1956	5.5	55.1	39,970	64.4	46,720	54.9	39,860	64.2	46,640	-
1957	1510	1,380	June 29, 1957	5.7	89.1	64,530	107	77,690	89.9	65,090	109	78,730	-
1958	1560	1,280	May 29, 1958	3.1	64.8	45,910	74.0	55,540	64.1	46,440	72.6	52,580	-
1959	1630	1,040	June 6, 1959	5.1	56.3	40,760	69.7	50,450	57.2	41,390	70.6	51,080	-
1960	1710	645	June 3, 1960	5.8	47.6	34,540	53.9	39,100	-	-	-	-	-

Note.--Records prior to October 1954 not adjusted for diversion by King Canyon Canal.

6335. Rock Creek below Rock River, Wyo.

Location.--Lat 41°46'35", long 105°55'48", in NE $\frac{1}{4}$ SW $\frac{1}{4}$  sec.22, T.21 N., R.76 W., on left bank 0.6 mile upstream from Johnston ditch and 3.4 miles northeast of town of Rock River.

Drainage area.--218 sq mi (revised).

Records available.--September 1940 to November 1941, March to September 1942, May 1951 to September 1960.

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

Average discharge.--10 years (1940-41, 1951-60), 26.5 cfs (19,190 acre-ft per year).

Extremes.--1940-42, 1951-60: Maximum discharge, 1,130 cfs June 13, 1942 (gage height, 6.42 ft), from rating curve extended above 370 cfs; no flow at times in 1942, 1954-56, 1958-60.

Remarks.--Diversions above station for irrigation of about 32,000 acres above and below station. Several small reservoirs above station for irrigation (combined capacity, about 3,300 acre-ft).

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	-	-	-	-	197	51.8	14.5	7.30	-
1952	13.0	15.4	12.4	12.5	13.3	14.8	76.7	84.0	346	28.3	11.3	3.69	52.2
1953	4.82	6.96	8.34	13.3	16.0	29.2	18.9	8.96	196	40.1	19.0	2.18	30.2
1954	5.84	9.85	7.59	7.70	9.84	9.89	10.1	27.9	29.8	1.37	.06	.03	9.97
1955	.72	2.22	1.53	.58	1.8	2.03	15.4	13.6	56.8	11.1	7.44	.17	9.71
1956	.76	4.49	3.89	4.04	3.13	22.0	13.8	58.9	66.7	16.5	8.55	.29	16.9
1957	3.01	8.41	6.05	6.79	16.5	34.6	27.7	43.5	287	18.8	10.1	1.1	53.7
1958	12.1	15.2	15	14	18	20.9	26.0	97.5	167	20.5	3.70	1.22	34.2
1959	4.73	7.21	9.7	8.5	8.2	14.5	33.6	35.6	146	21.9	2.23	3.84	24.6
1960	8.87	9.36	5.68	4.77	4.75	11.5	18.2	27.6	68.9	6.69	1.18	.03	13.9

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	-	-	-	-	11,700	3,190	890	434	-
1952	800	916	764	768	766	910	4,560	5,160	20,600	1,740	694	220	37,900
1953	297	414	513	815	887	1,800	1,120	551	11,680	2,460	1,170	130	21,840
1954	359	586	467	474	546	608	602	1,710	1,770	84	3.6	1.8	7,210
1955	44	132	94	36	9.9	125	918	1,140	3,580	682	457	10	7,030
1956	47	267	239	248	180	1,350	820	3,620	3,970	1,010	526	17	12,290
1957	185	500	372	417	916	2,130	1,650	2,670	17,100	11,150	1,150	603	38,840
1958	746	902	922	861	1,000	1,290	1,550	6,000	9,950	1,260	227	73	24,780
1959	291	429	595	526	456	889	2,000	2,190	8,690	1,350	137	228	17,780
1960	545	557	349	294	273	704	1,080	1,700	4,100	412	73	1.8	10,090

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950									
1951	1210	a552	June 2, 1951	-	-	-	-	-	-
1952	1240	830	June 9, 1952	2.7	52.2	37,900	50.5	36,640	
1953	1280	757	June 15, 1953	1.4	30.2	21,840	30.4	22,020	
1954	1340	142	May 23, 1954	0	9.97	7,210	8.39	6,070	
1955	1390	390	July 24, 1955	0	9.71	7,030	10.1	7,310	
1956	1440	678	May 28, 1956	0	16.9	12,290	17.6	12,800	
1957	1510	702	July 1, 1957	.1	53.7	38,840	55.8	40,360	
1958	1560	516	June 2, 1958	0	34.2	24,780	32.6	23,530	
1959	1630	322	June 16, 1959	0	24.6	17,780	24.7	17,920	
1960	1710	190	June 9, 1960	0	13.9	10,090	-	-	

a Maximum during period May to September.

## PLATTE RIVER BASIN

6350. Medicine Bow River above Seminole Reservoir, near Hanna, Wyo.

Location.--Lat 42°00'35", long 106°30'45", in SW¼NW¼ sec.34, T.24 N., R.81 W., on left bank 15 ft downstream from county highway bridge, 2 miles upstream from Troublesome Creek, 9 miles upstream from high-water line of Seminole Reservoir at elevation 6,357 ft, and 10 miles north of Hanna.

Drainage area.--2,338 sq mi (revised), of which 396 sq mi is probably noncontributing.

Records available.--July 1939 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 6,415.40 ft above mean sea level, datum of 1929.

Average discharge.--21 years (1939-60), 152 cfs (110,000 acre-ft per year).

Extremes.--1939-60: Maximum discharge, 6,590 cfs Mar. 29, 1943 (gage height, 5.23 ft), from rating curve extended above 1,900 cfs by logarithmic plotting; minimum daily, 1.1 cfs Sept. 7-14, 1959.

Remarks.--Diversions for irrigation of about 92,000 acres above station. Many small reservoirs above station (total capacity, about 6,000 acre-ft) for irrigation. For details on adjudication of diversions, see Remarks for this station in WSP 1210.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	54.1	52.8	42.5	30.4	37.1	87.2	211	439	576	174	88.9	25.0	152
1952	48.6	52.0	42.5	36.0	39.8	55.0	690	699	901	65.1	31.7	8.96	221
1953	21.9	23.4	25.1	44.2	46.8	79.0	125	211	516	58.1	88.7	4.95	103
1954	14.9	35.1	35.3	35.7	50.6	67.3	119	81.5	58.6	18.5	5.70	6.36	43.7
1955	16.1	24.1	13.5	13.8	11.0	58.3	423	141	176	42.7	61.9	5.47	80.3
1956	9.87	28.6	19.1	23.9	11.4	183	139	179	226	73.6	72.4	3.78	81.0
1957	9.65	19.2	17.5	15.9	52.6	144	205	505	963	586	127	55.9	224
1958	45.0	49.4	44.8	40.9	69.7	161	234	539	542	68.4	34.8	8.89	153
1959	15.1	23.7	24.9	27.0	39.4	73.6	190	236	313	75.3	8.39	16.3	86.5
1960	33.6	44.4	28	22	21	219	192	96.7	239	34.8	6.93	7.27	78.6

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	3,330	3,140	2,610	1,870	2,060	5,360	12,570	27,000	34,270	10,690	5,470	1,490	109,900
1952	2,990	3,100	2,610	2,210	2,290	3,380	41,080	42,980	53,640	4,000	1,950	533	160,800
1953	1,350	1,390	1,540	2,720	2,600	4,860	7,420	13,000	30,690	3,570	5,450	293	74,880
1954	914	2,090	2,050	2,200	2,810	4,140	7,060	5,010	3,480	1,140	351	379	31,620
1955	990	1,440	831	847	612	2,360	25,180	8,650	10,500	2,620	3,810	325	58,160
1956	607	1,700	1,170	1,470	657	11,260	8,290	10,990	13,440	4,520	4,450	225	58,780
1957	594	1,140	1,080	976	2,920	8,870	12,220	31,040	57,330	36,020	7,810	2,140	162,100
1958	2,640	2,940	2,760	2,520	3,870	9,910	13,910	33,150	32,230	4,080	2,140	529	110,700
1959	805	1,410	1,530	1,660	2,190	4,530	11,290	14,480	18,620	4,630	516	967	62,630
1960	2,070	2,640	1,720	1,350	1,210	13,490	11,420	5,950	14,240	2,140	426	433	57,090

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	156	-	113,000
1951	1210	1,130	June 3, 1951	16	152	109,900	151	-	109,500
1952	1240	1,680	June 12, 1952	6.5	221	160,800	215	-	156,300
1953	1280	1,240	June 17, 1953	2.8	103	74,880	104	-	75,660
1954	1340	830	June 29, 1954	1.5	43.7	31,620	41.2	-	29,830
1955	1390	1,290	Aug. 14, 1955	3.0	80.3	58,160	80.7	-	58,440
1956	1440	1,920	Aug. 19, 1956	1.8	81.0	58,780	80.1	-	56,120
1957	1510	1,890	June 16, 1957	2.5	224	162,100	232	-	167,700
1958	1560	1,300	June 2, 1958	6.2	153	110,700	147	-	106,100
1959	1630	705	June 18, 1959	1.1	86.5	62,630	90.2	-	65,310
1960	1710	1,780	Mar. 27, 1960	3.5	78.6	57,090	-	-	-



## 6355. Seminoe Reservoir near Leo, Wyo.

Location.--Lat 42°09', long 106°53', in sec.8, T.25 N., R.84 W., on upstream side near center of dam on North Platte River, 6 miles upstream from high-water line of Pathfinder Reservoir at elevation 6,457 ft and 9 miles southwest of Leo.

Drainage area.--11,179 sq mi (revised), of which 4,538 sq mi (including 3,950 sq mi in Great Divide Basin in southern Wyoming) is probably noncontributing.

Records available.--February 1939 to September 1960. Month-end figures only for February, March 1939, October 1940 to September 1950, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 6,190.00 ft above mean sea level, datum of 1929 (levels by Bureau of Reclamation); gage readings have been reduced to elevations above mean sea level. Prior to Apr. 20, 1939, staff gage at same site and datum.

Extremes.--1939-60: Maximum contents observed, 1,073,000 acre-ft June 20, 1949 (elevation, 6,359.29 ft); minimum observed (since appreciable storage was attained), 19,040 acre-ft Sept. 1, 1939 (elevation, 6,228.00 ft).

Remarks.--Reservoir is formed by concrete-arch dam. Storage began Apr. 1, 1939, but some regulation for power development during period Jan. 1 to Mar. 31, 1939. Capacity, 1,012,000 acre-ft below elevation 6,357 ft (top of spillway gates). Figures given herein represent total contents, of which 30,200 acre-ft (capacity below elevation 6,239 ft, minimum operating level for power development) is not available for power development and 352 acre-ft (below elevation 6,185.09 ft pen stock invert) is dead storage. Dead storage is considered negligible. Water is used for irrigation and power development.

Cooperation.--Records furnished by Bureau of Reclamation.

Contents, in acre-feet, on last day of month

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951	710,600	676,100	642,000	594,800	556,900	524,900	556,200	710,200	988,400	1,031,000	992,800	941,500
1952	898,000	859,500	790,300	714,500	656,000	536,000	625,400	901,000	1,047,000	1,002,000	955,400	898,900
1953	819,200	750,300	694,700	653,200	620,900	580,200	557,300	589,200	772,600	714,600	660,200	565,300
1954	466,200	392,600	319,900	251,600	245,000	235,700	265,900	336,300	356,600	357,200	355,500	324,900
1955	339,500	341,600	335,600	328,400	322,000	312,100	364,100	396,200	457,000	452,800	463,300	455,700
1956	423,400	372,500	340,700	330,700	286,000	267,800	283,700	433,000	603,900	530,900	429,800	369,000
1957	331,200	300,300	293,000	285,700	297,400	270,300	243,000	351,400	835,600	1,033,000	1,008,000	911,300
1958	851,100	770,200	679,900	613,800	601,600	561,700	548,900	781,800	962,500	967,300	928,600	901,200
1959	904,700	901,400	899,000	818,400	701,600	597,600	536,500	524,800	687,800	629,500	591,700	547,200
1960	518,200	478,900	416,800	335,200	268,000	252,800	276,400	350,700	493,700	449,300	380,700	335,900



6375.5. Sweetwater River near South Pass City, Wyo.

Location--Lat 42°22'30", long 108°52'56", in NW1/4 sec.28, T.28 N., R.101 W., on left bank 100 ft downstream from small tributary, three-quarters of a mile downstream from Fog Gulch, 1 1/4 miles downstream from State Highway 28, and 7.6 miles southwest of South Pass City.

Drainage area--177 sq mi.

Records available--October 1958 to September 1960.

Gage--Water-stage recorder. Altitude of gage is 7,420 ft (from topographic map).

Extremes--1958-60: Maximum discharge, 386 cfs Apr. 6, 1960 (gage height, 5.89 ft, back-water from ice); minimum daily, 1.5 cfs Jan. 3, 1960.

Remarks--Adjudications for diversions of about 14 cfs above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1959	11.8	12	9.4	9.1	13	19	58.6	77.0	148	43.1	14.8	11.4	35.4
1960	17.3	9.00	3.47	2.03	4.06	25.9	57.1	76.7	74.3	22.3	8.59	8.71	25.8

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1959	724	734	579	559	722	1,180	3,370	4,730	8,780	2,650	907	678	25,610
1960	1,060	536	213	125	233	1,590	3,400	4,720	4,420	1,370	528	518	18,710

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet		
		Discharge	Date							
1959	1630	286	June 8, 1959	-	35.4	25,610	35.0	25,380		
1960	1710	386	Apr. 6, 1960	1.5	25.8	18,710	-	-		

6376. Willow Creek near Atlantic City, Wyo.

Location--Lat 42°31'36", long 108°50'59", in NE1/4 sec.36, T.30 N., R.101 W., on right bank 4.7 miles northeast of South Pass City and 6.4 miles northwest of Atlantic City.

Drainage area--3.08 sq mi.

Records available--March 1957 to September 1958.

Gage--Water-stage recorder. Altitude of gage is 8,700 ft (from topographic map).

Extremes--1957-58: Maximum discharge, 118 cfs June 6, 1957 (gage height, 3.57 ft); minimum not determined.

Remarks--No diversion above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1957	-	-	-	-	-	0.39	0.56	3.90	38.7	2.87	0.85	0.69	-
1958	0.69	0.6	0.6	0.5	0.5	.4	.73	9.62	4.65	1.24	.62	.50	1.73

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1957	-	-	-	-	-	24	33	240	2,300	177	53	41	-
1958	43	36	37	31	28	25	43	591	277	76	38	30	1,260

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet		
		Discharge	Date							
1957	1510	118	June 6, 1957	-	-	-	-	-		
1958	1560	37	May 24, 1958	-	1.73	1,260	-	-		

a Maximum during period March to September.

6377. Willow Creek near South Pass City, Wyo.

Location.--Lat 42°29'14", long 108°49'36", in SE $\frac{1}{4}$  NW $\frac{1}{4}$  sec.18, T.29 N., R.100 W., on left bank 150 ft upstream from State Highway 28 and 1.8 miles northwest of South Pass City.

Drainage area.--9.21 sq mi.

Records available.--March 1957 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 8,050 ft (from topographic map).

Extremes.--1957-58: Maximum discharge, 102 cfs June 6, 1957 (gage height, 3.20 ft); minimum daily, 0.1 cfs Aug. 14, 15, 1958.

Remarks.--No diversion above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1957	-	-	-	-	-	0.78	1.48	25.0	41.0	7.55	1.56	1.31	-
1958	1.61	1.45	1.25	0.83	0.89	.94	3.74	20.5	7.23	1.84	.49	.47	3.46

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1957	-	-	-	-	-	48	88	1,540	2,440	464	96	78	-
1958	99	86	77	51	49	58	222	1,260	430	113	30	28	2,500

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet		
		Discharge	Date							
1957	1510	a102	June 6, 1957	-	-	-	-	-	-	-
1958	1560	55	May 25, 1958	0.1	3.46	2,500	-	-	-	-

a Maximum during period March to September.

6378. Rock Creek near South Pass City, Wyo.

Location.--Lat 42°32'54", long 108°45'47", in SW $\frac{1}{4}$  NE $\frac{1}{4}$  sec.27, T.30 N., R.100 W., on left bank 1.6 miles upstream from State Highway 28 and 5.9 miles northeast of South Pass City.

Drainage area.--9.87 sq mi.

Records available.--March 1957 to September 1960.

Gage.--Water-stage recorder. Altitude of gage is 8,230 ft (from topographic map).

Extremes.--1957-60: Maximum discharge, 286 cfs June 6, 1957 (gage height, 3.59 ft); minimum daily, 0.8 cfs Nov. 18, Aug. 29 to Sept. 2, 1959.

Remarks.--No diversion above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1957	-	-	-	-	-	1.06	1.93	31.7	78.3	12.3	3.79	2.76	-
1958	3.15	2.75	2.25	1.89	1.86	1.70	3.34	40.8	15.3	4.21	1.90	1.58	6.77
1959	1.39	1.33	1.5	1.4	1.4	1.4	3.91	15.4	16.6	3.27	1.35	1.54	4.21
1960	2.60	1.5	1.3	1.3	1.5	1.65	9.68	22.5	9.79	2.99	1.18	1.1	4.76

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1957	-	-	-	-	-	65	115	1,950	4,690	757	233	164	-
1958	194	163	138	116	103	104	199	2,510	908	259	117	94	4,900
1959	85	79	92	86	78	85	233	948	987	201	85	92	3,050
1960	160	89	80	80	86	102	576	1,380	583	184	71	65	3,450

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet		
		Discharge	Date							
1957	1510	a286	June 6, 1957	-	-	-	-	-	-	-
1958	1560	126	May 24, 1958	1.2	6.77	4,900	6.44	4,670	-	-
1959	1650	222	June 4, 1959	.8	4.21	3,050	4.31	3,120	-	-
1960	1710	47	May 12, 1960	-	4.76	3,450	-	-	-	-

a Maximum during period March to September.

## 6378.5. Rock Creek near Atlantic City, Wyo.

Location.--Lat 42°31'33", long 108°44'33", in NW $\frac{1}{4}$ SE $\frac{1}{4}$  sec.35, T.30 N., R.100 W., on right bank just downstream from Snow Creek, 0.7 mile below State Highway 28 and 2.1 miles northwest of Atlantic City.

Drainage area.--14.6 sq mi.

Records available.--March to September 1957.

Gage.--Water-stage recorder. Altitude of gage is 7,920 ft (from topographic map).

Extremes.--March to September 1957: Maximum discharge, 220 cfs June 6, 1957 (gage height, 3.91 ft); minimum daily, 1.5 cfs Mar. 27-29, 1957.

Remarks.--No diversion above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1957	-	-	-	-	-	1.81	3.28	39.7	87.6	14.3	4.83	3.36	-

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1957	-	-	-	-	-	111	195	2,440	5,210	879	297	200	-

## 6379. Slate Creek near Atlantic City, Wyo.

Location.--Lat 42°30'57", long 108°44'52", in SE $\frac{1}{4}$ NW $\frac{1}{4}$  sec.2, T 29 N., R.100 W., on left bank 600 ft upstream from Rock Creek and 1.6 miles northwest of Atlantic City.

Drainage area.--5.92 sq mi.

Records available.--March 1957 to September 1960.

Gage.--Water-stage recorder. Altitude of gage is 7,860 ft (from topographic map).

Extremes.--1957-60: Maximum discharge, 102 cfs May 5, 1957 (gage height, 1.61 ft); minimum daily, 0.1 cfs for many days in 1959-60.

Remarks.--No diversion above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1957	-	-	-	-	-	0.77	1.31	25.2	23.4	3.81	1.78	1.70	-
1958	1.89	1.32	1.10	0.95	0.95	.86	1.53	10.6	2.83	1.35	.66	.51	2.06
1959	.73	.71	.52	.6	.5	.85	1.33	3.55	1.78	.55	.20	.34	.98
1960	.98	.67	.57	.5	.6	.74	2.48	3.20	.93	.36	.11	.16	.94

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1957	-	-	-	-	-	47	78	1,550	1,390	234	109	101	-
1958	116	78	58	53	53	53	91	652	168	83	41	30	1,490
1959	45	42	32	37	29	40	79	218	106	34	12	20	693
1960	60	40	35	31	35	46	148	197	55	22	6.9	9.3	685

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1957	1510	a102	May 5, 1957	-	-	-	-	-
1958	1560	48	May 25, 1958	0.4	2.06	1,490	1.86	1,350
1959	1630	8.8	May 25, 1959	.1	.96	693	.98	709
1960	1710	7.6	May 13, 1960	.1	.94	685	-	-

a Maximum during period March to September.

## PLATTE RIVER BASIN

6379.1. Rock Creek at Atlantic City, Wyo.

Location.--Lat 42°30'47", long 108°44'46", in NW¼ sec.2, T.29 N., R.100 W., on left bank 500 ft downstream from Slate Creek and 1.4 miles northwest of Atlantic City.

Drainage area.--21.3 sq mi.

Records available.--June 1957 to September 1960.

Gage.--Water-stage recorder. Altitude of gage is 7,850 ft (from topographic map). Prior to Oct. 4, 1957, at site 35 ft upstream at different datum.

Extremes.--1957-60: Maximum discharge, 146 cfs June 16, 1957, May 24, 1958; maximum gage height, 2.63 ft May 24, 1958; minimum daily discharge, 0.9 cfs Aug. 30, 1960.

Remarks.--No diversion above station. Records of chemical analyses for the period April 1957 to June 1959, suspended sediment loads for the period May 1957 to September 1960, and water temperatures for the period June 1957 to September 1960 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1957	-	-	-	-	-	-	-	-	-	18.6	6.61	5.73	-
1958	5.05	4.44	3.67	3.09	3.53	3.27	5.73	56.4	22.2	6.87	2.80	2.28	10.0
1959	2.44	2.87	2.63	2.82	2.23	3	8.03	22.6	19.9	4.71	2.32	2.21	6.33
1960	4.63	2.96	2.56	2.79	2.47	4.85	14.2	22.4	11.0	3.51	1.42	1.83	6.22

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1957	-	-	-	-	-	-	-	-	-	1,140	407	341	-
1958	310	264	226	190	196	201	341	3,470	1,320	423	172	136	7,250
1959	150	171	162	174	124	184	478	1,390	1,190	290	142	132	4,590
1960	284	176	157	171	142	299	844	1,380	652	216	87	109	4,520

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1957	1510	at 146	June 16, 1957	-	-	-	-	-
1958	1560	146	May 24, 1958	1.9	10.0	7,250	9.57	6,930
1959	1630	57	June 4, 1959	1.1	6.33	4,590	6.52	4,720
1960	1710	44	May 12, 1960	.9	6.22	4,520	-	-

a Maximum during period June to September.

6380. Sweetwater River near Atlantic City, Wyo.

Location (revised).--Lat 42°23'50", long 108°34'55", in SE¼ sec.13, T.28 N., R.99 W., ¾ miles downstream from Rock Creek and 10 miles southeast of Atlantic City.

Drainage area.--411 sq mi.

Records available.--July 1946 to September 1951. No winter records.

Gage.--Water-stage recorder. Altitude of gage is 7,190 ft (from topographic map).

Extremes.--1946-51: Maximum discharge, 1,810 cfs Apr. 23, 1950 (gage height, 7.79 ft); maximum gage height, 8.09 ft Apr. 16, 1950 (backwater from ice); minimum daily discharge recorded, 3 cfs Aug. 19, 1948.

Remarks.--A few small diversions above station for irrigation.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	42.8	45.9	-	-	-	-	215	486	441	132	53.4	27.8	-

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	2,630	2,730	-	-	-	-	12,780	29,870	26,220	8,120	3,280	1,650	-

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	-	-
1951	1210	915	May 30, 1951	-	-	-	-	-

6390. Sweetwater River near Alcova, Wyo.

Location.--Lat 42°27'30", long 107°11'45", in NE¼ sec.25, T.29 N., R.87 W., on left bank at Dumbell ranch, 25 miles southwest of Alcova. Station is above Pathfinder Reservoir.

Drainage area.--2,327 sq mi (revised).

Records available.--August 1913 to September 1924, October 1938 to September 1960. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Altitude of gage is 5,920 ft (from topographic map). Aug. 28, 1913, to Sept. 30, 1924, staff gages at site 0.4 mile upstream at different datums.

Average discharge.--33 years (1913-24, 1938-60), 129 cfs (93,390 acre-ft per year).

Extremes.--1913-24, 1938-60: Maximum discharge observed, 4,290 cfs Apr. 13, 1924 (gage height, 8.36 ft, site and datum then in use); minimum daily, 0.5 cfs July 30 to Aug. 12, 1940.

Remarks.--Diversions for irrigation of about 24,000 acres above station. Several small reservoirs above station (combined capacity, about 2,200 acre-ft) for irrigation. For details on adjudication of diversions, see Remarks for this station in WSP 1210.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	74.5	68.9	54.4	45.4	49.1	69.3	208	373	438	125	46.2	33.1	132
1952	63.5	51.5	38.1	32.0	41.0	55.2	159	792	496	130	40.0	27.3	161
1953	39.7	46.3	39.2	54.5	62.9	89.7	137	202	280	51.5	21.8	8.20	85.8
1954	21.0	40.7	35.2	32.6	30.4	52.5	230	316	131	48.8	10.7	8.36	79.9
1955	27.4	44.9	38.1	23.6	25.6	38.6	154	244	124	29.2	11.3	8.47	64.1
1956	22.5	34.4	32.4	46.6	25.7	84.5	151	227	283	21.1	15.2	12.8	79.5
1957	22.6	31.9	20.2	18.8	32.0	80.3	99.9	417	700	232	52.1	47.1	146
1958	59.4	64.1	45.4	30.8	49.4	90.6	159	347	160	30.5	21.1	11.5	89.3
1959	21.5	37.0	38.7	23.9	32.1	67.8	111	68.8	51.4	35.5	7.60	10.2	42.1
1960	33.5	41.6	38.3	25.7	24.1	99.2	174	26.0	24.5	12.4	2.24	7.27	42.3

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	4,580	4,100	3,350	2,790	2,730	4,260	12,400	22,930	26,050	7,670	2,840	1,970	95,670
1952	3,900	3,070	2,340	1,970	2,360	3,400	9,450	48,680	29,500	8,020	2,460	1,620	115,800
1953	2,440	2,750	2,410	3,350	3,490	5,510	8,140	12,400	18,540	3,170	1,340	488	62,140
1954	1,290	2,420	2,170	2,010	1,690	3,230	13,670	19,460	7,770	3,000	656	497	57,660
1955	1,690	2,670	2,340	1,450	1,420	2,380	9,160	14,980	7,350	1,800	696	504	46,440
1956	1,380	2,050	1,990	2,870	1,480	5,200	8,960	13,940	16,830	1,300	934	763	57,700
1957	1,390	1,900	1,240	1,160	1,780	4,930	5,950	25,660	41,650	14,280	3,200	2,800	105,900
1958	3,650	3,810	2,790	1,890	2,740	5,570	9,480	21,330	9,540	1,880	1,300	685	64,670
1959	1,320	2,200	2,580	1,470	1,780	4,170	6,610	4,230	3,060	2,180	468	608	30,480
1960	2,060	2,470	2,360	1,580	1,380	6,100	10,350	1,600	1,460	761	138	433	30,690

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	255	184,300
1951	1210	786	June 3, 1951	19	132	95,670	128	92,950
1952	1240	988	May 10, 1952	19	161	116,800	158	115,100
1953	1280	438	June 19, 1953	2.7	85.8	62,140	83.4	60,410
1954	1340	580	Apr. 8, 1954	3.4	79.9	57,660	61.0	58,680
1955	1390	375	May 11, 1955	2.0	64.1	46,440	62.4	45,160
1956	1440	602	June 3, 1956	8.3	79.5	57,700	78.2	56,800
1957	1510	1,010	June 13, 1957	12	146	105,900	154	111,700
1958	1560	558	May 30, 1958	8.3	89.3	64,670	83.3	60,320
1959	1630	152	Apr. 9, 1959	3.8	42.1	30,480	43.5	31,470
1960	1710	546	Mar. 30, 1960	2.0	42.3	30,690	-	-

## 6405. Pathfinder Reservoir near Alcova, Wyo.

Location.--Lat 42°28'06", long 106°51'12", in sec.24, T.29 N., R.84 W., in gatehouse near left end of dam on North Platte River, 9 miles southwest of Alcova.

Drainage area.--14,660 sq mi (revised), of which 4,650 sq mi (including 3,950 sq mi in Great Divide Basin in southern Wyoming) is probably noncontributing.

Records available.--January 1909 to September 1960. Month-end figures only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 5,678.1 ft above mean sea level, datum of 1929; gage readings have been reduced to elevations above mean sea level. Prior to Oct. 1, 1950, sea level elevations were referred to Bureau of Reclamation datum which was 1.9 ft lower than mean sea level, datum of 1929. Prior to Apr. 12, 1950, reference marks and tape gages near present site at datum 1.9 ft lower.

Extremes.--1909-60: Maximum contents observed, 1,182,000 acre-ft June 25, 26, 27, 1917 (elevation, 5,658.86 ft, present datum); no storage at times in 1909-12, 1931, 1958-59.

Remarks.--Reservoir is formed by masonry dam. Storage began in April 1909. Capacity, 1,016,000 acre-ft between elevations 5,668.1 (north outlet trashrack sill) and 5,850.1 ft (crest of spillway). No dead storage. Figures given herein represent usable contents. Water is used to irrigate lands in Wyoming and Nebraska under the North Platte project.

Cooperation.--Records furnished by Bureau of Reclamation.

Contents, in acre-feet, on last day of month

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951	614,200	676,200	738,700	806,900	870,800	939,300	996,400	936,200	840,300	605,200	401,400	376,400
1952	449,000	515,400	604,900	704,200	806,200	942,000	1,018,000	1,016,000	999,500	808,600	568,300	455,900
1953	539,900	614,600	684,600	744,200	799,300	872,400	894,500	917,100	822,800	608,900	472,600	450,800
1954	545,400	629,800	727,400	813,900	846,500	871,200	918,000	884,000	778,800	547,400	349,800	358,700
1955	365,600	380,900	402,900	425,100	447,100	481,000	513,200	585,600	634,400	441,800	220,800	153,800
1956	191,200	256,800	311,500	353,600	411,400	469,400	549,400	499,100	339,300	177,500	38,570	91,990
1957	132,200	183,600	210,500	235,000	249,200	318,200	413,200	583,000	608,300	425,400	229,300	276,600
1958	370,000	474,800	574,500	654,900	700,000	797,000	721,300	566,500	381,700	143,500	940	0
1959	0	60	850	67,330	144,500	186,400	203,700	256,000	212,300	203,800	129,300	79,740
1960	81,760	83,090	117,000	166,100	209,900	277,400	299,600	241,300	188,700	132,300	79,360	59,730



## 6410. North Platte River below Pathfinder Reservoir, Wyo.

Location.--Lat 42°27'54", long 106°50'47", in SW $\frac{1}{4}$  sec.24, T.29 N., R.84 W., on left bank 2,300 ft downstream from Pathfinder Dam and 9 miles southwest of Alcovia.

Drainage area.--14,661 sq mi (revised), of which 4,650 sq mi (including 3,950 sq mi in Great Divide Basin in southern Wyoming) is probably noncontributing.

Records available.--May 1905 to December 1960. Monthly discharge only for some periods, published in WSP 1310. Prior to October 1920, published as "at Pathfinder." Supplemental records for January 1909 to September 1913, published as daily inflow to Pathfinder Reservoir in WSP 266, 286, 306, 326, and 356, have been found to be in error on basis of comparison with records at nearby stations and should not be used.

Gage.--Water-stage recorder. Altitude of gage is 5,670 ft (from topographic map). Prior to 1932, staff or chain gages at same site and datum.

Average discharge.-- 55 years (1905-60), 1,579 cfs (1,143,000 acre-ft per year).

Extremes.--1905-60: Maximum daily discharge, 18,900 cfs June 25-27, 1917; minimum not determined.

Remarks.--Flow completely regulated by Seminole and Pathfinder Reservoirs (see elsewhere in this report). Natural flow of stream affected by transbasin diversions, storage reservoirs, power developments, ground-water withdrawals and diversions for irrigation, and return flow from irrigated areas.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1	1	1	1	1	1	1	2,079	2,621	4,741	4,477	1,568	1,304
1952	.5	.5	.5	.5	.5	.5	1,342	2,968	5,652	4,911	5,075	3,130	1,927
1953	.5	.5	.5	.5	.5	.5	815	1,518	2,783	5,089	3,782	2,017	1,327
1954	.6	.6	.6	.6	.6	328		61,025	2,258	4,078	3,544	379	962
1955	.5	.5	.5	.5	.5	.5	272	99.4	165	3,416	3,901	1,507	774
1956	.4	.4	.47	.5	.48	.4	317	2,330	3,406	4,468	4,350	261	1,269
1957	.3	.3	.3	.4	†.43	.5	280	1.77	1,141	5,140	4,715	1,198	1,053
1958	.62	.33	284	93.3	.4	43,003	4,215		4,483	4,350	3,281	679	1,708
1959	75.7	330	512	553	1,137	1,668	2,057	1,369	1,673	1,828	2,475	1,839	1,266
1960	1061	1,223	832	845	783	551	1,357	1,714	1,658	2,323	2,182	1,217	1,314
1961	506	107	348	-	-	-	-	-	-	-	-	-	-

† Corrected.

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	61	60	61	61	56	61	60	127,800	156,000	291,500	275,300	93,300	944,300
1952	31	30	31	31	29	31	79,860	182,500	336,300	502,000	312,100	186,300	1,399,000
1953	31	30	31	31	28	31	48,510	81,010	165,600	312,900	232,500	20,000	960,700
1954	37	36	37	37	33	20,160	36	63,050	134,400	250,800	205,600	22,560	696,800
1955	31	30	31	31	28	31	16,160	6,110	9,840	210,100	239,900	77,770	560,100
1956	25	24	29	31	26	25	18,860	143,300	202,700	274,800	266,300	15,540	921,700
1957	18	18	18	25	24	31	16,660	103	67,920	316,000	289,900	71,270	762,000
1958	38	20	16,230	5,740	22	25	178,700	259,200	266,700	267,500	201,700	40,430	1,236,000
1959	4,530	19,620	31,490	33,980	63,150	102,400	122,400	84,170	99,530	112,400	133,700	109,400	916,800
1960	65,240	72,770	51,150	61,980	45,020	33,900	80,730	105,400	98,640	142,800	134,200	72,410	954,200
1961	31,130	6,380	21,400	-	-	-	-	-	-	-	-	-	-

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	1,491	1,079,000
1951	1210,1280	8,320	May 15, 1951	-	1,304	944,300	1,304	944,200
1952	1240,1280	8,610	June 14, 1952	-	1,927	1,399,000	1,927	1,399,000
1953	1290	5,700	July 7, 1953	-	1,327	960,700	1,327	960,700
1954	1340	6,060	July 14, 1954	-	962	696,800	962	696,800
1955	1390	5,570	July 18, 1955	-	774	560,100	773	560,000
1956	1440	5,720	July 25, 1956	-	1,269	921,700	1,269	921,600
1957	1510	6,000	July 13, 1957	-	1,053	762,000	1,075	778,200
1958	1560	7,130	Apr. 28, 1958	-	1,708	1,236,000	1,782	1,276,000
1959	1630	2,420	July 9-11, 1959	12	1,265	916,800	1,451	1,050,000
1960	1710	2,380	July 3, 1960	430	1,314	954,200	1,138	824,000
1961	1710	-	-	-	-	-	-	-

## PLATTE RIVER BASIN

6415. Alcova Reservoir at Alcova, Wyo.

Location.--Lat 42°32'52", long 106°43'08", in SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec.24, T.30 N., R.83 W., in elevator shaft at right end of dam on North Platte River, a quarter of a mile southwest of Alcova.

Drainage area.--14,725 sq mi (revised), of which 4,650 sq mi (including 3,950 sq mi in Great Divide Basin in southern Wyoming) is probably noncontributing.

Records available.--February 1938 to September 1960. Prior to October 1950 month-end figures only, published in WSP 1310.

Gage.--Water-stage recorder for elevations above 5,447.00 ft. Datum of gage is 5,320 ft above mean sea level, datum of 1929 (levels by Bureau of Reclamation); gage readings have been reduced to elevations above mean sea level. Prior to May 1946, electric tape gages or reference marks nearby at same datum. May 1946 to June 26, 1955, electric tape gage at present site and datum.

Extremes.--1938-60: Maximum contents observed, 190,300 acre-ft Aug. 14, 15, 1952 (elevation, 5,499.92 ft); minimum observed since appreciable storage was attained, 1,880 acre-ft Sept. 30, 1940 (elevation, 5,353.56 ft). No usable storage prior to February 1938.

Remarks.--Reservoir is formed by rockfill dam; completed in January 1938; storage began Feb. 8, 1938. Capacity, 190,500 acre-ft at elevation 5,500.00 ft (top of spillway gates). Dead storage, 100 acre-ft. Figures given herein represent total contents. Usable contents published prior to October 1956. Water is used for irrigation in North Platte River basin. Records of chemical analyses for the period October 1950 to August 1951 are published in reports of Geological Survey.

Cooperation.--Records furnished by Bureau of Reclamation.

Contents, in acre-feet, on last day of month

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951	172,100	171,200	170,600	170,000	169,900	169,700	155,700	180,300	182,700	183,200	182,300	162,500
1952	162,000	159,300	158,900	158,700	158,700	158,900	185,100	187,400	187,800	189,400	188,600	164,800
1953	156,500	155,700	155,200	155,200	155,100	155,600	179,900	181,900	182,700	184,800	182,200	170,700
1954	170,400	169,000	168,000	166,800	166,500	187,200	186,800	189,100	188,600	189,100	180,100	172,700
1955	172,900	172,000	171,700	171,400	171,500	171,700	187,600	186,900	186,800	187,900	188,600	172,500
1956	171,100	170,700	170,000	169,900	169,800	169,500	187,500	188,900	187,900	188,100	186,400	173,500
1957	172,200	172,200	171,900	171,700	171,600	171,700	187,700	187,600	187,000	188,100	187,700	171,500
1958	170,100	170,200	186,100	188,500	188,100	188,100	186,800	186,800	188,200	188,000	188,100	157,100
1959	103,400	90,840	87,220	87,750	123,600	187,200	188,200	187,000	188,400	187,400	187,000	187,500
1960	187,600	186,400	186,400	187,200	188,400	188,200	188,200	188,100	187,700	187,200	185,700	188,300

## 6420. North Platte River at Alcova, Wyo.

Location.--Lat 42°33'04", long 106°42'48", in SW $\frac{1}{4}$  sec.19, T.30 N., R.82 W., on right bank at Alcova, a quarter of a mile downstream from Alcova Dam.

Drainage area.--14,726 sq mi (revised), of which 4,650 sq mi (including 3,950 sq mi in Great Divide Basin in southern Wyoming) is probably noncontributing.

Records available.--February 1904 to December 1905, October 1934 to September 1960. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 5,329.85 ft above mean sea level, datum of 1929. Feb. 19, 1904, to Dec. 31, 1905, staff gage at site 1,000 ft upstream at datum 2.59 ft lower.

Average discharge.--27 years (1904-5, 1934-60), 1,215 cfs (879,600 acre-ft per year).

Extremes.--1904-5, 1934-60: Maximum discharge observed, 13,400 cfs June 6, 10, 11, 1905 (gage height, 11.5 ft, site and datum then in use); minimum not determined.

Remarks.--Flow completely regulated by Seminoe, Pathfinder, and Alcova Reservoirs (see elsewhere in this report). Natural flow of stream affected by transbasin diversions, storage reservoirs, power development, diversions for irrigation, and return flow from irrigated areas.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	6.0	6.0	6.0	6.0	6.0	6.0	252	1,616	2,423	4,520	4,363	1,803	1,263
1952	8.32	32.9	5	6	6	6	890	2,780	5,401	4,644	5,061	3,387	1,955
1953	137	6.0	6.0	6.0	6.0	6.0	418	1,224	2,456	4,680	3,562	2,035	1,222
1954	4.90	4.86	4.85	4.90	4.90	4.80	5.17	845	1,992	3,255	3,63		870
1955	7.92	8.16	4.97	4.82	4.50	15.8	14.8	4.39	18.7	3,124	3,681	1,534	711
1956	7.55	5.64	5.69	5.49	6.0	5.93	7,252	2,184	3,102	4,302	4,218	372	1,195
1957	5.23	5.84	5.83	4.63	5.53	6.16	6.70	7,861	1,022	4,904	4,473	1,387	998
1958	11.2	5.63	5.63	68.0	9.41	13.1	3,064	4,124	4,129	4,155	3,064	1,028	1,649
1959	918	534	532	493	495	601	1,991	1,268	1,285	1,514	1,845	1,595	1,091
1960	977	1,162	817	825	757	540	1,315	1,520	1,325	1,955	1,852	1,010	1,173

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	369	357	369	369	333	369	14,990	99,340	144,200	277,900	268,300	107,300	914,200
1952	512	1,960	307	369	345	369	52,380	71,000	321,400	285,500	311,200	201,500	1,347,000
1953	8,410	357	369	369	333	369	24,880	75,280	146,100	287,800	219,000	121,100	884,400
1954	301	289	298	301	272	295	308	51,940	118,000	235,900	200,100	21,620	629,600
1955	387	486	306	297	250	971	982	270	1,110	192,100	226,300	91,290	514,700
1956	464	336	350	338	345	365	431	134,300	184,600	264,500	259,300	22,110	867,400
1957	322	347	358	285	307	379	399	484	60,790	301,500	275,000	82,510	722,700
1958	687	335	348	4,180	522	803	182,300	253,600	245,700	255,500	188,400	81,160	1,194,000
1959	56,430	31,790	32,700	30,320	27,480	36,920	118,500	77,990	76,440	93,080	113,500	94,920	790,100
1960	60,060	69,120	50,210	50,720	43,520	33,210	78,250	93,440	78,860	120,200	113,900	60,130	851,600

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean
		Discharge	Date				
1950	-	-	-	-	-	-	1,434
1951	1210	5,440	July 10-15, 1951	-	1,263	914,200	1,265
1952	1240	8,080	June 14, 1952	5	1,855	1,347,000	1,864
1953	1290	8,260	July 10, 1953	6	1,222	884,400	1,210
1954	1340	5,730	July 12, 1954	4.8	870	629,600	870
1955	1390	5,840	July 17, 1955	3.8	711	514,700	711
1956	1440	5,400	July 21, 1956	4.6	1,195	867,400	1,195
1957	1510	5,770	July 18, 1957	4.0	998	722,700	999
1958	1560	5,020	Aug. 7, 1958	3.4	1,649	1,194,000	1,814
1959	1630	3,650	July 31, 1959	370	1,091	790,100	1,172
1960	1710	2,530	Aug. 22, 1960	440	1,173	851,600	-

a Maximum daily.

## 6425. Bates Creek near Freeland, Wyo.

Location.--Lat 42°32', long 106°19', in sec.29, T.30 N., R.79 W., 20 ft upstream from bridge on county highway, 2 miles downstream from Chalk Creek, and 8 miles (revised) southeast of Freeland.

Drainage area.--118 sq mi (revised).

Records available.--March to October 1940, April to September 1941, October 1945 to September 1951. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Altitude of gage is 6,510 ft (estimate from Geological Survey levels, 1929 North American datum). Prior to June 4, 1946, staff gage at bridge 20 ft downstream at same datum.

Average discharge.--6 years (1945-51), 13.6 cfs (9,850 acre-ft per year).

Extremes.--1940-41, 1945-51: Maximum discharge observed, 600 cfs May 4, 1941 (gage height, 3.95 ft), from rating curve extended above 100 cfs by logarithmic plotting; minimum daily, 0.4 cfs Aug. 25, 1948.

Remarks.--Water rights totaling 4.68 cfs (priorities 1889-1939) for irrigation of about 329 acres, adjudicated by Wyoming for diversion above station. Regulation by Bates Creek Reservoir above station (3,112 acre-ft per year adjudicated for irrigation).

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	2.20	2.52	2.82	2.00	1.92	6.39	27.8	34.6	18.9	3.15	1.44	1.71	8.81

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	135	150	173	123	107	393	1,650	2,130	1,130	194	89	102	6,380

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	12.0	8,660
1951	1210	119	Apr. 3, 1951	1.0	8.81	6,380	-	-

6430. Bates Creek near Alcova, Wyo.

Location.--Lat 42°40'34", long 106°36'09", in SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec.1, T.31 N., R.82 W., on right bank 2.8 miles above mouth and 10.5 miles northeast of Alcova.

Drainage area.--393 sq mi (revised).

Records available.--April 1916 to September 1924 (irrigation season only), June 1935 to September 1954, October 1956 to September 1960. Published as "near Casper" 1916-24.

Gage.--Water-stage recorder. Altitude of gage is 5,290 ft (from topographic map). Apr. 10, 1916, to Sept. 30, 1924, staff gages at site 1,200 ft upstream at different datums. June 1, 1935, to Sept. 30, 1954, water-stage recorder at site 1,200 ft upstream at datum 3.91 ft higher.

Average discharge.--23 years (1935-54, 1956-60), 12.9 cfs (9,340 acre-ft per year).

Extremes.--1916-24, 1935-54, 1956-60: Maximum daily discharge, 4,000 cfs, estimated, Sept. 27, 30, 1923; no flow at times in many years.

Remarks.--Diversions for irrigation of about 8,800 acres above station. Natural flow of stream also affected by storage, for irrigation, in Bates Creek Reservoir (capacity, about 3,100 acre-ft) and several smaller reservoirs (total capacity, about 1,400 acre-ft) above station. For details on adjudication of diversions, see Remarks for this station in WSP 1210. Records of suspended sediment loads for the period October 1956 to September 1958 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	8.97	11.6	11.9	8.79	12.2	11.2	11.7	0.32	0.20	2.70	0.14	4.09	6.94
1952	7.95	10.8	10.0	10.3	10.3	17.9	19.1	28.8	.26	.10	.08	.09	9.66
1953	3.39	4.94	10.5	9.86	12.1	14.5	2.69	33.1	1.27	.30	.52	.46	7.83
1954	2.42	5.63	9.69	10.1	10.1	9.12	19.0	.24	.42	3.01	.18	.30	5.82
1955													
1956													
1957	.003	1.52	2.97	1.51	3.11	2.55	.64	12.9	5.16	1.76	3.03	1.92	3.10
1958	2.35	4.59	7.15	5.34	11.4	14.2	56.5	51.5	1.41	.02	1.07	.06	13.0
1959	3.09	8.36	13.6	12.3	13.9	14.5	5.60	.76	.10	.04	.10	.95	6.07
1960	2.86	3.33	4.69	3.67	5.22	37.5	4.29	.35	.27	.09	.82	.11	5.31

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	551	691	732	540	675	689	693	19	12	166	8.3	244	5,020
1952	489	646	616	631	590	1,100	1,140	1,770	15	6.1	5.0	5.6	7,010
1953	209	294	645	607	671	895	180	2,030	75	18	32	27	5,660
1954	149	335	596	622	561	561	1,130	15	25	185	11	18	4,210
1955													
1956													
1957	.20	90	182	93	173	157	38	795	307	108	186	114	2,240
1958	145	273	440	328	636	873	3,360	3,170	84	1.2	66	3.4	9,380
1959	190	497	837	758	770	889	333	47	6.0	2.4	6.1	.57	4,390
1960	176	198	289	226	300	2,310	255	21	16	5.8	51	6.3	3,850

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	9.65	6,990
1951	1210	252	Sept. 6, 1951	0	6.94	5,020	6.63	4,800
1952	1240	321	May 24, 1952	0	9.66	7,010	8.83	6,410
1953	1290	2,270	May 29, 1953	.1	7.83	5,660	7.73	5,600
1954	1340	348	July 20, 1954	0	5.82	4,210	-	-
1955								
1956								
1957	1510	256	Aug. 27, 1957	0	3.10	2,240	3.91	2,830
1958	1560	440	Apr. 18, 1958	0	13.0	9,380	13.9	10,050
1959	1630	71	Apr. 13, 1959	0	6.07	4,390	4.90	3,550
1960	1710	289	Mar. 29, 1960	0	5.31	3,850	-	-

## 6435. North Platte River near Goose Egg, Wyo.

Location.--Lat 42°43'15", long 106°32'10", in SW $\frac{1}{4}$  sec. 22, T.32 N., R.81 W., on right bank 0.3 mile downstream from Cottonwood Creek, 2 $\frac{1}{2}$  miles downstream from Poison Spring Creek, 4 miles southwest of Goose Egg, and 13 miles southwest of Casper.

Drainage area.--15,398 sq mi (revised), of which 4,654 sq mi (including 3,950 sq mi in Great Divide Basin in southern Wyoming) is probably noncontributing.

Records available.--April 1917 to September 1919 (irrigation seasons only), May to September 1924, May to September 1947, May 1950 to September 1960. Monthly discharge only for some periods, published in WSP 1310. Published as "near Casper" 1917-19, 1924.

Gage.--Water-stage recorder. Altitude of gage is 5,190 ft (from topographic map). Apr. 9, 1917, to Sept. 30, 1919, staff gages at site 1 $\frac{1}{2}$  miles downstream at different datums. May 1 to Sept. 30, 1924, and May 1 to Sept. 30, 1947, staff gages at site 4 $\frac{1}{2}$  miles downstream at different datums.

Average discharge.--10 years (1950-60), 1,239 cfs (897,000 acre-ft per year).

Extremes.--1917-19, 1924, 1947, 1950-60: Maximum discharge observed, 19,200 cfs June 24-28, 1917; maximum gage height, 11.80 ft May 28, 1953; minimum daily discharge, 8.7 cfs June 14, 1955.

Remarks.--Natural flow of stream affected by transbasin diversions, storage reservoirs, power developments, ground-water withdrawals, diversions for irrigation of about 350,000 acres, and return flow from irrigated areas. Records of chemical analyses for the periods October 1950 to August 1951 and October 1957 to April 1960, suspended sediment loads for the periods June 1950 to September 1953 and August 1956 to September 1958, and water temperatures for the periods June 1950 to September 1952, April to September 1953, and August 1956 to April 1960 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	48.7	30.7	37.1	28.4	33.6	33.7	239	1,639	2,448	4,515	4,419	2,039	1,304
1952	55.9	77.0	35.7	29.3	32.7	41.0	888	2,899	5,676	4,709	5,127	3,606	1,935
1953	248	34.8	34.8	31.5	29.2	41.6	390	1,290	2,536	4,822	3,568	2,235	1,290
1954	42.0	29.2	29.4	30.1	27.0	34.5	42.2	868	1,991	3,790	3,315	418	895
1955	38.4	29.1	25.3	23.3	22.0	53.3	114	29.3	18.0	2,923	3,659	1,561	717
1956	37.0	32.0	36.6	26.1	31.6	56.4	25.32	172	3,122	4,282	4,268	482	1,224
1957	33.4	26.6	23.7	17.3	25.2	24.0	21.9	28.6	992	5,154	4,631	1,537	1,056
1958	52.5	32.0	31.5	92.1	36.0	40.3	2,940	4,077	4,114	4,158	3,113	1,080	1,656
1959	1,009	592	551	498	502	607	2,006	1,342	1,294	1,548	1,882	1,674	1,128
1960	1,032	1,206	802	812	740	583	1,267	1,503	1,332	1,963	1,897	1,069	1,186

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	3,000	1,820	2,280	1,740	1,860	2,070	14,200	100,800	145,700	277,600	271,700	121,300	944,100
1952	3,440	4,580	2,190	1,800	1,880	2,520	52,750	178,200	37,700	289,600	315,200	214,600	1,404,000
1953	15,220	2,080	2,130	1,930	1,620	2,560	23,220	79,330	150,900	296,500	225,600	133,000	934,100
1954	2,580	1,740	1,800	1,850	1,500	2,120	2,510	53,350	18,500	233,000	203,900	24,870	647,700
1955	2,360	1,730	1,570	1,430	1,220	3,280	6,810	1,800	1,070	179,700	225,000	92,860	518,800
1956	2,270	1,900	2,250	1,600	1,820	3,470	1,510	133,600	185,800	263,300	282,400	28,680	888,600
1957	2,060	1,580	1,480	1,070	1,400	1,470	1,300	1,770	59,040	516,900	284,800	91,460	764,300
1958	3,230	1,900	1,940	5,660	2,000	2,480	174,900	250,700	44,800	255,700	191,400	64,240	1,199,000
1959	62,040	35,250	33,890	30,600	27,900	37,320	119,300	82,490	76,980	95,170	115,700	99,630	816,300
1960	63,480	71,780	49,300	49,900	42,570	35,850	75,400	92,430	79,260	120,700	116,700	63,640	861,000

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	-	-	-
1951	1210	5,630	July 10, 1951	14	1,304	944,100	1,308	947,200	
1952	1240	8,660	June 13, 1952	18	1,935	1,404,000	1,947	1,414,000	
1953	1280	10,600	May 28, 1953	22	1,290	934,100	1,272	920,800	
1954	1340	5,820	July 14, 1954	18	895	647,700	894	647,300	
1955	1390	7,170	July 25, 1955	8.7	717	518,800	718	519,600	
1956	1440	5,540	July 29, 1956	14	1,224	888,600	1,222	887,300	
1957	1510	6,410	July 19, 1957	11	1,056	764,300	1,058	766,300	
1958	1560	5,040	Aug. 5, 1958	24	1,656	1,199,000	1,828	1,323,000	
1959	1630	2,900	May 4, 1959	380	1,128	816,300	1,201	869,600	
1960	1710	2,550	Aug. 23, 1960	350	1,186	861,000	-	-	

6440. Poison Spider Creek near Goose Egg, Wyo.

Location.--Lat 42°46'44", long 106°31'46", in SW¼SW¼ sec.35, T.33 N., R.81 W., on right bank 0.3 mile upstream from mouth, 2½ miles northwest of Goose Egg, and 11 miles southwest of Casper.

Drainage area.--301 sq mi.

Records available.--October 1950 to September 1956.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 5,185 ft (from topographic map).

Average discharge.--6 years (1950-56), 4.07 cfs (2,950 acre-ft per year).

Extremes.--1950-56: Maximum discharge, 172 cfs May 28, 1953 (gage height, 3.87 ft), from rating curve extended above 75 cfs by logarithmic plotting; minimum daily, 1.6 cfs Feb. 9, 1953.

Remarks.--Diversions for irrigation of about 370 acres above station. Four small reservoirs (combined capacity, about 350 acre-ft) above station. Return flow from Kendrick irrigation project enters above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	2.8	2.5	2.42	2.42	2.45	2.95	2.44	2.30	3.88	3.20	1.91	2.25	2.63
1952	2.54	2.25	2.31	2.39	2.42	3.92	3.21	8.07	2.41	2.43	3.64	2.80	3.21
1953	2.19	3.07	3.27	3.65	3.53	4.09	3.56	6.80	4.01	3.27	3.82	4.61	3.83
1954	3.87	4.43	3.87	4.33	3.85	4.22	4.62	4.06	5.71	4.38	4.07	4.87	4.35
1955	5.49	4.13	5.05	4.32	3.80	10.2	13.6	5.07	5.95	3.66	3.72	5.36	5.87
1956	4.76	5.31	4.60	4.72	4.31	4.90	4.91	4.57	3.89	3.58	4.53	4.68	4.56
1957													
1958													
1959													
1960													

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	172	149	149	149	136	161	145	141	231	197	117	134	1,900
1952	156	134	142	147	139	241	191	496	143	150	224	166	2,330
1953	135	182	201	225	196	252	212	418	239	201	235	275	2,770
1954	238	264	258	266	214	259	275	250	340	270	250	290	3,150
1955	338	246	310	265	211	627	811	312	354	225	229	319	4,250
1956	293	316	283	290	248	301	292	281	232	220	279	278	3,310
1957													
1958													
1959													
1960													

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean
		Discharge	Date				
1950							
1951	1240	33	Sept. 3, 1951	-	2.63	1,900	2.57
1952	1240	84	May 23, 1952	1.7	3.21	2,330	3.33
1953	1280	172	May 28, 1953	1.6	3.83	2,770	4.13
1954	1340	13	June 7, 1954	1.7	4.35	3,150	4.57
1955	1390	98	Mar. 30, 1955	2.1	5.87	4,250	5.86
1956	1440	49	May 27, 1956	2.5	4.56	3,310	-
1957							
1958							
1959							
1960							

## 6445. Casper Creek at Casper, Wyo.

Location.--Lat 42°50'52", long 106°21'52", in NW¼NE¼ sec.7, T.33 N., R.79 W., on left bank 700 ft upstream from bridge on U. S. Highways 20 and 26, 0.4 mile upstream from mouth, and 2 miles west of city hall in Casper.

Drainage area.--668 sq mi (revised), of which 98 sq mi is probably noncontributing.

Records available.--May 1946 to September 1956.

Gage.--Water-stage recorder and Parshall flume with concrete overflow section. Altitude of gage is 5,110 ft (from topographic map).

Average discharge.--10 years (1946-56), 2.22 cfs (1,610 acre-ft per year).

Extremes.--1946-56: Maximum discharge, 531 cfs June 25, 1948 (gage height, 3.51 ft), from rating curve extended above 9 cfs on basis of slope-area measurement of peak flow; no flow at times.

Remarks.--Diversions for irrigation of about 3,500 acres above station. Twenty small reservoirs (total capacity, about 15,000 acre-ft) above station. Return flow from water imported from North Platte River for Kendrick Irrigation project enters above station. Records of chemical analyses for the periods December 1949 to July 1951 and October 1959 to April 1960 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1.51	0.86	0.75	0.50	0.79	0.73	0.79	0.99	2.07	3.67	4.02	2.62	1.62
1952	.91	.70	.51	.45	.60	1.15	1.00	6.95	1.98	2.44	1.75	3.35	1.82
1953	*1.34	*1.15	*1.09	*1.04	*1.28	*1.61	*1.17	*2.02	*1.48	*1.44	*.88	*1.65	*1.35
1954	*1.46	*1.51	*1.33	*1.55	*2.22	*3.93	*2.17	*1.89	*1.57	*.28	*.24	*.51	*1.55
1955	*1.26	*1.19	*.92	*.74	*.71	*3.25	*8.67	*1.69	*3.64	*.47	*.86	*1.03	*2.03
1956	*1.39	*1.79	*1.58	*1.63	*1.93	*2.42	*2.19	*1.45	*.29	*.12	*.34	*1.21	*1.36
1957													
1958													
1959													
1960													

\* Not previously published; computed on basis of records previously withheld from publication. Daily figures are not available.

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	93	51	46	31	44	45	47	61	123	226	247	156	1,170
1952	56	42	31	28	35	70	60	427	118	150	108	199	1,320
1953	*82	*68	*67	*64	*71	*99	*70	*124	*89	*89	*54	*98	*974
1954	*90	*90	*82	*96	*124	*242	*129	*116	*93	*17	*14	*30	*1,120
1955	*78	*71	*57	*47	*40	*200	*516	*104	*216	*29	*53	*61	*1,470
1956	*85	*107	*97	*100	*111	*149	*131	*89	*17	*7.3	*21	*72	*990
1957													
1958													
1959													
1960													

\* Not previously published; see footnote to preceding table.

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	1.90	1,370
1951	1210	32	May 20, 1951	0.3	1.62	1,170	1.53	1,110
1952	1240	103	May 23, 1952	.2	1.82	1,320	1.95	1,410
1953	-	*28	May 29, 1953	*.2	*1.35	*974	*1.41	*1,020
1954	-	*8.3	June 3, 1954	*.1	*1.55	*1,120	*1.47	*1,070
1955	-	*85	Apr. 11, 1955	*.2	*2.03	*1,470	*2.15	*1,560
1956	-	*24	Sept. 11, 1956	*.1	*1.36	*990	-	-
1957								
1958								
1959								
1960								

\* Not previously published.





6460. Deer Creek in canyon, near Glenrock, Wyo.

Location (revised).--Lat 42°43', long 106°02', in sec.26, T.32 N., R.77 W., on left bank 500 ft upstream from Tolland No. 1 ditch and 14 miles southwest of Glenrock.

Drainage area.--139 sq mi (revised).

Records available.--May 1946 to September 1951.

Gage.--Water-stage recorder.

Average discharge.--5 years (1946-51), 47.1 cfs (34,100 acre-ft per year).

Extremes.--1946-51: Maximum discharge, 855 cfs Apr. 7, 1950 (gage height, 8.76 ft), from rating curve extended above 280 cfs; minimum, 1.2 cfs Aug. 30, 1951 (gage height, 3.38 ft).

Remarks.--Water rights totaling 46.73 cfs (priorities 1883-1930), for irrigation of about 3,280 acres, adjudicated by Wyoming for diversion above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	7.01	9.00	6.89	4.48	5.67	12.4	113	214	44.9	12.6	3.66	3.06	36.5

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	431	536	423	276	315	764	6,710	13,140	2,670	778	225	182	26,720

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean
		Discharge	Date				
1950	-	-	-	-	-	-	45.9
1951	1210	595	Apr. 18, 1951	1.3	36.5	26,720	-
							33,220

6465. Deer Creek at Glenrock, Wyo.

Location.--Lat 42°51'42", long 105°52'02", in SW $\frac{1}{4}$  NW $\frac{1}{4}$  sec.4, T.33 N., R.75 W., on left bank 40 ft downstream from bridge on U. S. Highways 20 and 87 in Glenrock and 0.6 mile upstream from mouth.

Drainage area.--212 sq mi (revised).

Records available.--April 1916 to September 1924, May 1928 to September 1933, March 1935 to September 1960. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Altitude of gage is 4,980 ft (from topographic map). Prior to June 1, 1935, staff gages at site 400 ft downstream at various datums. Datum lowered 2.00 ft June 15, 1916, and 1.00 ft May 26, 1928.

Average discharge.--38 years (1916-24, 1928-33, 1935-60), 56.8 cfs (41,120 acre-ft per year).

Extremes.--1916-24, 1928-33, 1935-60: Maximum discharge observed, 2,840 cfs Apr. 15, 1924 (gage height, 6.5 ft, site and datum then in use), from rating curve extended above 1,200 cfs; no flow at times in many years.

Remarks.--Diversions for irrigation of about 6,500 acres above station. One small reservoir above station (capacity, about 60 acre-ft) for irrigation.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	13.6	17.4	15.7	14.6	14.5	14.4	73.7	195	56.1	8.11	2.08	1.20	34.0
1952	4.90	10.1	9.63	15.1	15.8	19.3	163	309	78.1	2.27	.30	.28	52.4
1953	.23	4.52	11.9	13.9	13.5	18.8	58.7	315	56.8	.19	.44	.14	41.5
1954	.63	8.93	12.5	13.5	15.7	22.6	184	85.2	7.38	.27	.14	.06	29.1
1955	.95	10.3	10.6	10.6	10.2	13.5	140	125	83.0	3.91	.31	.08	34.0
1956	1.10	5.09	10.2	9.65	10.9	34.6	10.3	5.23	6.99	.12	.10	.04	7.87
1957	.15	5.47	12.5	13.6	15.6	18.4	61.7	254	87.7	8.31	.26	.44	40.1
1958	6.48	13.7	13.7	14.8	22.2	34.8	168	244	3.13	.93	.32	.09	43.7
1959	.55	6.14	10.3	9.08	9.54	11.6	95.9	120	1.36	.33	0	.01	22.1
1960	.42	2.24	13.5	13.7	12.3	84.8	174	82.1	.43	.31	0	0	32.0

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	837	1,030	968	900	805	888	4,390	11,980	2,150	499	128	71	24,650
1952	301	599	592	930	911	1,190	9,700	19,000	4,650	139	18	17	38,050
1953	14	269	731	855	740	1,160	3,490	19,340	3,370	12	27	8.3	30,020
1954	39	532	771	829	873	1,400	10,940	5,240	439	16	8.5	3.4	21,090
1955	59	610	654	649	567	832	8,340	7,700	4,940	240	19	4.8	24,610
1956	68	303	626	593	626	2,130	612	322	416	7.1	6.3	2.4	5,710
1957	9.1	326	768	838	867	1,130	3,670	15,630	5,220	511	16	26	29,010
1958	398	916	840	910	1,230	2,140	10,010	14,990	186	57	20	5.6	31,600
1959	34	366	633	559	530	728	5,700	7,350	81	20	0	.8	16,000
1960	26	133	833	845	708	5,220	10,340	5,050	26	19	0	0	23,200

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	44.5	32,210
1951	1210	399	May 22, 1951	0.2	34.0	24,650	32.2	25,300
1952	1240	964	May 27, 1952	.1	52.4	38,050	51.7	37,570
1953	1280	705	May 29, 1953	.1	41.5	30,020	41.9	30,340
1954	1340	458	Apr. 7, 1954	0	29.1	21,090	29.1	21,070
1955	1390	785	Apr. 27, 1955	0	34.0	24,610	33.5	24,290
1956	1440	333	Mar. 24, 1956	0	7.87	5,710	8.01	5,820
1957	1510	459	May 26, 1957	.1	40.1	29,010	41.4	29,960
1958	1560	845	Apr. 17, 1958	0	43.7	31,600	42.2	30,580
1959	1630	363	Apr. 26, 1959	0	22.1	16,000	22.1	15,960
1960	1710	1,020	Mar. 29, 1960	0	32.0	23,200	-	-

## PLATTE RIVER BASIN

6468. North Platte River near Glenrock, Wyo.

Location.--Lat 42°50'10", long 105°45'30", in NW¼NE¼ sec.17, T.33 N., R.74 W., on left bank 0.8 mile downstream from Sand Creek, 1.0 mile downstream from Dave Johnston powerplant, and 5.8 miles east of Glenrock city limits.

Drainage area.--17,487 sq mi (revised), of which 5,123 sq mi (including 3,950 sq mi in Great Divide Basin in southern Wyoming) is probably noncontributing.

Records available.--October 1959 to September 1960.

Gage.--Water-stage recorder. Altitude of gage is 4,920 ft (from topographic map).

Extremes.--1959-60: Maximum discharge, 3,080 cfs July 9, 1960 (gage height, 2.70 ft); minimum daily, 329 cfs Feb. 27, 1960.

Remarks.--Flow completely regulated by Seminoe, Pathfinder, and Alcova Reservoirs (see elsewhere in this report). Slight regulation 1.0 mile upstream by storage pond for Dave Johnston powerplant (capacity, 755 acre-ft). Natural flow of stream affected by transbasin diversions, storage reservoirs, power development, diversions for irrigation, and return flow from irrigated areas.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1960	1,108	1,211	943	898	839	825	1,487	1,733	1,347	1,963	1,864	1,126	1,281

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1960	68,210	72,080	57,970	55,230	48,240	50,740	88,500	106,600	80,130	120,700	114,600	66,980	930,000

6475. Box Elder Creek at Boxelder, Wyo.

Location.--Lat 42°37', long 105°52', in SW¼SW¼ sec.32, T.31 N., R.75 W., on left bank just downstream from private bridge at Hiser Ranch (old Boxelder Post Office), an eighth of a mile downstream from Snowshoe Creek and 17 miles south of Glenrock.

Drainage area.--63.0 sq mi (revised).

Records available.--April 1946 to September 1951.

Gage.--Water-stage recorder. Datum of gage is 6,704.18 ft above mean sea level, datum of 1929. Prior to June 7, 1946, staff gage at same site and datum.

Average discharge.--5 years (1946-51), 34.6 cfs (25,050 acre-ft per year).

Extremes.--1946-51: Maximum discharge, 496 cfs May 21, 1949, from rating curve extended above 330 cfs; maximum gage height recorded, 4.78 ft May 4, 1947; no flow at times.

Remarks.--Water rights totaling 1.8 cfs (priorities 1888-1902), for irrigation of about 120 acres, adjudicated by Wyoming for diversion above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	3.15	3.19	2.43	1.88	2.20	5.64	47	225	51.9	8.14	2.08	0.60	2.57

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	194	190	149	115	122	347	2,800	13,840	3,090	500	128	36	21,510

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	31.4	22,750
1951	1241	432	May 21, 1951	0.2	29.7	21,510	-	-

6480. Box Elder Creek near Careyhurst, Wyo.

Location.--Lat 42°50'08", long 105°40'24", in NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec.13, T.33 N., R.74 W., on right bank 0.9 mile south of Careyhurst and  $2\frac{1}{4}$  miles upstream from mouth.

Drainage area.--202 sq mi.

Records available.--May to December 1911, October 1915 to September 1924, May 1928 to October 1932, April to September 1933, April 1935 to September 1960. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Altitude of gage is 4,930 ft (from topographic map). May 18 to Oct. 30, 1911, Apr. 9, 1916, to Sept. 30, 1924, staff gage within half a mile of present site at different datum. May 26 to Oct. 4, 1938, staff gage at site 30 ft upstream at present datum.

Average discharge.--38 years (1915-24, 1928-32, 1935-60), 44.5 cfs (32,220 acre-ft per year).

Extremes.--1911, 1915-24, 1928-33, 1935-60: Maximum discharge, 2,360 cfs May 23, 1933 (gage height, 9.04 ft), from rating curve extended above 1,200 cfs; no flow at times in many summers.

Remarks.--Diversions for irrigation of about 10,200 acres above station. Water rights for 3.9 cfs for municipal supply of Douglas adjudicated for diversion above station. Several small reservoirs above station (combined capacity, about 276 acre-ft) for irrigation.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	4.85	9.63	10.4	9.44	7.45	2.00	31.5	214	35.5	3.41	0.65	0.95	27.7
1952	4.16	6.30	5.40	6.91	6.72	8.24	140	275	52.9	.34	.28	.98	42.4
1953	4.56	4.74	6.53	7.70	6.58	6.48	50.9	246	54.2	.50	.37	.30	32.7
1954	.33	3.45	5.45	5.90	1.35	7.52	89.5	71.0	4.43	.85	.78	.90	16.0
1955	1.67	3.67	5.67	5.53	6.81	8.62	110	117	99.6	2.84	.75	1.36	30.2
1956	2.21	2.19	7.14	7.12	6.21	6.37	7.20	4.91	1.25	1.30	1.28	1.19	4.03
1957	.64	.97	4.32	3.65	3.80	.60	36.1	280	90.8	2.69	1.88	1.30	35.8
1958	5.37	11.1	10.1	8.98	12.2	19.9	116	185	3.00	.91	.62	.56	31.2
1959	1.15	4.85	5.69	6.62	6.99	6.86	66.2	144	5.89	.90	.91	1.29	21.1
1960	1.90	4.93	6.05	6.04	9.12	50.5	94.6	72.8	5.20	.97	1.19	.78	21.2

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	298	573	637	580	414	123	1,870	13,150	2,110	209	40	57	20,060
1952	256	375	332	425	387	507	8,350	16,920	3,150	21	17	58	30,800
1953	280	282	401	474	365	399	3,030	15,120	3,230	31	23	18	23,650
1954	20	205	335	363	75	462	5,330	4,360	264	52	48	53	11,570
1955	103	218	348	340	378	530	6,540	7,180	5,930	175	46	81	21,870
1956	136	131	439	438	357	392	429	302	74	80	78	71	2,930
1957	39	58	266	224	211	37	2,150	17,150	5,400	165	114	77	25,890
1958	330	662	619	551	680	1,220	6,870	11,350	178	50	38	33	22,580
1959	71	289	350	407	388	422	3,940	8,850	350	58	56	77	15,260
1960	117	293	372	372	525	3,100	5,630	4,480	310	60	73	46	15,380

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	32.0	23,160
1951	1210	482	May 22, 1951	0.4	27.7	20,060	27.0	19,520
1952	1240	870	May 27, 1952	.2	42.4	30,800	42.4	30,800
1953	1280	504	May 29, 1953	.2	32.7	23,650	32.1	23,250
1954	1340	249	Apr. 28, 1954	.2	16.0	11,570	16.1	11,680
1955	1390	368	June 16, 1955	.2	30.2	21,870	30.3	21,910
1956	1440	44	Mar. 29, 1956	.4	4.03	2,930	3.56	2,580
1957	1510	392	June 1, 1957	.2	35.8	25,890	36.9	26,740
1958	1590	535	Apr. 17, 1958	.3	31.2	22,580	30.0	21,680
1959	1650	344	May 5, 1959	.4	21.1	15,260	21.2	15,330
1960	1710	398	Mar. 28, 1960	.5	21.2	15,380	-	-

## 6490. La Prele Creek near Douglas, Wyo.

Location.--Lat 42°40', long 105°36', in sec.5, T.31 N., R.73 W., on right bank 13 miles southwest of Douglas. This station is above La Prele Reservoir.

Drainage area.--135 sq mi (revised).

Records available.--August 1919 to September 1960.

Gage.--Water-stage recorder. Altitude of gage is about 5,600 ft (from nearby line of levels).

Average discharge.--41 years (1919-60), 38.4 cfs (27,800 acre-ft per year).

Extremes.--1919-60: Maximum discharge, 1,220 cfs May 11, 1920 (gage height, 11.4 ft, from floodmark), from rating curve extended above 800 cfs; no flow at times in 1936, 1939-40, 1943.

Remarks.--Diversions for irrigation of about 7,200 acres above station. Several small reservoirs above station (combined capacity, about 140 acre-ft) for irrigation.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	10.1	11.1	8.93	7.30	8.26	8.36	46.3	241	58.8	12.5	6.05	7.45	35.7
1952	11.6	8.90	8.29	7.54	8.12	9.89	128	278	38.0	7.84	2.67	2.21	42.7
1953	4.91	4.18	6.70	7.41	7.45	14.0	58.8	226	50.2	4.15	2.90	2.36	32.7
1954	2.71	4.12	4.39	5.71	6.48	15.2	49.1	22.3	6.53	1.96	2.00	.71	10.1
1955	.73	2.13	4.63	4.60	5.04	9.47	77.0	86.5	48.9	6.34	2.98	1.18	20.8
1956	1.26	4.73	6.45	5.19	4.09	10.1	6.83	13.7	7.02	2.16	1.27	1.09	5.34
1957	1.57	4.68	5.61	4.91	6.75	11.2	40.4	288	99.9	12.7	6.42	5.57	41.0
1958	8.12	10	8	7	8.1	12.3	66.0	117	9.50	6.25	2.27	.51	21.4
1959	1.50	2.97	2.98	5.95	6.70	9.02	65.6	137	17.0	10.1	2.47	1.49	22.0
1960	3.89	4.01	5.06	4.51	5.50	27.8	51.8	36.6	7.02	4.55	2.40	1.18	12.9

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	618	659	549	449	459	514	2,750	14,790	3,500	766	372	443	25,870
1952	712	530	510	463	467	608	7,600	17,070	2,260	432	164	131	31,000
1953	302	249	412	456	414	863	3,500	13,910	2,990	255	179	140	23,670
1954	166	245	270	351	360	935	2,920	1,370	398	121	123	42	7,290
1955	45	127	284	283	280	563	4,580	5,320	2,910	390	183	70	15,060
1956	78	281	397	319	235	621	406	844	418	133	78	65	3,880
1957	96	279	345	302	375	692	2,410	17,730	5,950	782	395	331	29,690
1958	499	595	492	430	450	755	3,930	7,220	565	385	140	31	15,490
1959	92	177	183	366	372	555	3,900	8,430	1,010	624	152	88	15,950
1960	239	238	311	277	316	1,710	3,080	2,250	418	280	147	70	9,340

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean
		Discharge	Date				
1950	-	-	-	-	-	-	30.6
1951	1210	635	May 16, 1951	3.1	35.7	25,870	35.6
1952	1240	901	May 26, 1952	1.6	42.7	31,000	41.6
1953	1280	491	May 29, 1953	2.2	32.7	23,670	32.3
1954	1340	106	Apr. 15, 1954	.5	10.1	7,290	9.76
1955	1390	372	Apr. 27, 1955	.2	20.8	15,060	21.2
1956	1440	124	May 27, 1956	.7	5.34	3,880	5.29
1957	1510	626	May 18, 1957	.7	41.0	29,690	42.2
1958	1560	236	May 15, 1958	.4	21.4	15,490	19.8
1959	1630	330	May 5, 1959	.8	22.0	15,950	22.5
1960	1710	202	Mar. 26, 1960	.9	12.9	9,340	-

6495. La Prele Creek near Orpha, Wyo.

Location.--Lat 42°50'12", long 105°29'25", in NW $\frac{1}{4}$  sec.15, T.33 N., R.72 W., on left bank 20 ft downstream from highway bridge,  $\frac{1}{2}$  miles upstream from mouth, and  $\frac{1}{2}$  miles south-east of Orpha.

Drainage area.--177 sq mi (revised).

Records available.--April to August 1916, April to September 1918, April to September 1923, April to September 1924, May 1928 to September 1933, April 1935 to September 1960. Monthly discharge only for some periods, published in WSP 1310. Prior to May 1928, published as "near Fetterman."

Gage.--Water-stage recorder. Altitude of gage is 4,880 ft (from topographic map). Prior to May 26, 1928, staff gages at site about a quarter of a mile downstream at different datums. May 26, 1928, to Sept. 30, 1933, staff gage at present site at datum 0.5 ft higher. Apr. 1 to June 2, 1935, staff gage at present site and datum.

Average discharge.--30 years (1928-33, 1935-60), 12.4 cfs (8,980 acre-ft per year).

Extremes.--1916, 1918, 1923-24, 1928-33, 1935-60: Maximum discharge, 1,340 cfs Sept. 6, 1946 (gage height, 7.30 ft), from rating curve extended above 460 cfs; no flow at times in many years.

Remarks.--Flow regulated by La Prele Reservoir (capacity, 20,000 acre-ft); also several small reservoirs above station (combined capacity, about 140 acre-ft) for irrigation. Diversions above station for irrigation of about 21,000 acres.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	18.7	15.2	12.4	11.5	11.2	9.74	8.95	7.04	8.49	5.32	1.77	8.54	9.90
1952	18.7	14.9	10.6	11.1	8.81	11.2	13.2	6.88	8.97	4.31	4.07	5.80	9.88
1953	10.5	12.0	11.6	13.2	8.37	9.56	12.6	2.71	.55	.49	2.47	.61	7.04
1954	1.10	.99	6.03	9.26	5.24	11.2	3.34	.24	.08	.15	.13	.10	3.16
1955	.15	.18	7.33	6.97	7.04	13.1	18.8	2.02	1.49	.10	.19	.02	4.76
1956	1.17	9.74	8.49	6.90	6.99	7.15	1.29	.11	.03	.12	.33	.08	3.52
1957	.06	2.17	4.09	4.64	5.64	1.51	.39	9.96	7.00	5.11	1.15	9.42	4.29
1958	12.5	12.8	11.7	11.3	10.4	10.9	12.9	5.81	.08	.52	.19	.11	7.22
1959	.12	2.02	6.35	7.14	9.35	7.01	2.27	.31	.39	1.27	.12	.34	3.03
1960	4.26	5.19	6.15	5.85	5.08	7.72	1.01	.31	.05	.30	0	0	3.00

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1,150	906	764	708	625	599	532	433	505	327	109	508	7,170
1952	1,150	887	649	685	507	690	786	425	534	265	250	345	7,170
1953	645	711	714	809	465	588	749	167	33	30	152	36	5,100
1954	67	59	371	570	291	691	199	15	5.0	9.1	7.7	6.1	2,290
1955	9.5	11	450	429	391	804	1,120	124	89	6.3	12	1.4	3,450
1956	72	579	522	424	402	439	77	6.9	1.8	7.5	20	5.0	2,560
1957	3.6	129	252	285	313	93	23	613	417	314	71	590	3,100
1958	766	763	720	693	578	673	767	357	4.6	32	12	6.5	5,370
1959	7.3	120	391	439	519	431	135	19	25	78	7.3	20	2,190
1960	262	309	378	360	292	474	60	19	3.2	18	0	0	2,180

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	10.7	7,760
1951	1210	26	Sept. 30, 1951	0	9.90	7,170	9.71	7,030
1952	1240	63	Mar. 29, 1952	.7	9.88	7,170	9.03	6,560
1953	1280	19	Oct. 13, 1952	.1	7.04	5,100	4.67	3,530
1954	1340	39	Apr. 1, 1954	0	3.16	2,290	3.13	2,280
1955	1390	134	June 1, 1955	0	4.76	3,450	5.73	4,150
1956	1440	39	July 17, 1956	0	3.52	2,560	2.44	1,770
1957	1510	156	May 12, 1957	0	4.29	3,100	5.86	4,970
1958	1560	133	July 30, 1958	0	7.42	5,370	6.03	3,640
1959	1630	46	July 13, 1959	.1	3.03	2,190	3.62	2,620
1960	1710	77	July 4, 1960	0	3.00	2,180	-	-

6500. North Platte River near Douglas, Wyo.

Location.--Lat 42°41'00", long 105°23'26", in NW $\frac{1}{4}$ SE $\frac{1}{4}$  sec.5, T.31 N., R.71 W., on right bank 2 miles downstream from Bedtick Creek,  $\frac{3}{4}$  miles upstream from Wagonhound Creek, and 4 miles south of Douglas.

Drainage area.--18,328 sq mi (revised), of which 5,139 sq mi (including 3,950 sq mi in Great Divide Basin in southern Wyoming) is probably noncontributing.

Records available.--May 1891 to September 1894, April 1919 to September 1923 (irrigation seasons only), April 1929 to September 1939, April 1946 to September 1959. Published as "at Douglas" 1891-94, 1929-39.

Gage.--Water-stage recorder. Datum of gage is 4,743.56 ft above mean sea level, datum of 1929. Prior to Apr. 28, 1932, staff or chain gages at sites 4 to 7 miles upstream at various datums. Apr. 28, 1932, to Sept. 30, 1939, water-stage recorder at site 6 miles upstream at different datum.

Average discharge.--23 years (1929-39, 1946-59), 1,429 cfs (1,035,000 acre-ft per year).

Extremes.--1929-39, 1946-59: Maximum discharge recorded, 16,700 cfs July 13, 1937 (gage height, 8.44 ft, site and datum then in use); minimum daily, 45 cfs Jan. 8, 1937.

Remarks.--Natural flow of stream affected by transbasin diversions, storage reservoirs, power developments, ground-water withdrawals and diversions for irrigation of about 385,000 acres above station, and return flow from irrigated areas. Records of chemical analyses for the periods June to August 1949 and August 1950 to June 1953, suspended sediment loads for the period April 1947 to September 1952, and water temperatures for the period June 1949 to September 1952 are published in reports of Geological Survey. (After September 1948, published as North Platte River above Bedtick Creek, near Douglas, Wyo.)

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	235	196	156	118	125	110	346	2,068	2,602	4,189	4,260	2,299	1,403
1952	235	180	124	104	144	172	1,129	3,327	5,616	4,280	4,798	3,478	1,969
1953	565	161	148	164	157	160	461	1,723	2,530	4,568	3,591	2,421	1,397
1954	165	139	125	127	150	158	330	983	1,777	3,640	3,397	565	973
1955	130	112	111	96.3	113	197	444	305	1,287	2,675	3,638	1,815	834
1956	131	117	116	101	96.9	141	108	2,006	2,906	4,104	4,267	795	1,250
1957	135	147	152	110	182	143	199	842	937	4,861	4,445	1,871	1,165
1958	192	157	149	229	130	206	3,197	4,874	4,118	4,100	3,319	944	1,795
1959	1,191	621	579	544	586	697	2,140	1,646	1,259	1,397	1,768	1,776	1,186
1960													

† Corrected.

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	14,460	11,640	9,580	7,280	6,950	6,770	20,610	27,200	154,900	257,600	261,900	136,800	1,016,000
1952	14,430	10,730	7,630	6,390	8,300	10,570	67,200	204,600	334,200	263,200	295,000	207,000	1,429,000
1953	34,730	9,590	9,100	10,060	8,700	9,820	27,420	106,000	150,500	280,900	220,800	144,100	1,012,000
1954	10,160	8,250	7,720	7,800	8,340	9,740	19,620	60,410	105,800	223,800	208,900	33,590	704,100
1955	8,010	6,640	6,840	5,920	6,290	12,090	26,390	18,740	17,090	164,500	223,700	108,600	604,200
1956	8,030	6,960	7,110	6,230	5,570	8,660	6,430	123,300	172,900	252,400	262,400	47,290	907,300
1957	8,280	8,740	9,360	6,750	10,130	8,580	11,830	39,500	55,730	300,100	273,300	111,400	843,700
1958	11,810	9,340	9,190	14,100	7,240	12,660	190,300	287,400	245,100	252,100	204,100	56,200	1,300,000
1959	73,220	36,960	35,590	33,430	32,570	42,880	127,300	101,200	74,920	85,880	108,700	105,700	858,400
1960													

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	1,614	1,168,000
1951	1210	5,620	July 12, 1951	70	1,403	1,016,000	1,399	1,013,000
1952	1240	8,620	June 15, 1952	74	1,969	1,429,000	1,997	1,450,000
1953	1280	7,390	May 29, 1953	110	1,397	1,012,000	1,360	984,400
1954	1340	7,420	July 16, 1954	93	973	704,100	966	699,500
1955	1390	9,070	Aug. 7, 1955	66	834	604,200	833	602,800
1956	1440	5,660	July 29, 1956	66	1,250	907,300	1,256	911,600
1957	1510	6,000	July 20, 1957	55	1,165	843,700	1,171	847,700
1958	1560	5,320	Apr. 19, 1958	88	1,795	1,300,000	1,954	1,415,000
1959	1630	3,230	Oct. 2, 1958	175	1,166	858,400	-	-
1960								



## 6505. Wagonhound Creek near La Bonte, Wyo.

Location--Lat 42°39'35", long 105°22'10", in SW<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub> sec.16, T.31 N., R.71 W., on left bank 0.6 mile upstream from mouth, 3½ miles northeast of La Bonte, and 6 miles south of Douglas.

Drainage area--112 sq mi (revised).

Records available--April 1916 to September 1924, May 1929 to June 1932, April 1937 to September 1960 (seasonal records only 1929-32, 1937-39). Monthly discharge only for some periods, published in WSP 1310.

Gage--Water-stage recorder. Altitude of gage is 4,741 ft (from topographic map). Prior to Oct. 18, 1939, staff or chain gages at several sites within half a mile of present site at various datums.

Average discharge--29 years (1916-24, 1939-60), 10.1 cfs (7,310 acre-ft per year).

Extremes--1916-24, 1929-32, 1937-60: Maximum discharge, 2,000 cfs July 12, 1937 (gage height, 10.0 ft, site and datum then in use, from floodmarks), from rating curve extended above 73 cfs on basis of slope-area measurement of peak flow; no flow at times in many years.

Remarks--Diversion for irrigation of about 3,900 acres above station. Diversion above station for supplemental irrigation supply to about 8,800 acres along La Prele Creek.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1.76	2.43	2.20	2.57	1.66	1.33	7.60	8.88	3.02	1.69	0.58	0.77	2.88
1952	.51	.69	.80	.97	.91	4.36	29.9	13.3	5.02	.80	.68	.43	4.84
1953	.68	.93	.66	1.37	1.55	4.22	25.1	23.1	.55	.30	.19	.04	4.90
1954	0	0	.08	.21	.07	.15	.52	.15	.04	0	0	0	.10
1955	0	0	0	0	0	.05	17.7	1.45	8.69	1.45	.64	.14	2.48
1956	.04	.26	.14	.20	.41	.43	.09	.14	.10	.02	0	0	.15
1957	0	0	0	0	0	0	.82	54.6	13.6	1.27	.74	.21	6.02
1958	.06	.69	1.32	1.39	1.78	4.69	10.4	7.10	2.88	1.13	.31	.15	2.66
1959	.11	.27	.25	.25	.30	.52	13.1	4.76	3.97	1.24	.17	.15	2.08
1960	.31	.24	.28	.20	.16	8.30	2.39	.91	.83	.28	.06	.04	1.18

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	108	145	135	158	92	82	452	546	180	104	36	-46	2,080
1952	31	41	49	60	52	268	1,780	820	299	49	42	25	3,520
1953	42	55	41	84	86	259	1,490	1,420	33	19	12	2.2	3,540
1954	0	0	5.2	13	4.0	9.1	31	18.9	2.4	0	0	0	.74
1955	0	0	0	0	0	2.81	1,050	89	517	89	39	8.1	1,790
1956	2.2	15	8.3	12	23	26	5.4	8.5	6.1	1.2	0	0	108
1957	0	0	0	0	0	0	49	3,360	812	78	46	12	4,360
1958	3.6	41	81	85	99	289	622	437	172	69	19	9.1	1,930
1959	6.7	16	15	15	16	32	777	293	236	76	11	8.9	1,500
1960	19	14	17	12	9.3	511	142	56	49	17	3.8	2.6	853

† Corrected.

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean
		Discharge	Date				
1950	-	-	-	-	-	-	3.26
1951	1210	104	May 17, 1951	0.3	2.88	2,080	2.51
1952	1240	215	May 23, 1952	.2	4.84	3,520	4.87
1953	1280	a137	May 8, 1953	0	4.90	3,540	4.71
1954	1340	2.8	Apr. 9, 1954	0	.10	.74	.09
1955	1390	191	June 1, 1955	0	2.48	1,790	2.52
1956	1440	16	May 27, 1956	0	.15	108	.11
1957	1510	263	May 19, 1957	0	6.02	4,360	6.19
1958	1560	40	July 21, 1958	0	2.66	1,930	2.54
1959	1630	129	Apr. 7, 1959	.1	2.08	1,500	2.09
1960	1710	120	Mar. 27, 1960	0	1.18	853	-

a Maximum recorded.

6510. West Fork La Bonte Creek near La Bonte, Wyo.

Location--Lat 42°28', long 105°41', in sec.23, T.29 N., R.74 W., on left bank just upstream from canyon in Downey Park, 150 ft downstream from confluence of Gould and Rocky Fork Creeks and 13 miles southwest of La Bonte.

Drainage area--20.6 sq mi (revised).

Records available--August 1946 to September 1951.

Gage--Water-stage recorder.

Average discharge--5 years (1946-51), 5.67 cfs (4,100 acre-ft per year).

Extremes--1946-51: Maximum discharge, 171 cfs Apr. 20, 1947 (gage height, 4.88 ft), from rating curve extended above 80 cfs; minimum daily, 0.1 cfs at times in most years.

Remarks--Water rights totaling 12.1 cfs (priorities 1910-14), for irrigation of about 846 acres, adjudicated by Wyoming for diversion above station. Diversion above station for supplemental supply to about 9,300 acres along La Prele Creek.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	0.65	1.07	0.5	0.2	0.2	0.6	10.1	14.8	3.88	0.77	0.28	0.25	2.78

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	40	63	31	12	11	37	603	909	231	47	17	15	2,020

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	4.46	3,230
1951	1210	51	May 16, 1961	-	2.78	2,020	-	-

5515. La Bonte Creek near La Bonte, Wyo.

Location.--Lat 42°39'00", long 105°21'24", in SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec.15, T.31 N., R.71 W., on left bank 0.9 mile upstream from mouth and 3 miles northeast of La Bonte.

Drainage area.--287 sq mi (revised).

Records available.--April 1916 to September 1924, May 1928 to November 1932, April to September 1933, April 1935 to September 1960. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Altitude of gage is 4,742 ft (from topographic map). Prior to May 4, 1935, staff or chain gages at site a quarter of a mile upstream at different datum. May 4 to June 3, 1935, staff gage at same site and datum.

Average discharge.--37 years (1916-24, 1928-32, 1935-60), 53.4 cfs (38,660 acre-ft per year).

Extremes.--1916-24, 1928-33, 1935-60: Maximum discharge observed, 2,750 cfs May 22, 23, 1923 (gage height, 7.5 ft, from floodmark, site and datum then in use), from rating curve extended above 1,100 cfs; no flow at times in many years.

Remarks.--Diversion for irrigation of about 8,300 acres above station. Diversion above station for supplemental irrigation supply to about 9,300 acres along La Prele Creek. One small reservoir above station (capacity, about 100 acre-ft) for irrigation.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	9.92	12.1	9.69	7.75	6.04	7.09	61.8	233	85.4	20.7	12.2	12.2	40.1
1952	9.47	9.75	7.26	5.63	5.89	12.7	254	330	69.9	12.2	7.87	7.35	61.1
1953	6.62	6.07	6.61	7.05	7.52	30.1	139	272	11.3	5.01	3.87	2.03	41.7
1954	1.85	4.60	5.52	5.41	4.26	8.72	13.2	7.92	3.42	3.55	2.28	.92	5.14
1955	.78	.98	2.55	2.85	5.11	10.3	131	64.7	48.2	9.30	4.00	2.93	23.5
1956	2.62	3.6	5.8	7.2	5.8	7.45	6.53	7.97	1.22	.29	2.13	.26	4.25
1957	1.27	1.03	1.53	1.72	2.85	10.5	130	404	112	9.68	5.21	5.87	57.5
1958	5.43	8.13	7.84	6.23	7.15	10.4	61.0	115	7.76	7.26	4.42	2.74	20.4
1959	4.35	6.50	5.49	3.76	6	10.5	127	191	20.7	16.9	2.72	2.56	33.3
1960	3.64	3.19	3.66	3.96	5.90	29.6	31.8	33.1	13.9	2.72	3.04	1.94	11.4

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	610	723	596	477	336	436	3,680	14,350	5,080	1,270	753	726	29,040
1952	582	580	446	346	339	780	15,130	20,280	4,160	749	484	437	44,310
1953	407	361	406	434	418	1,850	8,260	16,750	673	308	238	121	30,230
1954	112	274	340	332	237	536	786	487	203	218	140	55	3,720
1955	48	59	156	176	284	636	7,810	3,980	2,870	572	246	174	17,010
1956	161	214	357	443	334	458	388	490	73	18	131	16	3,080
1957	78	61	94	106	158	647	7,720	24,830	6,660	595	321	349	41,620
1958	334	484	482	383	397	637	3,630	7,060	462	447	272	163	14,750
1959	287	387	338	231	333	643	7,580	11,760	1,230	1,040	187	153	24,130
1960	224	190	225	244	339	1,820	1,890	2,030	825	167	187	115	8,260

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	36.5	26,420	
1951	1210	1,270	May 16, 1951	4.6	40.1	29,040	39.7	28,720	
1952	1240	1,030	May 23, 1952	4.2	61.1	44,310	60.5	43,680	
1953	1280	604	May 7, 1953	.9	41.7	30,230	41.1	29,780	
1954	1340	313	July 17, 1954	.4	5.14	3,720	4.50	3,260	
1955	1390	1,530	June 1, 1955	.2	23.5	17,010	24.1	17,480	
1956	1440	548	May 25, 1956	0	4.25	3,080	3.56	2,580	
1957	1510	1,080	May 19, 1957	0	57.5	41,620	59.0	42,690	
1958	1590	330	Apr. 17, 1958	1.8	20.4	14,750	19.9	14,440	
1959	1630	490	May 8, 1959	1.7	33.3	24,130	32.9	23,780	
1960	1710	342	June 10, 1960	1.5	11.4	8,260	-	-	

## 6520. North Platte River at Orin, Wyo.

Location.--Lat 42°39'02", long 105°09'46", in SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec.17, T.31 N., R.69 W., on right bank 630 ft downstream from bridge on U. S. Highway 87, a quarter of a mile upstream from Shawnee Creek, and 1.5 miles east of Orin.

Drainage area.--18,837 sq mi (revised), of which 5,142 sq mi (including 3,950 sq mi in Great Divide Basin in southern Wyoming) is probably noncontributing.

Records available.--January, April to November 1895, April to October 1896, January 1897 to December 1898, April to November 1899, April to September 1917, April to September 1918, May to September 1924, April 1958 to September 1960. Monthly discharge only for some periods, published in WSP 1310. Published as "at Orin Junction" 1895, 1897-99 and as "at McKinley" 1917-18.

Gage.--Water-stage recorder. Altitude of gage is 4,660 ft (from topographic map). Jan. 1, 1895, to Nov. 30, 1899, and May 1 to Sept. 30, 1924, staff gage at railroad bridge just upstream from U. S. Highway 87 at different datum. Apr. 1, 1917, to Sept. 30, 1918, staff gage at site 2 $\frac{1}{4}$  miles downstream at different datum.

Extremes.--1895-99, 1917-18, 1924, 1958-60: Maximum discharge observed, 23,300 cfs June 24, 1899 (gage height, 7.2 ft, site and datum then in use); minimum daily determined, 170 cfs Sept. 11-14, 1899.

Remarks.--Natural flow of stream affected by storage reservoirs, power developments, and diversions for irrigation and return flow from irrigated areas. Major regulation began after completion of Pathfinder Reservoir in April 1909.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1958	-	-	-	-	-	-	-	4,635	4,009	4,110	3,351	979	-
1959	1,292	839	566	628	595	701	2,326	1,874	1,237	1,437	1,683	1,687	1,224
1960	1,118	1,259	1,016	872	834	879	1,633	1,756	1,282	1,793	1,818	1,184	1,289

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1958	-	-	-	-	-	-	-	285,000	238,500	252,700	206,000	58,250	-
1959	79,440	58,010	54,830	58,600	53,020	43,110	138,400	115,200	73,590	88,390	103,500	100,400	886,500
1960	68,730	74,920	62,470	53,590	48,000	54,030	97,170	108,000	76,300	110,200	111,800	70,420	935,600

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1958	1560	5,510	Apr. 19, 1958	-	-	-	-	-
1959	1630	4,300	May 5, 1959	250	1,224	886,500	1,299	940,300
1960	1710	2,640	July 10, 1960	250	1,289	935,600	-	-

a Maximum during period April to September.

## 6527. Glendo Reservoir near Glendo, Wyo.

Location.--Lat 42°28'25", long 104°57'30", in E $\frac{1}{2}$ NW $\frac{1}{4}$  sec.24, T.29 N., R.68 W., on right bank in gate shaft house, half a mile southwest of Glendo Dam and 4 miles southeast of Glendo.

Drainage area.--19,494 sq mi (revised), of which 5,164 sq mi (including 3,950 sq mi in Great Divide Basin in southern Wyoming) is probably noncontributing.

Records available.--October 1957 to September 1960.

Gage.--Water-stage recorder for elevations above 4,543.50 ft. Datum of gage is 4,543.50 ft above mean sea level, datum of 1934 (adjusted 1940), levels by Bureau of Reclamation, gage readings have been reduced to elevations above mean sea level.

Extremes.--1957-60: Maximum contents, 566,900 acre-ft June 9, 1959 (elevation, 4,638.19 ft); no contents Oct. 1-16, 1957.

Remarks.--Reservoir is formed by rockfill dam; completed in October 1957. Storage began Oct. 17, 1957. Capacity, 798,400 acre-ft at elevation 4,653.00 ft (spillway crest). Dead storage, 12,060 acre-ft. Figures given herein represent total contents. Water is used for irrigation in North Platte River basin.

Cooperation.--Records furnished by Bureau of Reclamation.

Contents, in acre-feet, on last day of month

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958	6,500	16,010	26,320	32,670	42,210	54,050	186,600	344,900	450,500	406,200	306,600	193,000
1959	265,800	297,600	312,800	344,200	376,300	419,100	496,400	555,800	504,100	345,800	150,100	93,710
1960	162,900	234,600	289,300	339,600	387,300	392,400	467,200	536,000	430,300	223,100	86,270	87,470

## 6528. North Platte River below Glendo Reservoir, Wyo.

Location.--Lat 42°27'25", long 104°56'50", in SW 1/4 sec.30, T.29 N., R.67 W., on right bank opposite Sand Draw, 1.3 miles upstream from Horseshoe Creek, 3.1 miles downstream from Glendo Dam, and 5.2 miles southeast of Glendo.

Drainage area.--19,497 sq mi (revised), of which 5,164 sq mi (including 3,950 sq mi in Great Divide Basin in southern Wyoming) is probably noncontributing.

Records available.--October 1957 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 4,488.94 ft above mean sea level, datum of 1929 (levels by Bureau of Reclamation).

Extremes.--1957-60: Maximum discharge, 9,200 cfs June 19, 1959 (gage height, 10.94 ft); minimum daily, 2.6 cfs Dec. 5, 8, 1960.

Remarks.--Flow completely regulated by Glendo Reservoir since Oct. 17, 1957 (see preceding station). Natural flow of stream affected by transbasin diversions, storage reservoirs, power developments, ground-water withdrawals and diversions for irrigation, and return flow from irrigated areas.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1958	115	2	2	2	2	2	693	1,873	1,976	4,676	4,779	2,801	1,422
1959	9.65	29.9	324	75.2	5.00	5.32	773	724	2,006	4,017	4,827	2,638	1,296
1960	5.02	51.3	5.68	40.5	28.8	8.00	203	508	2,955	4,762	3,931	1,180	1,213

Monthly and yearly mean discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1958	7,040	119	123	123	111	123	41,210	115,200	117,600	287,500	293,900	166,700	1,030,000
1959	593	1,780	19,910	4,620	277	327	45,990	44,530	119,400	247,000	296,800	157,000	938,200
1960	308	3,050	349	2,490	1,660	49,200	12,080	31,220	175,800	32,800	241,700	70,240	880,900

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet		
		Discharge	Date							
1958	1560	5,610	July 29, 1958	-	1,422	1,030,000	1,443	1,045,000		
1959	1630	9,200	June 19, 1959	3.6	1,296	938,200	1,270	919,700		
1960	1710	7,480	July 16, 1960	2.6	1,213	880,900	-	-		

## 6530. Horseshoe Creek near Esterbrook, Wyo.

Location.--Lat 42°21'30", long 105°26'35", in NE 1/4 sec.35, T.28 N., R.72 W., on right bank 30 ft downstream from Trail Creek and 5 1/2 miles southwest of Esterbrook.

Drainage area.--45.5 sq mi (revised).

Records available.--June 1946 to September 1951.

Gage.--Water-stage recorder. Altitude of gage is 6,350 ft (from topographic map).

Average discharge.--5 years (1946-51), 12.6 cfs (9,120 acre-ft per year).

Extremes.--1946-51: Maximum discharge, 195 cfs June 21, 1947 (gage height, 4.47 ft), from rating curve extended above 80 cfs; no flow at times in 1948-49.

Remarks.--Water rights totaling 5.51 cfs (priorities 1904-41), for irrigation of about 389 acres, adjudicated by Wyoming for diversion above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1.72	1.83	1.29	0.95	1.38	2.01	13.8	78.0	28.5	6.32	1.42	0.32	11.5

Monthly and yearly mean discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	106	109	79	59	77	124	821	4,800	1,690	389	87	19	8,360

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet		
		Discharge	Date							
1950	-	-	-	-	-	-	-	-	-	-
1951	1210	191	May 17, 1951	0.2	11.5	8,360	12.1	8,790		

6535. Horseshoe Creek near Glendo, Wyo.

Location.--Lat 42°27'09", long 104°58'11", in SE $\frac{1}{4}$  sec.26, T.29 N., R.68 W., on left bank 0.6 mile upstream from mouth and  $4\frac{1}{2}$  miles southeast of Glendo.

Drainage area.--211 sq mi (revised).

Records available.--April 1916 to September 1918, April 1921 to September 1924, May 1928 to November 1932, April to September 1933, April 1935 to September 1960. Monthly discharge only for some periods, published in WSP 1310. Records for April to September 1919, published in WSP 469 and 506, have been found to be unreliable and should not be used.

Gage.--Water-stage recorder. Altitude of gage is 4,500 ft (from topographic map). Prior to June 9, 1935, staff or chain gages at sites about 2 miles upstream at different datums.

Average discharge.--34 years (1916-18, 1921-24, 1928-32, 1935-60), 27.0 cfs (19,550 acre-ft per year).

Extremes.--1916-18, 1921-24, 1928-33, 1935-60: Maximum discharge, 11,900 cfs May 30, 1935 (gage height, 8.80 ft, from floodmarks, present site and datum), from rating curve extended above 750 cfs on basis of slope-area measurement of peak flow; no flow at times in 1918, 1935, 1939-40.

Remarks.--Divisions for irrigation of about 7,600 acres above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	6.64	7.16	7.03	5.50	5.09	4.59	8.41	116	24.0	8.37	7.03	6.54	17.4
1952	4.41	3.80	7.63	7.52	7.02	9.21	78.1	158	118	20.5	6.04	4.46	35.4
1953	5.21	5.12	5.84	6.10	6.19	18.1	56.0	116	11.9	6.72	4.93	3.46	20.6
1954	3.02	3.83	3.51	3.20	3.05	3.30	2.71	1.56	5.02	1.55	1.72	1.90	2.69
1955	1.86	2.52	2.00	1.47	1.52	1.74	21.6	7.63	19.1	12.0	7.52	3.60	6.87
1956	3.75	3.97	4.13	4.26	3.97	3.90	3.78	4.01	3.71	1.27	.89	1.49	3.26
1957	2.30	2.22	1.97	1.51	1.77	1.66	2.55	255	118	22.4	7.38	6.06	35.6
1958	5.42	6.96	9.01	7.50	8.01	9.05	19.4	23.7	12.7	6.09	4.35	5.13	9.78
1959	4.57	5.09	5.23	3.96	3.11	3.10	10.5	70.1	27.8	14.7	5.02	2.74	13.1
1960	5.45	4.83	4.22	4.22	4.01	3.28	5.31	4.47	13.5	4.20	3.86	2.62	4.98

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	408	426	432	338	282	282	500	7,130	1,430	515	432	389	12,560
1952	271	226	469	462	404	566	4,650	9,700	7,040	1,260	371	285	25,680
1953	320	305	359	375	344	1,110	3,330	7,140	710	413	303	206	14,920
1954	185	228	216	197	170	203	161	96	180	94	106	113	1,950
1955	114	150	123	91	84	107	1,290	469	1,140	736	462	214	4,980
1956	230	236	254	262	228	240	225	246	221	78	55	89	2,360
1957	141	132	121	93	98	102	152	15,700	7,030	1,380	452	361	25,760
1958	333	414	554	461	445	557	1,150	1,460	758	374	268	305	7,080
1959	291	303	322	244	173	190	625	4,310	1,660	905	308	183	9,480
1960	335	287	259	259	231	202	316	275	801	258	237	156	3,620

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	16.1	11,660
1951	1210	-	-	-	-	-	16.9	12,260
1952	1240	376	May 16, 1951	3.8	17.4	12,560	35.4	25,700
1953	1290	2,400	June 3, 1952	2.6	35.4	25,680	20.1	14,560
1954	1340	220	May 8, 1953	2.6	20.6	14,920	2.36	1,710
1955	1390	27	Aug. 7, 1954	.9	2.69	1,950	7.33	5,310
		196	July 11, 1955	1.3	6.87	4,980		
1956	1440	229	June 18, 1956	.4	3.26	2,360	2.81	2,040
1957	1510	788	May 19, 1957	.8	35.6	25,760	36.8	26,670
1958	1560	66	May 17, 1958	3.1	9.78	7,080	9.24	6,680
1959	1630	140	May 9, 1959	2.1	13.1	9,480	13.1	9,460
1960	1710	370	June 7, 1960	2.1	4.98	3,620	-	-



6545. Cottonwood Creek near Fletcher Park, Wyo.

Location.--Lat 42°18'45", long 105°14'13", at east boundary of sec.16, T.27 N., R.70 W., on left bank a quarter of a mile downstream from Held Creek and 8½ miles northeast of Fletcher Park.

Drainage area.--51.1 sq mi (revised).

Records available.--June 1946 to September 1951.

Gage.--Water-stage recorder. Altitude of gage is 5,480 ft (from topographic map).

Average discharge.--5 years (1946-51), 7.64 cfs (5,530 acre-ft per year).

Extremes.--1946-51: Maximum discharge, 236 cfs June 22, 1947 (gage height, 5.01 ft), from rating curve extended above 60 cfs by logarithmic plotting; minimum daily, 0.1 cfs Sept. 4, 5, 13-17, 20, 21, 25-28, 1946.

Remarks.--Water rights totaling 7.8 cfs (priorities 1873 to 1919), for irrigation of about 550 acres, adjudicated by Wyoming for diversion above station. Natural flow of stream also affected by two small reservoirs above station (total adjudication, 22 acre-ft per year) for irrigation.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	0.76	0.94	1.22	0.97	0.93	1.18	2.74	31.8	14.8	7.08	4.14	1.32	5.71

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	47	56	75	60	52	73	163	1,950	884	435	255	78	4,130

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	5.91	4,270
1951	1210	149	May 16, 1951	0.6	5.71	4,130	-	-



6550. Cottonwood Creek at Wendover, Wyo.

Location.--Lat 42°19'32", long 104°52'33", in SE $\frac{1}{4}$  sec.10, T.27 N., R.67 W., on left bank at Wendover, 1,000 ft upstream from mouth.

Drainage area.--196 sq mi (revised).

Records available.--April 1916 to September 1924, May 1929 to September 1933, April 1935 to September 1942, April 1946 to September 1955. No winter records prior to 1936 except for water years 1930-32. Monthly discharge only for some periods, published in WSP 1310. Published as "near Wendover" 1916-24.

Gage.--Water-stage recorder. Datum of gage is 4,421.52 ft above mean sea level, datum of 1929. Apr. 19, 1916, to Sept. 30, 1924, staff gages within three-quarters of a mile upstream at different datums. May 1, 1929, to Sept. 30, 1933, and Apr. 1 to May 23, 1935, chain gage at site a quarter of a mile upstream from present site at different datum. May 24, 1935, to Sept. 30, 1942, water-stage recorder at site 250 ft upstream from present site at different datum. Datum lowered 2.00 ft July 25, 1936.

Average discharge.--19 years (1929-32, 1935-42, 1946-55), 5.55 cfs (4,020 acre-ft per year).

Extremes.--1916-24, 1929-33, 1935-42, 1946-55: Maximum discharge, 4,140 cfs Sept. 23, 1940 (gage height, 12.13 ft, site and datum then in use, from floodmark), from rating curve extended above 140 cfs on basis of slope-area measurements at gage heights 7.57 and 12.13 ft; no flow July 12, 15, 1932.  
Maximum discharge known, about 5,800 cfs Aug. 15, 1927 (gage height, 10.6 ft, from floodmark, site and datum of 1929), by slope-area measurement.

Remarks.--Diversions for irrigation of about 3,000 acres above station. Two small reservoirs above station (total capacity, about 20 acre-ft) for irrigation.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	2.89	2.89	2.81	2.72	3.29	3.64	4.21	5.79	5.94	3.73	3.88	3.74	3.79
1952	3.51	3.21	3.07	3.38	3.00	4.42	4.73	5.99	24.2	3.74	3.71	2.99	5.47
1953	2.87	3.07	3.23	3.06	3.67	4.56	4.37	6.42	3.58	3.59	3.18	2.68	3.68
1954	2.68	2.65	2.61	2.75	2.81	2.36	2.20	2.24	1.96	2.15	2.42	2.27	2.42
1955	2.23	2.20	2.13	1.96	1.79	2.38	2.00	5.26	11.6	2.23	7.93	1.84	3.64

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	178	172	173	167	183	224	251	356	354	229	239	223	2,750
1952	216	191	189	208	173	272	282	368	1,440	230	228	178	3,980
1953	176	183	199	188	204	269	260	395	213	221	195	159	2,680
1954	165	158	160	169	156	145	131	138	117	132	149	135	1,760
1955	137	131	131	120	99	146	119	324	693	137	488	109	2,630

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	3.85	2,860	
1951	1210	320	June 22, 1951	2.5	3.79	2,750	3.80	2,820	
1952	1240	326	June 4, 1952	2.8	5.47	3,980	5.42	3,940	
1953	1280	190	Aug. 21, 1953	2.4	3.68	2,860	3.57	2,590	
1954	1340	58	Aug. 6, 1954	1.8	2.42	1,760	2.31	1,670	
1955	1390	1,730	June 1, 1955	1.7	3.64	2,630	-		

## 6555. Guernsey Reservoir near Guernsey, Wyo.

Location.--Lat 42°17'23", long 104°45'48", in NE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 27, T.27 N., R.66 W., on gate structure at right end of dam on North Platte River,  $1\frac{1}{4}$  miles northwest of Guernsey.

Drainage area.--20,173 sq mi (revised), of which 5,165 sq mi (including 3,950 sq mi in Great Divide Basin in southern Wyoming) is probably noncontributing.

Records available.--January 1928 to September 1960. Prior to October 1950 month-end figures only, published in WSP 1310.

Gage.--Electric tape and staff gages. Datum of gage is 4,370.00 ft above mean sea level, datum of 1929 (levels by Bureau of Reclamation); gage readings have been reduced to elevations above mean sea level. Prior to Dec. 22, 1933, staff gages at same site and datum.

Extremes.--1928-60: Maximum contents, 73,240 acre-ft Oct. 17, 1929 (elevation, 4,420.95 ft); minimum, 30 acre-ft Oct. 5, 6, 1958; minimum elevation observed, 4,361.50 ft Oct. 5, 1958.

Remarks.--Reservoir is formed by rockfill dam completed in July 1927. Capacity, 44,800 acre-ft at elevation 4,420 ft (top of spillway gate). Dead storage negligible. Figures given herein represent total contents. Usable contents published prior to October 1956. Water is used for irrigation in eastern Wyoming and western Nebraska, and for development of power. Records of chemical analyses for the period October 1950 to September 1951 are published in reports of Geological Survey.

Cooperation.--Records furnished by Bureau of Reclamation.

Contents, in acre-feet, on last day of month

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951	27,760	35,810	36,620	35,160	37,030	44,570	7,750	31,380	36,540	29,780	7,110	1,440
1952	333	7,620	16,380	24,520	32,390	39,720	49,470	45,130	46,590	20,310	21,620	12,290
1953	29,550	34,390	37,320	41,630	42,900	35,450	17,310	28,610	25,920	18,520	15,060	5,780
1954	16,890	26,120	33,670	41,870	14,700	24,240	43,760	17,780	26,230	17,970	26,680	3,430
1955	14,050	21,330	10,120	16,740	22,480	36,910	30,780	38,300	39,680	22,430	22,950	6,040
1956	17,620	25,670	20,710	28,070	34,490	37,320	15,100	25,160	20,730	20,290	26,750	6,380
1957	15,570	23,800	31,260	36,670	44,540	5,930	23,920	43,710	30,320	40,680	31,770	16,970
1958	26,180	27,010	27,840	28,010	29,060	29,970	31,320	30,190	27,680	32,360	27,040	4,050
1959	2,160	5,140	28,130	32,680	33,100	8,290	33,140	36,050	38,920	18,820	23,720	1,230
1960	2,690	6,740	8,540	10,820	12,360	32,490	23,750	38,020	23,680	26,470	6,330	2,260

6560. North Platte River below Guernsey Reservoir, Wyo.

Location.--Lat 42°16'50", long 104°45'15", in SE<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub> sec.27, T.27 N., R.66 W., on right bank 1 mile northwest of Guernsey and 1.1 miles downstream from Guernsey Dam.

Drainage area.--20,186 sq mi (revised), of which 5,165 sq mi (including 3,950 sq mi in Great Divide Basin in southern Wyoming) is probably noncontributing. Area at site used May 1909 to December 1927, 20,267 sq mi (revised).

Records available.--June 1900 to September 1960 (no winter records prior to 1903). Monthly discharge only for some periods, published in WSP 1310. Published as "near Guernsey" 1900-1901, 1904; as "at Guernsey" 1902-3, 1905-8, March to October 1912; as "at Whalen" 1909; as North Platte River and Interstate Canal at Whalen 1910-11, 1913-16; and as "above Whalen" 1917-27.

Gage.--Water-stage recorder. Altitude of gage is 4,340 ft (from topographic map). Prior to Nov. 17, 1908, and Mar. 30 to Oct. 31, 1912, staff gages downstream at several sites within three-quarters of a mile at different datums. May 1, 1909, to Dec. 31, 1927, staff gages at different datums on river and diversion canals at Whalen Dam about 9 miles downstream.

Average discharge.--58 years (1902-60), 1,911 cfs (1,384,000 acre-ft per year).

Extremes.--1900-60: Maximum discharge, 30,000 cfs June 2 or 3, 1908 (gage height, 11.5 ft, from floodmarks, site and datum then in use), from rating curve extended above 13,000 cfs; no flow Feb. 28, 1927, Nov. 19 to Dec. 8, Dec. 10-12, 14, 15, 1951.

Remarks.--Natural flow of stream affected by transbasin diversions, storage reservoirs, power developments, ground-water withdrawals and diversions for irrigation, and return flow from irrigated areas. Flow completely regulated by Guernsey Reservoir since 1927 (see preceding page). Small diversions for irrigation between this station and diversion dam at Whalen. Records of chemical analyses for the period December 1950 to September 1958, suspended sediment loads for the period April 1947 to June 1953, and water temperatures for the periods October 1951, April to September 1952, March to September 1953, and May 1954 to September 1958 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	225	86.0	175	179	173	55.5	916	1,957	2,513	4,081	4,579	2,545	1,467
1952	369	165	17.9	12.1	61.2	139	1,238	3,918	5,832	4,720	4,778	3,750	2,087
1953	446	121	132	154	159	379	873	1,841	2,471	4,459	3,588	2,676	1,451
1954	13.5	23.7	29.6	26.1	685	47.4	20.0	1,352	1,292	3,556	3,205	1,158	956
1955	15.3	20.6	327	13.0	11.6	16.6	777	331	427	2,758	3,610	2,202	883
1956	10.2	14.0	265	18.3	11.1	171	545	1,633	2,881	3,995	4,092	1,308	1,253
1957	11.0	11.6	12.5	15.2	21.3	776	11.5	1,068	1,406	4,581	4,397	2,276	1,229
1958	11.3	10.0	11.0	12.5	15.0	14.0	660	1,897	2,029	4,529	4,824	3,240	1,449
1959	77.5	8.5	17.6	16.7	19.4	422	415	767	2,029	4,291	4,758	3,113	1,356
1960	26.9	5.18	5.68	7.87	9.31	464	404	259	3,178	5,114	4,332	1,344	1,270

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	13,710	5,120	10,730	11,000	9,580	3,410	54,480	120,500	149,500	250,900	281,600	151,500	1,062,000
1952	22,710	9,820	1,100	744	3,520	8,530	73,680	240,900	347,000	290,200	293,800	223,100	1,515,000
1953	27,400	7,200	8,150	9,440	8,850	23,310	51,920	113,200	147,100	274,200	220,600	159,300	1,051,000
1954	829	1,410	1,820	1,610	38,040	2,910	1,190	83,110	76,900	218,600	197,100	68,940	692,500
1955	942	1,230	20,130	799	645	1,020	46,250	20,330	25,430	169,600	222,000	131,000	639,400
1956	627	835	16,280	1,120	637	10,520	32,410	100,400	171,400	245,600	251,600	77,850	909,300
1957	676	688	768	956	1,180	47,710	688	65,690	83,640	281,700	270,400	135,400	889,500
1958	696	595	678	768	722	859	39,250	116,600	120,700	278,500	296,600	192,800	1,049,000
1959	4,760	506	1,080	1,030	1,080	25,930	24,690	47,160	120,700	263,800	291,300	185,200	967,200
1960	1,650	308	349	484	536	28,540	24,030	15,940	189,100	314,400	266,400	79,950	921,700

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	1,660	1,202,000	
1951	1210	4,980	July 25, 1951	16	1,467	1,062,000	1,472	1,066,000	
1952	1240	8,300	June 12, 1952	0	2,087	1,515,000	2,100	1,524,000	
1953	1280	4,940	July 10, 1953	15	1,451	1,051,000	1,398	1,012,000	
1954	1340	4,980	July 13, 1954	8	956	692,500	982	710,700	
1955	1390	4,680	Aug. 16, 1955	10	883	639,400	877	634,800	
1956	1440	5,220	July 15, 1956	9	1,253	909,300	1,231	895,700	
1957	1510	5,470	Aug. 16, 1957	10	1,229	889,500	1,228	889,300	
1958	1560	5,220	July 14, 1958	10	1,449	1,049,000	1,455	1,053,000	
1959	1630	5,450	July 27, 1959	3	1,336	967,200	1,331	963,200	
1960	1710	5,400	July 27, 1960	3.5	1,270	921,700	-	-	

6570. North Platte River at recorder station, below Whalen, Wyo.

Location.--Lat 42°14'20", long 104°36'30" in SW $\frac{1}{4}$  sec.12, T.26 N., R 65 W., on left bank a quarter of a mile downstream from Cottonwood Draw, 2 $\frac{1}{2}$  miles downstream from Whalen Dam, and 4 $\frac{1}{4}$  miles northwest of Fort Laramie.

Drainage area.--20,375 sq mi (revised), of which 5,168 sq mi (including 3,950 sq mi in Great Divide Basin in southern Wyoming) is probably noncontributing. Area at site used prior to Apr. 16, 1938, 20,267 sq mi (revised).

Records available.--May 1909 to September 1960. Prior to Apr. 16, 1938, published as "below Whalen."

Gage.--Water-stage recorder. Altitude of gage is 4,250 ft (from topographic map). Prior to Apr. 16, 1938, staff gages at Whalen Dam and canals 2 $\frac{1}{2}$  miles upstream at different datums. Apr. 16, 1938, to Nov. 17, 1955, water-stage recorder at site 200 ft downstream at present datum.

Extremes.--1909-60: Maximum discharge determined, 22,000 cfs June 26, 1955 (gage height, 9.85 ft), from rating curve extended above 4,500 cfs on basis of studies of peak flow measurements of upstream floods; no flow at times in 1910, 1916, 1925-27.

Remarks.--Natural flow of stream affected by transbasin diversions, storage reservoirs, power developments, ground-water withdrawals and diversions for irrigation, and return flow from irrigated areas.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	43.3	24.4	6.25	5.22	4.14	2.85	11.2	314	377	998	910	250	248
1952	253	67.6	2.41	1.61	2.17	14.2	303	1,390	2,645	1,207	1,173	604	639
1953	106	109	31.9	3.99	2.51	11.3	16.8	347	671	1,181	722	508	311
1954	30.0	17.6	6.76	5.19	10.9	7.55	2.83	105	364	882	512	174	178
1955	25.4	11.2	8.27	3.40	2.75	2.37	9.69	183	245	861	630	186	183
1956	22.2	14.7	24.4	20.3	14.9	12.9	22.1	490	767	1,101	1,150	361	336
1957	19.4	13.5	12.1	13.4	16.7	9.09	16.4	543	291	1,370	1,200	403	329
1958	31.5	14.9	11.2	12.1	11.3	12.2	16.3	455	324	1,190	1,320	441	324
1959	40.9	6.18	15.1	15.1	14.6	13.2	19.2	148	514	1,402	1,169	535	328
1960	36.5	5.49	4.88	7.45	3.76	11.4	20.7	167	865	1,530	1,154	298	344

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	2,660	1,450	384	321	230	175	667	19,290	22,450	61,350	55,940	14,910	179,800
1952	15,550	4,020	148	99	125	871	18,060	85,440	157,400	74,200	72,120	35,960	464,000
1953	6,500	6,500	1,960	246	139	695	997	21,360	39,900	72,590	44,390	30,220	225,500
1954	1,850	1,040	416	319	608	464	168	6,430	21,670	54,220	31,470	10,350	129,000
1955	1,560	663	509	209	153	146	577	11,270	14,580	52,920	36,750	11,050	132,400
1956	1,370	875	1,500	1,250	856	794	1,320	30,130	45,650	67,710	70,720	21,500	243,700
1957	1,190	805	745	821	928	559	974	33,380	17,300	84,260	73,800	23,950	238,700
1958	1,940	889	690	742	628	752	972	27,960	19,260	73,370	81,160	26,270	234,600
1959	2,520	368	926	968	811	813	1,140	9,090	30,590	86,230	71,860	31,630	237,100
1960	2,250	327	300	458	216	702	1,230	10,300	51,470	94,100	70,940	17,750	250,000

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean		Acre-feet	
		Discharge	Date							
1950	-	-	-	-	-	-	332		240,100	
1951	1210	1,500	July 10, 1951	2.1	248	179,800	269		195,100	
1952	1240	4,860	June 6, 1952	1.5	639	464,000	633		459,200	
1953	1280	1,700	May 18, 1953	1.6	311	225,500	295		213,800	
1954	1340	2,690	July 15, 1954	2.4	178	129,000	177		128,400	
1955	1390	22,000	June 26, 1955	.7	183	132,400	184		133,400	
1956	1440	2,400	May 15, 1956	2.8	336	243,700	334		242,700	
1957	1510	2,960	Aug. 17, 1957	4.5	329	238,700	331		239,500	
1958	1560	1,590	July 4, 1958	8	324	234,600	324		234,900	
1959	1630	2,170	July 22, 1959	3.0	328	237,100	326		236,200	
1960	1710	1,840	July 28, 1960	2.0	344	250,000	-		-	

6575. Laramie River near Glendevey, Colo.

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

Drainage area.--101 sq mi.

Records available.--June 1904 to October 1905, August 1910 to September 1960. Monthly discharge only for some periods, published in WSP 1310. Published as "at Glendevey" 1905, 1910-18.

Gage.--Water-stage recorder. Altitude of gage is 8,230 ft (from topographic map). Prior to Nov. 7, 1910, staff gage. 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.--51 years (1904-5, 1910-60), 73.4 cfs (53,140 acre-ft per year).

Extremes.--1904-5, 1910-60: 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.--Divisions for irrigation of about 700 acres of hay meadows above station. Sky-line ditch, Laramie-Poudre tunnel, Bob Creek ditch, Columbine ditch, and part of Wilson supply ditch export water from Laramie River and tributaries above station to Cache la Poudre River in South Platte River basin; see elsewhere in this report for records of diversions.

Revisions.--Revised records for the water year 1918 superseding those published in WSP 1310 are given herewith.

Month	Mean	Acre-feet
September 1918.....	30.7	1,630
Water year 1917-18.	116	84,000
Calendar year 1918.	116	83,700

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	27.5	23.8	22.1	21.2	17.0	17.8	30.0	264	459	90.0	86.4	41.8	91.8
1952	37.1	21.6	19.9	19.9	19.7	20.7	50.6	243	520	74.0	18.9	20.3	88.5
1953	23.6	18.5	15.0	17.0	15.8	16.0	26.7	78.9	149	59.4	78.5	23.7	43.6
1954	25.0	23.2	19.3	17.0	15.4	16.3	48.3	94.4	39.6	24.6	16.1	28.8	30.7
1955	36.4	18.4	16.1	12.1	11.9	12.8	31.3	94.9	104	104	84.0	34.2	47.0
1956	23.8	24.5	20.3	20.0	17.4	19.2	44.7	282	308	91.7	67.5	25.7	78.9
1957	20.7	21.0	19.5	17.8	19.0	17.1	28.8	170	752	311	42.7	39.0	121
1958	38.8	28.0	25.2	21.1	19.6	17.0	25.3	348	285	50.4	30.5	28.6	76.5
1959	24.8	19.5	15.6	15.7	16.0	16.9	30.9	176	335	49.4	40.5	41.5	65.1
1960	44.7	30.2	19.4	14.3	13.0	20.6	60.0	122	277	89.1	65.6	37.9	66.1

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1,690	1,420	1,360	1,300	944	1,090	1,780	16,220	27,310	5,540	5,310	2,490	66,450
1952	2,280	1,280	1,230	1,230	1,130	1,270	3,010	14,930	30,940	4,550	1,160	1,210	64,220
1953	1,450	1,100	922	1,040	875	982	1,590	4,850	8,890	3,650	4,820	1,410	31,580
1954	1,540	1,380	1,190	1,040	855	1,000	2,880	5,800	2,350	1,520	992	1,710	22,260
1955	2,240	1,100	992	746	662	787	1,860	5,840	6,180	6,410	5,160	2,030	34,010
1956	1,460	1,460	1,250	1,230	1,000	1,180	2,660	17,360	18,340	5,640	4,150	1,530	57,260
1957	1,270	1,250	1,200	1,090	1,050	1,050	1,710	10,430	44,770	19,130	2,620	2,320	87,890
1958	2,380	1,670	1,550	1,300	1,090	1,050	1,500	21,380	16,930	3,100	1,880	1,580	55,410
1959	1,530	1,160	958	964	887	1,040	1,840	10,800	19,940	3,040	2,430	2,470	47,120
1960	2,750	1,800	1,190	881	750	1,270	3,570	7,510	16,480	5,480	4,030	2,260	47,970

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	58.5	42,390
1951	1210	914	June 21, 1951	13	91.8	66,450	92.2	66,770
1952	1240	935	June 8, 1952	12	88.5	64,220	86.6	62,900
1953	1280	595	June 14, 1953	12	43.6	31,580	44.5	32,220
1954	1340	224	June 26, 1954	11	30.7	22,260	31.0	22,480
1955	1390	218	June 14, 1955	10	47.0	34,010	46.8	33,840
1956	1440	795	June 6, 1956	14	78.9	57,260	78.3	56,810
1957	1510	1,390	June 13, 1957	14	121	87,890	124	89,770
1958	1560	840	May 25, 1958	12	76.5	55,410	73.8	53,460
1959	1630	586	June 11, 1959	13	65.1	47,120	68.0	49,210
1960	1710	550	June 18, 1960	11	66.1	47,970	-	-

## 6585. Laramie River near Jelm, Wyo.

Location.--Lat 41°00'10", long 106°00'50", in SE $\frac{1}{4}$  sec.15, T.12 N., R.77 W., on right bank 35 ft downstream from road bridge, a quarter of a mile north of Colorado-Wyoming State line, half a mile upstream from Johnson Creek, and 4 miles south of Jelm.

Drainage area.--294 sq mi (revised).

Records available.--June 1904 to October 1905, October 1910 to September 1960. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 7,683.36 ft above mean sea level, datum of 1929. June 22, 1904, to Oct. 31, 1905, staff gage at site three-quarters of a mile upstream at different datum. May 7 to July 13, 1911, staff gage and July 14, 1911, to Sept. 3, 1921, water-stage recorder, on downstream side of bridge 35 ft upstream at present datum.

Average discharge.--51 years (1904-5, 1910-60), 161 cfs (116,600 acre-ft per year).

Extremes.--1904-5, 1910-60: Maximum discharge, 4,200 cfs June 9, 1923 (gage height, 4.15 ft); minimum recorded, 5.6 cfs Dec. 2, 1933.

Remarks.--Diversions for irrigation of about 4,600 acres of hay meadows above station. Transbasin diversions above station to Cache la Poudre River and tributaries.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	47.5	38.7	34.1	27.5	27.7	34.5	88.3	626	978	205	128	60.9	192
1952	66.2	42.2	30.3	32.5	32.8	44.0	134	696	982	145	56.8	33.7	191
1953	33.4	31.2	28.9	31.7	28.1	36.0	56.8	190	361	74.1	104	32.1	84.0
1954	34.2	38.9	35.5	33.3	25.2	29.1	84.5	240	108	48.1	30.9	21.5	61.0
1955	53.8	38.4	33.1	23.8	23.8	26.1	49.6	214	272	126	118	34.9	84.8
1956	37.5	46.7	35.1	35.2	31.3	37.3	86.0	645	586	126	104	32.5	150
1957	25.7	37.2	29.7	25.2	32.2	38.2	64.7	353	1,572	644	103	56.9	248
1958	65.5	51.3	41.6	34.9	32.5	31.5	58.9	636	511	75.4	58.8	37.9	137
1959	42.7	38.1	30.5	29.9	29.9	31.5	59.2	337	745	113	84.5	55.7	133
1960	80.7	58.6	34.4	19.3	15.1	19.5	128	361	584	141	102	52.1	135

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	2,920	2,300	2,100	1,690	1,540	2,120	5,250	38,520	58,210	12,580	7,850	3,620	138,700
1952	4,070	2,510	1,860	2,000	1,890	2,710	7,960	42,820	58,420	8,910	3,490	2,000	138,600
1953	2,050	1,860	1,780	1,950	1,560	2,210	3,380	11,700	21,490	4,550	6,390	1,910	60,830
1954	2,100	2,310	2,180	2,050	1,400	1,790	5,030	14,780	6,400	2,960	1,900	1,280	44,180
1955	3,310	2,280	2,040	1,470	1,320	1,600	2,950	13,180	16,160	7,740	7,260	2,080	61,390
1956	2,300	2,780	2,160	2,160	1,800	2,290	5,120	39,680	34,850	7,770	6,370	1,930	109,200
1957	1,580	2,210	1,820	1,550	1,790	2,350	3,850	21,680	93,520	39,570	6,360	3,390	179,700
1958	4,030	3,050	2,560	2,150	1,800	1,940	3,500	39,090	30,380	4,640	3,620	2,260	99,020
1959	2,630	2,270	1,870	1,840	1,660	1,940	3,520	20,700	44,360	6,960	5,200	3,310	96,260
1960	4,960	3,480	2,110	1,190	869	1,200	7,620	22,220	34,750	8,700	6,240	3,100	96,440

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	122	88,090
1951	1210	1,600	May 29, 1951	24	192	138,700	193	139,800
1952	1240	1,550	June 7, 1952	24	191	138,600	187	135,900
1953	1280	918	June 14, 1953	22	84.0	60,830	85.3	61,756
1954	1340	558	May 23, 1954	9.2	61.0	44,180	62.4	45,220
1955	1390	564	June 15, 1955	20	84.8	61,390	84.2	61,000
1956	1440	1,390	May 25, 1956	25	150	109,200	148	107,600
1957	1510	2,070	June 13, 1957	22	248	179,700	254	183,700
1958	1560	1,440	May 26, 1958	19	137	99,020	133	96,150
1959	1630	1,180	June 9, 1959	22	133	96,260	138	100,000
1960	1710	980	June 5, 1960	12	133	96,440	-	-

6595. Laramie River and Pioneer Canal near Woods, Wyo.

Location.--River: Lat 41°08'30", long 105°58'40", in E½ sec.36, T.14 N., R.77 W., on left bank 100 ft upstream from diversion dam for Pioneer Canal, 2.2 miles downstream from Fox Creek, 2.5 miles northeast of Woods, and 23 miles southwest of Laramie.

Canal: Lat 41°09'10", long 105°57'30", in SE¼ sec.30, T.14 N., R.76 W., on left bank at downstream side of bridge, 1.5 miles downstream from headgate.

Drainage area.--434 sq mi (revised).

Records available.--April 1912 to September 1924, October 1926 to September 1927, October 1931 to September 1960. Monthly discharge only for some periods, published in WSP 1310.

Gage.--River: Water-stage recorder and concrete control. Datum of gage is 7,388.99 ft above mean sea level, datum of 1929. Apr. 16 to Nov. 15, 1912, staff gage and Nov. 16, 1912, to Sept. 22, 1915, water-stage recorder, 90 ft downstream between dam crest and canal headgates at datum 1.00 ft higher. Sept. 23, 1915, to Sept. 30, 1924, Apr. 19 to Sept. 30, 1927, and Apr. 11, 1932, to July 13, 1950, water-stage recorder at site 50 ft downstream; prior to Oct. 1, 1935, at datum 1.00 ft higher.

Canal: Water-stage recorder. Altitude of gage is 7,380 ft (river-profile survey). Apr. 16, 1912, to Apr. 10, 1923, chain gage; Apr. 11, 1923, to Sept. 30, 1924, and Apr. 19 to June 9, 1927, water-stage recorder; June 10 to Sept. 30, 1927, staff gage; all at same site at different datum. Apr. 11, 1932, to May 8, 1938, staff gage at same site and datum.

Extremes (combined flow of river and canal).--1912-24, 1926-27, 1931-60: Maximum discharge, 5,060 cfs June 10, 1923 (river discharge by computation of peak flow over dam); minimum not determined.

Remarks.--Pioneer Canal (see fourth table below for monthly diversions) diverts from left bank of river at diversion dam 100 ft downstream for irrigation in vicinity of Laramie. First three tables show combined flow of river and canal. Diversions above station for irrigation of about 11,000 acres above and below station. Three small reservoirs above station in Wyoming (total capacity, about 600 acre-ft) for irrigation, stock water, and domestic use. Transbasin diversions above station to Cache la Poudre River and tributaries (see p. 184-186, 189).

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	51.7	44.9	43.1	36.2	37.0	43.1	120	855	1,051	212	123	57.6	223
1952	79.7	50.4	41.0	42.3	41.4	51.8	197	921	1,028	158	55.5	31.0	225
1953	35.7	42.6	40.1	44.1	40.1	52.5	78.6	233	377	74.0	101	28.8	95.5
1954	34.6	43.9	38.5	31.4	31.2	40.3	123	288	117	50.5	24.8	17.4	70.3
1955	49.5	38.4	35.4	24.9	24.6	29.4	67.0	241	282	134	127	35.5	91.1
1956	36.8	43.1	41.3	37.7	34.6	50.3	108	786	681	129	100	32.7	174
1957	35.3	44.0	34.4	28.4	37.0	47.8	83.4	554	2,062	726	125	64.0	319
1958	80.2	63.4	54.5	46.2	43.1	43.1	87.9	843	540	83.8	62.7	46.1	167
1959	50.7	43.0	32.6	32.1	32.2	36.0	97.4	485	787	124	85.2	58.0	155
1960	91.3	64.6	55.1	44.4	38.9	42.3	192	444	621	144	97.8	48.9	157

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	3,180	2,670	2,650	2,230	2,050	2,650	7,130	52,560	62,570	13,060	7,560	3,430	161,700
1952	4,900	3,000	2,520	2,600	2,380	3,190	11,730	56,600	61,170	9,700	3,420	1,840	163,000
1953	2,070	2,530	2,470	2,710	2,230	3,230	4,680	14,340	22,410	4,550	6,220	1,710	69,150
1954	2,130	2,610	2,360	1,930	1,750	2,480	7,330	17,700	6,960	3,110	1,530	1,030	50,900
1955	5,040	2,290	2,180	1,530	1,370	1,810	3,990	14,840	16,760	8,240	7,810	2,110	65,970
1956	2,260	2,560	2,540	2,320	1,990	3,090	6,430	48,340	40,510	7,930	6,170	1,950	126,100
1957	2,170	2,620	2,110	1,740	2,060	2,940	4,960	34,080	22,100	44,630	7,700	3,810	230,900
1958	4,930	3,770	3,350	2,840	2,390	2,650	5,230	51,860	32,110	5,160	3,860	2,740	120,900
1959	3,120	2,560	2,000	1,970	1,790	2,210	5,800	29,850	46,850	5,160	5,240	3,450	112,400
1960	5,610	3,840	3,390	2,750	2,240	2,600	11,440	27,290	36,930	8,830	6,020	2,910	113,800

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet		
		Discharge	Date							
1950	-	-	-	-	-	-	157	-	113,700	
1951	1210	2,130	May 29, 1951	20	223	161,700	226	163,700	163,700	
1952	1240	1,890	June 7, 1952	22	225	163,000	220	159,700	159,700	
1953	1286	927	June 14, 1953	15	95.5	69,150	95.5	69,150	69,150	
1954	1354	606	May 25, 1954	10	70.3	50,900	70.3	50,900	50,900	
1955	1390	541	June 15, 1955	22	91.1	65,970	90.9	65,820	65,820	
1956	1440	1,750	May 27, 1956	25	174	126,100	173	125,600	125,600	
1957	1510	4,020	June 13, 1957	12	319	230,900	326	236,100	236,100	
1958	1590	1,920	May 25, 1958	17	167	120,900	161	116,500	116,500	
1959	1630	1,260	June 9, 1959	18	155	112,400	162	117,600	117,600	
1960	1710	1,030	June 9, 1960	35	157	113,800	-	-	-	

Monthly and yearly diversion, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1,460	238	369	430	278	246	179	4,970	9,160	5,530	4,230	2,600	29,690
1952	1,820	714	369	615	633	738	714	6,200	25,950	4,750	3,360	1,810	47,670
1953	2,020	996	430	430	389	369	387	4,250	5,830	3,690	3,330	1,680	23,800
1954	1,720	341	307	307	222	307	1,550	4,360	4,490	1,090	1,210	932	17,440
1955	2,750	2,140	500	615	555	553	1,710	4,140	5,230	3,860	4,590	1,500	28,140
1956	460	107	149	161	107	153	1,640	7,310	7,980	4,690	2,860	1,800	27,420
1957	198	198	245	224	167	103	197	5,100	8,190	15,100	2,980	3,260	37,120
1958	998	225	480	1,160	1,840	2,230	1,980	8,810	4,060	4,320	3,310	2,130	39,620
1959	1,400	220	179	167	135	178	506	6,140	8,950	4,690	3,370	1,990	27,920
1960	809	364	272	365	254	317	3,800	6,990	6,520	4,820	4,260	1,990	30,760

## PLATTE RIVER BASIN

6596. Sand Creek near Tie Siding, Wyo.

Location.--Lat 41°00'40", long 105°45'20", in sec.13, T.12 N., R.75 W., in Wyoming, on left bank 90 ft upstream from bridge on county road, 1½ miles downstream from Colorado-Wyoming State line, and 15 miles southwest of Tie Siding.

Drainage area.--39.9 sq mi.

Records available.--April 1957 to September 1960.

Gage.--Water-stage recorder. Altitude of gage is 7,530 ft (from topographic map).

Extremes.--1957-60: Maximum discharge, 253 cfs June 8, 1957 (gage height, 7.69 ft); no flow Sept. 3-17, 1959, Aug. 29, Sept. 1-3, 1960.

Remarks.--Natural flow affected by diversion above station to Cache la Poudre River basin through Wilson Supply ditch. Water imported above station from Deadman Creek in Laramie River basin is rediverted through Wilson Supply ditch but is wasted down Sand Creek at times.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1957	-	-	-	-	-	-	8.05	36.6	134	15.7	4.21	1.64	-
1958	3.70	3.16	3.07	2.56	2.38	2.35	4.64	33.5	16.9	2.54	1.18	.33	6.39
1959	2.11	3.52	2.3	2.2	2.3	2.4	7.60	21.2	16.9	2.40	1.17	1.69	5.49
1960	4.42	2.72	1.8	1.5	1.5	6.81	11.0	20.8	15.9	2.89	.69	.65	5.89

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1957	-	-	-	-	-	-	479	2,250	7,970	967	259	97	-
1958	228	188	189	157	132	144	276	2,060	1,010	156	73	19	4,630
1959	130	209	141	135	128	148	452	1,310	1,000	147	72	101	3,970
1960	272	162	111	92	86	419	653	1,280	945	178	42	39	4,280

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1957	1510	2253	June 8, 1957	-	-	-	-	-	-
1958	1560	173	May 30, 1958	0.2	6.39	4,630	6.22	4,510	
1959	1630	34	May 20, 1959	0	5.49	3,970	5.57	4,040	
1960	1710	35	June 9, 1960	0	5.89	4,280	-	-	

a Maximum during period April to September.



6600. Laramie River at Laramie, Wyo.

Location.--Lat 41°19'40", long 105°36'30", in SW¼ sec.29, T.16 N., R.73 W., near left bank on downstream side of pier of bridge on county highway, 1.2 miles northwest of city hall in Laramie and 5 miles downstream from Fivemile Creek.

Drainage area.--1,071 sq mi (revised), of which 151 sq mi is probably noncontributing.

Records available.--April 1933 to September 1960. Irrigation seasons only prior to 1952. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Altitude of gage is 7,125 ft (from river-profile map). Prior to Apr. 10, 1936, chain gage on bridge on State Highways 130 and 230, 1.4 miles upstream at different datum. Apr. 10, 1936, to May 21, 1949, chain gage and May 22, 1949, to Apr. 7, 1951, wire-weight gage, at present site and datum.

Average discharge.--9 years (1951-60), 88.5 cfs (64,070 acre-ft per year).

Extremes.--1933-60: Maximum discharge, 3,250 cfs June 15, 1957 (gage height, 6.83 ft); minimum daily, 0.1 cfs Sept. 7-9, 1950.

Remarks.--Natural flow of stream affected by transbasin diversions, storage reservoirs, diversions for irrigation of about 53,000 acres, and return flow from irrigated areas.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	-	-	89.6	360	766	132	53.5	25.4	-
1952	47.1	49.5	37.1	39.2	37.3	37.7	123	527	531	107	16.7	6.16	130
1953	8.82	14.4	29.6	40.6	38.9	54.2	51.6	27.5	165	16.4	54.5	5.98	40.5
1954	4.99	33.1	38.3	34.5	41.5	38.5	17.9	57.3	13.7	15.4	8.21	2.22	25.4
1955	6.48	11.9	14.6	16.4	16.2	24.0	17.6	62.7	110	41.3	69.8	7.80	33.4
1956	21.1	33.7	35.5	39.3	28.0	59.5	44.6	321	379	38.6	56.4	8.09	88.8
1957	10.8	28.2	27.7	24.4	43.8	69.6	52.7	199	1,568	557	86.0	20.7	223
1958	40.2	55.8	54.8	37.7	26.0	28.9	35.6	392	300	31.1	12.4	5.66	85.3
1959	16.2	19.6	23.7	32.7	37.1	44.0	69.3	167	477	77.9	26.6	18.5	83.9
1960	64.7	75.2	55	40	40	73.5	55.8	173	378	55.8	21.8	6.37	86.4

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	-	-	5,330	22,130	45,550	8,110	3,290	1,510	-
1952	2,900	2,950	2,280	2,410	2,150	2,320	7,330	32,380	31,570	6,590	1,020	367	94,270
1953	542	857	1,820	2,500	2,160	3,330	1,880	1,690	9,820	1,010	3,350	350	29,310
1954	307	1,970	2,350	2,120	2,310	2,370	1,070	3,520	816	945	505	132	18,420
1955	398	710	898	1,010	902	1,480	1,050	3,860	6,570	2,540	4,290	464	24,170
1956	1,300	2,010	2,190	2,420	1,610	3,660	2,650	19,720	22,570	2,380	3,470	481	84,460
1957	664	1,680	1,700	1,500	2,430	4,280	3,140	12,260	93,320	34,220	5,290	1,230	161,700
1958	2,470	3,320	3,370	2,320	1,440	1,780	2,120	24,120	17,850	1,910	760	357	61,780
1959	995	1,170	1,460	2,010	2,060	2,700	4,130	10,290	28,390	4,790	1,640	1,100	60,740
1960	5,980	4,470	3,380	2,460	2,300	4,520	3,320	10,630	22,520	3,430	1,340	379	62,730

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950								
1951	1210	al,400	June 3, 1951	-	-	-	-	-
1952	1240	862	June 4, 1952	4.4	130	94,270	123	89,360
1953	1280	386	June 15, 1953	2.0	49.5	29,310	42.4	30,720
1954	1340	131	May 25, 1954	.8	25.4	18,420	21.8	15,790
1955	1390	430	July 27, 1955	2.7	33.4	24,170	38.2	27,670
1956	1440	960	May 29, 1956	4.7	88.8	64,460	86.8	63,000
1957	1510	3,250	June 15, 1957	5.0	223	161,700	230	166,800
1958	1580	1,150	May 27, 1958	4.1	85.3	61,780	77.7	56,240
1959	1630	790	June 18, 1959	4.3	83.9	60,740	95.2	68,940
1960	1710	696	June 11, 1960	3.8	86.4	62,730	-	-

a Maximum during period April to September.

## 6605. Laramie River at Two Rivers, Wyo.

Location.--Lat 41°28'20", long 105°43'30", in SW $\frac{1}{4}$  sec.5, T.17 N., R.74 W., on left bank at Old Two Rivers Post Office, 0.6 mile upstream from Little Laramie River and 14 miles northwest of Laramie.

Drainage area.--1,224 sq mi (revised), of which 188 sq mi is probably noncontributing.

Records available.--October 1908 to October 1927, October 1932 to September 1960. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 7,058.85 ft above mean sea level, datum of 1929. Apr. 16, 1909, to June 17, 1910, staff gage near present site at about same datum. May 6, 1911, to Oct. 31, 1912, staff gage at site 45 ft upstream at datum 0.74 ft lower. Apr. 8, 1913, to Oct. 31, 1914, water-stage recorder at site 300 ft downstream at datum 0.74 ft lower. Apr. 21, 1915, to Apr. 30, 1920, water-stage recorder at site 45 ft upstream at present datum.

Average discharge.--47 years (1908-27, 1932-60), 114 cfs (82,530 acre-ft per year).

Extremes.--1908-27, 1932-60: Maximum discharge, 3,930 cfs June 13, 1923 (gage height, 7.48 ft), from rating curve extended above 2,500 cfs; no flow Sept. 22-25, 1911, Aug. 17 to Sept. 6, Sept. 9-22, 1939.

Remarks.--Natural flow of stream affected by transbasin diversions, storage reservoirs, diversions above station for irrigation of about 56,000 acres, and return flow from irrigated areas.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	41.0	46.4	49.7	26.4	45.0	75.1	92.2	243	624	123	53.8	24.4	120
1952	47.6	55.0	37.3	42.1	46.1	51.8	129	366	429	101	15.1	4.96	110
1953	5.93	13.6	24.9	39.1	43.9	62.9	35.5	7.20	105	14.4	44.0	6.08	33.4
1954	2.97	27.0	28.5	30.8	51.0	46.8	9.85	23.0	4.88	1.74	1.34	.25	18.8
1955	1.70	2.67	8.44	13.1	14.2	23.8	14.8	34.8	92.6	23.0	46.4	9.99	23.8
1956	20.2	35.0	35.9	41.0	27.6	59.7	57.0	205	345	37.2	66.7	12.5	78.5
1957	10.5	29.5	27.3	23.3	46.9	100	65.6	111	4,353	586	113	34.7	208
1958	41.0	54.9	47.5	34.5	33.1	40.1	42.3	289	242	34.3	16.3	6.52	73.7
1959	15.3	17.3	23.1	30.1	34.4	42.5	79.5	99.4	364	73.4	26.9	18.5	68.4
1960	66.8	82.5	60	40	40	73	54.6	112	345	58.0	24.9	6.68	80.1

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	2,520	2,760	3,060	1,620	2,500	4,620	5,480	14,910	37,150	7,580	3,310	1,450	86,960
1952	2,930	3,270	2,290	2,590	2,650	3,190	7,660	22,530	25,550	6,200	929	295	90,080
1953	365	809	1,530	2,400	2,440	3,870	2,110	443	6,270	887	2,710	362	24,200
1954	182	1,600	1,750	1,890	2,850	2,880	588	1,410	291	107	82	15	13,620
1955	104	159	519	807	787	1,470	881	2,140	5,510	1,420	2,850	594	17,240
1956	1,240	2,080	2,210	2,520	1,580	3,670	3,390	12,590	20,530	2,280	4,100	743	56,930
1957	644	1,750	1,680	1,430	2,600	6,160	3,900	6,850	80,510	36,030	6,920	2,070	150,500
1958	2,520	3,260	2,920	2,120	1,840	2,460	2,520	17,780	14,410	2,110	1,000	388	53,330
1959	939	1,030	1,420	1,850	1,910	2,610	4,730	6,110	21,640	4,510	1,650	1,100	49,500
1960	4,110	4,910	3,690	2,480	2,300	4,460	3,250	6,900	20,550	3,570	1,530	397	58,130

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean
		Discharge	Date				
1950	-	-	-	-	-	-	78.8
1951	1210	1,080	June 5, 1951	8.9	120	86,960	120
1952	1240	723	June 5, 1952	4.0	110	80,080	102
1953	1260	258	June 17, 1953	3.2	33.4	24,200	34.6
1954	1340	70	Feb. 13, 1954	.1	18.8	13,620	15.0
1955	1390	240	June 19, 1955	.3	23.8	17,240	30.4
1956	1440	728	May 28, 1956	6.6	78.5	56,930	76.5
1957	1510	2,990	June 16, 1957	6.0	208	150,500	214
1958	1560	862	May 29, 1958	4.0	73.7	53,330	66.3
1959	1630	604	June 19, 1959	4.3	68.4	49,500	81.3
1960	1710	617	June 12, 1960	2.2	80.1	58,130	-

6610. Little Laramie River near Filmore, Wyo.

Location.--Lat 41°17'20", long 106°02'30", in sec.9, T.15 N., R.77 W., on right bank 30 ft downstream from bridge at May Ranch, 1½ miles west of Filmore, and 3½ miles downstream from North Fork.

Drainage area.--156 sq mi (revised).

Records available.--July 1902 to September 1903 (published as "near Hatton"), May 1911 to November 1926, October 1932 to September 1960. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Altitude of gage is 7,600 ft (from topographic map). Prior to Sept. 16, 1938, staff gage at present site; prior to May 14, 1911, at different datum; May 14, 1911, to Apr. 17, 1914, at datum 0.21 ft lower; and at present datum thereafter.

Average discharge.--44 years (1902-3, 1911-26, 1932-60), 103 cfs (74,570 acre-ft per year).

Extremes.--1902-3, 1911-26, 1932-60: Maximum discharge observed, 2,400 cfs June 1, 1914 (gage height, 5.9 ft), from rating curve extended above 1,700 cfs; minimum daily determined, 1 cfs Sept. 17-20, 1913.

Remarks.--Diversions above station for irrigation of about 18,000 acres above and below station. Ten small reservoirs above station (combined capacity, about 160 acre-ft) for irrigation, stock water, recreation, and domestic use.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	31.2	37.5	36.1	23.6	22.5	26.6	63.2	359	737	291	84.4	32.3	146
1952	41.9	34.3	25.3	21.9	19.8	26.2	79.9	415	661	145	50.3	24.4	129
1953	21.6	20.9	21.3	22.8	20.9	29.7	38.9	78.4	593	141	68.0	22.8	89.6
1954	23.2	27.9	23.9	20.9	27.2	27.4	29.3	186	141	38.4	16.9	13.8	48.1
1955	16.8	16.4	13.0	8.76	8.00	9.97	17.6	78.1	194	41.1	28.4	13.3	37.1
1956	15.9	17.5	14.9	13.7	13.3	15.2	27.3	288	321	60.2	33.7	16.9	69.8
1957	19.0	21.3	15.2	9.29	16.3	26.4	40.3	107	781	438	101	37.6	134
1958	31.0	27.1	25.2	24.8	23.8	21.8	34.4	345	445	83.5	33.7	19.3	93.0
1959	16.4	17.2	15.3	16.3	15.4	16.3	57.5	155	636	125	48.8	22.6	94.9
1960	37.0	41.6	30	17	18	23	51.9	168	361	88.1	24.7	16.3	72.9

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1,920	2,230	2,220	1,450	1,250	1,630	3,760	22,090	43,830	17,880	5,190	1,920	105,400
1952	2,580	2,040	1,560	1,350	1,140	1,610	4,750	25,500	39,360	8,930	3,090	1,450	93,360
1953	1,530	1,250	1,310	1,400	1,160	1,830	2,320	4,820	35,280	8,650	4,180	1,360	64,870
1954	1,420	1,660	1,470	1,280	1,510	1,690	1,750	11,420	8,410	2,360	1,040	821	34,830
1955	1,040	978	801	539	444	613	1,050	4,800	11,560	2,530	1,740	791	26,890
1956	978	1,040	916	841	764	932	1,620	17,680	19,110	3,700	2,070	1,010	50,660
1957	1,170	1,270	932	571	908	1,620	2,400	6,590	46,500	26,950	6,190	2,240	97,340
1958	1,910	1,610	1,550	1,520	1,320	1,340	2,040	21,220	26,450	5,140	2,070	1,150	67,320
1959	1,010	1,030	942	1,000	855	1,000	3,420	9,550	37,830	7,700	3,000	1,340	68,680
1960	2,280	2,470	1,840	1,050	1,040	1,430	3,090	10,350	21,470	5,420	1,520	972	52,930

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean
		Discharge	Date				
1950	-	-	-	-	-	-	110
1951	1210	1,310	June 18, 1951	19	146	105,400	145
1952	1240	1,250	June 5, 1952	17	129	93,360	125
1953	1280	1,510	June 19, 1953	16	89.6	64,870	90.5
1954	1340	732	May 22, 1954	12	48.1	34,830	45.7
1955	1390	355	June 16, 1955	7.0	37.1	26,890	37.3
1956	1440	1,010	May 27, 1956	10	69.8	50,660	70.4
1957	1510	1,360	June 8, 1957	6.2	134	97,340	137
1958	1560	1,120	May 28, 1958	14	93.0	67,320	90.1
1959	1630	1,120	June 16, 1959 <sup>a</sup>	13	94.9	68,680	99.9
1960	1710	804	June 9, 1960	-	72.9	52,930	-

<sup>a</sup> About.

## 6615. Little Laramie River at Two Rivers, Wyo.

Location.--Lat 41°28'10", long 105°43'50", in SE<sup>1</sup>SE<sup>1</sup> sec.6, T.17 N., R.74 W., on right bank at old Two Rivers Post Office, half a mile upstream from mouth and 14 miles northwest of Laramie.

Drainage area.--376 sq mi (revised), of which 58 sq mi is probably noncontributing.

Records available.--March to September 1903 (gage heights and discharge measurements only), October 1910 to October 1927, May to November 1933, May 1934 to September 1960. Published as "at Haley's Ranch, near Laramie" 1903.

Gage.--Water-stage recorder. Datum of gage is 7,060.62 ft above mean sea level, datum of 1929. March to September 1903 staff gage near present site at different datum. May 1, 1911, to Apr. 13, 1913, staff gage at present site and datum. Apr. 14, 1913, to Apr. 20, 1915, water-stage recorder at site 400 ft upstream at different datum. Datum lowered 1.0 ft July 1, 1913.

Average discharge.--43 years (1910-27, 1934-60), 44.7 cfs (32,360 acre-ft per year).

Extremes.--1903, 1910-27, 1933-60: Maximum discharge, 1,880 cfs June 4, 1914 (gage height, about 6.44 ft, present site and datum); no flow at times in most years.

Remarks.--Diversions for irrigation of about 56,000 acres above station. Fifteen small reservoirs above station (combined capacity, about 1,300 acre-ft) for irrigation, stock water, recreation, and domestic use.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	7.72	13.9	14.9	6.73	10.5	32.5	58.4	99.0	455	177	43.0	6.09	77.0
1952	18.4	21.0	12.5	13.0	13.1	26.4	96.5	172	369	64.3	18.2	2.06	68.5
1953	1.67	2.80	4.24	9.79	8.90	27.9	27.4	12.3	220	46.6	38.9	2.26	33.5
1954	2.68	6.72	1.28	5.15	14.5	7.90	7.98	7.86	6.14	.11	0	0	4.97
1955	2.17	2.91	1.11	.7	.4	5	13.4	1.50	20.6	.35	1.33	.003	4.10
1956	0	.05	2.99	3.68	.02	6.52	5.25	69.9	85.3	1.41	1.20	0	14.7
1957	0	1.34	.02	.45	2.99	10.4	13.4	12.5	356	247	56.2	8.72	59.1
1958	5.14	8.49	9.35	6.44	9.57	20.1	24.6	89.0	178	22.8	7.94	.07	31.7
1959	.87	3.44	2.26	.7	2.1	8.5	20.3	12.9	211	29.7	9.19	0	24.9
1960	2.64	10.4	4	4	7.5	11	12.9	9.93	135	5.97	.56	0	17.2

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	474	829	914	414	582	2,000	3,470	6,090	27,050	10,900	2,640	362	55,720
1952	1,130	1,250	769	799	756	1,620	5,740	10,550	21,950	3,950	1,120	122	49,760
1953	103	166	261	602	494	1,720	1,630	757	13,110	2,870	2,390	134	24,240
1954	177	400	79	317	807	486	475	483	365	6.7	0	0	3,600
1955	133	173	68	43	22	507	796	92	1,230	22	82	.2	2,970
1956	0	2.8	184	228	1.4	401	313	4,300	5,070	87	74	0	10,660
1957	0	80	1.4	28	166	637	800	771	21,150	5,170	3,460	519	42,780
1958	316	505	514	396	532	1,240	1,460	5,470	10,610	1,400	488	4.4	22,940
1959	54	205	139	43	117	523	1,210	794	12,550	1,830	565	0	18,030
1960	162	620	553	246	431	680	765	611	8,030	367	34	0	12,500

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	50.1	36,290
1951	-	-	-	-	-	-	78.3	56,660
1952	-	1,120	June 2, 1951	-	77.0	55,720	64.9	47,140
1953	1280	808	June 7, 1952	.9	68.5	49,760	33.7	24,360
1954	1340	760	June 21, 1953	0	33.5	24,240	4.58	3,310
1955	1390	a25	Feb. 9, 1954	0	4.97	3,600	3.84	2,780
		96	June 17, 1955	0	4.10	2,970		
1956	1440	625	May 28, 1956	0	14.7	10,660	14.5	10,550
1957	1510	999	June 15, 1957	0	59.1	42,780	60.8	44,040
1958	1560	469	June 2, 1958	0	31.7	22,940	30.4	22,000
1959	1630	460	June 19, 1959	0	24.9	18,030	26.2	18,970
1960	1710	550	June 11, 1960	0	17.2	12,500	-	-

a Maximum daily.

6616. Dutton Creek near McFadden, Wyo.

Location--Lat 41°34'18", long 106°04'54", in SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec.31, T.19 N., R.77 W., on right bank 0.6 mile downstream from Sheep Creek and 6.3 miles southeast of McFadden.

Drainage area--19.9 sq mi.

Records available--April 1958 to September 1960.

Gage--Water-stage recorder. Datum of gage is 7,450.74 ft above mean sea level, datum of 1929.

Extremes--1958-60: Maximum discharge, 186 cfs May 14, 1958 (gage height, 3.77 ft), from rating curve extended above 35 cfs; no flow for most of time in each year.

Remarks--One diversion above station for irrigation of about 60 acres above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1958	-	-	-	-	-	-	2.11	27.1	4.37	0	0	0	-
1959	0	0	0	0	0.06	0.2	2.94	15.6	11.4	.15	0	0	2.53
1960	0	0	0	0	0	1.20	.62	4.70	3.60	.04	0	0	.85

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1958	-	-	-	-	-	-	126	1,660	260	0	0	0	-
1959	0	0	0	0	3.6	12	175	957	677	9.1	0	0	1,830
1960	0	0	0	0	0	74	37	289	214	2.2	0	0	616

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1958	1560	186	May 14, 1958	0	-	-	-	-
1959	1630	125	May 22, 1959	0	2.53	1,830	2.53	1,830
1960	1710	64	June 8, 1960	0	.85	616	-	-

a Maximum during period April to September.

## 6620. Laramie River near Lookout, Wyo.

Location.--Lat 41°45'44", long 105°41'16", in NW¼ sec.27, T.21 N., R.74 W., on right bank 155 ft downstream from bridge on county road, 1 mile upstream from Wheatland Reservoir No. 2, and 9 miles northeast of Lookout.

Drainage area.--2,174 sq mi (revised), of which 603 sq mi is probably noncontributing. Records available.--May 1912 to December 1917, January 1921 to December 1927, April 1932 to September 1960. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 6,962.68 ft above mean sea level, adjustment of 1912. Prior to Apr. 22, 1915, chain gage and Apr. 22, 1915, to Aug. 31, 1917, water-stage recorder, at bridge 155 ft upstream at same datum. Oct. 14, 1931, to Sept. 17, 1938, water-stage recorder at site 125 ft upstream from present site at same datum.

Average discharge.--39 years (1912-17, 1921-27, 1932-60), 133 cfs (96,290 acre-ft per year).

Extremes.--1912-17, 1921-27, 1932-60: Maximum discharge, 3,340 cfs June 17, 1957 (gage height, 6.41 ft); no flow at times in 1934-35, 1939-40, 1954-55.

Remarks.--Natural flow of stream affected by transbasin diversions, storage reservoirs, diversions for irrigation of about 99,000 acres above station, and return flow from irrigated areas.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	40.4	50.5	58.6	58.3	60.4	99.9	129	274	1,075	332	102	32.1	191
1952	64.0	64.2	41.6	50.0	61.6	68.1	203	491	705	160	32.4	6.13	162
1953	5.85	10.4	14.4	45.3	63.3	107	48.2	10.3	245	61.1	89.6	8.74	58.9
1954	4	30.6	29.9	31.2	74.4	49.3	18.9	17.5	8.99	0	0	0	21.8
1955	0	0	0	.65	.4	10.9	39.3	31.4	93.7	12.6	51.2	10.3	20.9
1956	13.8	23.5	26.6	38.4	27.2	42.2	47.5	181	391	39.5	54.8	11.1	74.5
1957	9.29	11.6	20.9	20	50	95	142	83.5	507	844	169	43.9	249
1958	45.8	62.4	57.6	36.3	52.9	92.1	78.7	262	431	67.5	23.0	5.20	101
1959	14.6	27.4	34.8	41.6	47.1	55.0	99.7	86.0	501	123	32.3	12.9	89.2
1960	61.4	66.0	47.2	23.7	33.0	101	65.6	80.9	401	60.6	20.3	2.62	79.8

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	2,490	3,000	3,610	2,350	3,350	6,140	7,700	16,880	63,970	20,420	6,290	1,910	138,100
1952	3,940	3,820	2,560	3,070	3,540	4,190	12,060	30,180	41,960	9,870	1,990	365	117,500
1953	359	617	883	2,780	3,510	6,610	2,870	632	14,550	3,760	5,510	520	42,600
1954	304	1,820	1,840	1,920	4,130	3,030	1,120	1,080	535	40	0	0	15,780
1955	0	0	0	40	22	670	2,340	1,930	5,580	773	3,150	616	15,120
1956	846	1,400	1,630	2,360	1,560	2,590	2,820	11,120	23,260	2,430	3,370	662	54,050
1957	571	690	1,290	1,230	2,780	5,840	8,440	5,130	89,700	51,680	10,380	2,610	180,500
1958	2,810	3,720	3,540	2,230	2,940	5,660	4,680	16,100	25,650	4,150	1,410	309	73,200
1959	897	1,630	2,140	2,560	2,620	3,380	5,930	5,290	29,780	7,580	1,980	766	64,550
1960	3,770	3,930	2,900	1,460	1,900	6,210	3,780	4,980	23,860	3,730	1,250	156	57,930

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean
		Discharge	Date				
1950	-	-	-	-	-	-	117
1951	1210	1,940	June 4, 1951	15	191	138,100	192
1952	1240	1,210	June 12, 1952	2.5	162	117,500	150
1953	1280	740	June 17, 1953	.7	58.9	42,600	61.8
1954	1340	a100	Feb. 13, 1954	0	21.8	15,780	16.3
1955	1390	250	June 19, 1955	0	20.9	15,120	26.2
1956	1440	1,110	May 28, 1956	2.0	74.5	54,050	72.6
1957	1510	3,340	June 17, 1957	4.1	249	180,500	260
1958	1560	1,120	June 2, 1958	1.8	101	73,200	93.7
1959	1630	864	June 21, 1959	2.6	89.2	64,550	97.4
1960	1710	852	June 13, 1960	.8	79.8	57,930	-

a Maximum daily.

## 6625. Wheatland Reservoir No. 2 near Lookout, Wyo.

Location.--Lat 41°50'16", long 105°38'18", in SE¼SW¼ sec.31, T.22 N., R.73 W., on outlet gate tower near center of Wheatland No. 2 Dam on Laramie River, 15 miles northeast of Lookout.

Drainage area.--2,221 sq mi (revised), of which 603 sq mi is probably noncontributing. Records available.--December 1951 to September 1960. Month-end figures only since October 1954.

Gage.--Staff gage read once daily during irrigation season and at irregular intervals the rest of year. Datum of gage is at mean sea level (levels by Wheatland Irrigation District). Prior to Oct. 16, 1952, gage painted on vertical gate tower at same site and datum.

Extremes.--1951-60: Maximum contents observed, 98,260 acre-ft June 7-16, 1952 (elevation, 6,963.90 ft); no contents at times in 1954-57.

Remarks.--Reservoir is formed by an earthfill dam. Dam completed and storage began in 1901. Capacity, 98,930 acre-ft between elevations 6,935.0 (sill of outlet gates) and 6,964.0 ft (crest of spillway). Dead storage below elevation 6,935.0 ft not determined. Figures given herein represent usable contents. Water is used for irrigation in Laramie River and Sybille Creek basins.

Cooperation.--Records furnished by Wheatland Irrigation District.

Contents, in acre-feet, on last day of month, of Wheatland Reservoir No. 2 near Lookout, Wyo.

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951												
1952	-	-	52,020	52,510	53,970	59,760	76,920	92,320	87,840	57,970	36,370	24,540
1953	23,220	23,300	23,510	25,640	28,300	33,690	35,800	35,600	27,150	10,900	3,270	934
1954	2,600	4,040	6,500	7,780	10,210	11,650	12,150	12,020	10,780	970	240	0
1955	0	0	0	0	768	1,360	3,530	3,730	1,910	1,680	768	768
1956	1,710	2,370	3,450	5,110	6,120	7,900	12,580	14,600	7,500	2,330	1,140	0
1957	0	500	1,100	1,700	4,090	9,350	16,170	19,990	80,590	95,410	71,280	65,800
1958	66,860	70,230	72,340	73,470	75,880	80,890	81,800	81,670	75,650	48,480	25,630	20,410
1959	20,000	20,680	22,360	23,620	25,080	29,200	36,940	41,350	47,450	31,930	16,170	9,230
1960	12,000	16,180	17,140	18,570	20,250	26,800	29,820	29,680	37,670	19,800	8,070	5,740

6635. Laramie River below Wheatland Reservoir No. 2, Wyo.

Location.--Lat 41°55'35" long 105°34'36", in NE 1/4 sec. 34, T.23 N., R.73 W., on left bank 50 ft upstream from bridge on county road, 0.4 mile downstream from mouth of reservoir spillway channel, 1 1/2 miles downstream from outlet gates of Wheatland Reservoir No. 2, and 22 miles northeast of Lookout.

Drainage area.--2,248 sq mi (revised), of which 606 sq mi is probably noncontributing.

Records available.--May to August 1916, May to September 1917, October 1951 to September 1960. Published as "below McGill" 1916-17.

Gage.--Water-stage recorder. Datum of gage is 6,883.81 ft above mean sea level, unadjusted. Prior to May 17, 1917, staff gage and May 17 to Sept. 13, 1917, water-stage recorder, at bridge 50 ft downstream at different datum.

Average discharge.--9 years (1951-60), 94.4 cfs (68,340 acre-ft per year).

Extremes.--1916-17, 1951-60: Maximum discharge, 2,860 cfs June 26-30, 1917 (gage height, 5.6 ft, site and datum then in use); minimum daily determined, 1 cfs Sept. 8, 9, 1916.

Remarks.--Flow completely regulated by Wheatland Reservoir No. 2 (see preceding station).

Natural flow of stream affected by transbasin diversions, storage reservoirs, diversions for irrigation, and return flow from irrigated areas.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952	40.3	15	15	14	11	12	26.0	225	685	593	352	242	186
1953	26.1	12.1	10.5	9.77	13.4	23.9	12.8	8.90	356	319	178	45.1	85.0
1954	8.88	6.52	7.30	9.97	17.4	11.7	8.05	9.80	16.4	111	7.29	6.38	18.5
1955	5.61	5.26	3.81	3.98	3.61	6.48	10.4	18.5	136	20.8	46.8	9.85	22.6
1956	5.97	5.70	4.0	3.5	3.5	6.5	13.8	128	473	108	65.8	13.2	66.9
1957	8.67	9.65	5	5	5	7.3	16.7	16.9	382	581	507	143	142
1958	17.9	11.6	6	3	16.7	21.8	61.5	227	451	491	399	81.6	150
1959	9.57	7.69	6	6	6	6.7	17.0	12.3	368	321	275	152	99.3
1960	9.22	5.72	6	6	6	14.1	7.95	55.0	228	323	216	41.8	77.0

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952	2,480	893	922	861	633	738	1,550	13,860	40,750	36,470	21,630	14,380	135,200
1953	1,600	719	647	601	742	1,470	762	547	21,180	19,640	10,970	2,680	61,560
1954	546	388	449	613	968	720	479	603	977	6,840	448	380	13,410
1955	345	313	234	245	201	399	620	1,140	8,100	1,280	2,880	586	16,340
1956	367	339	246	215	201	400	821	7,840	28,160	6,620	4,050	785	50,040
1957	533	574	307	307	278	450	994	1,040	22,710	35,720	31,150	8,500	102,600
1958	1,100	688	369	184	928	1,340	3,660	13,920	26,830	30,130	24,510	4,860	108,600
1959	588	458	369	369	333	413	1,010	758	21,890	19,730	16,890	9,060	71,870
1960	567	340	369	369	345	869	473	3,380	13,540	19,880	13,270	2,480	55,880

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean
		Discharge	Date				
1950							
1951							
1952	1240	1,060	June 15, 1952	-	186	135,200	184
1953	1280	468	June 20, 1953	6.5	85.0	61,560	92.8
1954	1340	402	July 5, 1954	2.8	18.5	13,410	17.9
1955	1390	241	June 21, 1955	3.2	22.6	16,340	22.6
1956	1440	644	June 9, 1956	-	68.9	50,040	69.6
1957	1510	1,120	July 18, 1957	-	142	102,600	143
1958	1560	610	June 1, 1958	-	150	108,600	149
1959	1630	588	June 29, 1959	-	99.3	71,870	99.1
1960	1710	574	June 10, 1960	-	77.0	55,880	-

## 6645. Sybille Creek above Bluegrass Creek, near Wheatland, Wyo.

Location--Lat 41°52'05", long 105°12'42", in sec.23, T.22 N., R.70 W., on right bank a quarter of a mile upstream from Bluegrass Creek and 18 miles southwest of Wheatland.

Drainage area--225 sq mi (revised).

Records available--March 1941 to September 1960. Monthly discharge only for some periods, published in WSP 1310.

Gage--Water-stage recorder. Altitude of gage is 5,246 ft (from topographic map).

Average discharge--19 years (1941-60), 19.4 cfs (14,050 acre-ft per year).

Extremes--1941-60: Maximum discharge, 1,870 cfs May 26, 1956 (gage height, 5.90 ft), from rating curve extended above 340 cfs on basis of slope-area measurement of peak flow; minimum daily, 0.2 cfs Oct. 7-21, 1956.

Remarks--Diversions for irrigation of about 3,600 acres above station. One small diversion between station and Bluegrass Creek. Seven small reservoirs above station (combined capacity, about 400 acre-ft) for irrigation.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	5.47	9.35	7.42	5.59	6.23	7.13	10.6	13.9	22.9	21.9	8.53	6.61	10.4
1952	8.55	11.1	9.72	8.05	7.62	10.8	91.1	47.7	20.8	10.7	5.64	4.03	19.6
1953	3.37	5.04	7.03	7.35	6.15	7.63	9.77	10.1	12.3	7.50	4.54	1.69	6.88
1954	1.38	2.15	3.71	3.95	2.64	1.93	1.99	3.36	1.52	.76	.45	.40	2.02
1955	.34	.33	.40	.49	.72	.98	2.84	15.7	13.6	3.68	1.00	.46	3.39
1956	.60	.87	2.12	2.84	2.46	2.40	2.40	25.3	3.71	4.13	.50	.53	4.02
1957	.28	1.49	1.35	1.90	2.18	2.16	25.8	103	57.8	50.8	12.1	9.24	22.4
1958	12.8	13.8	13.5	8.75	8.90	9.23	24.4	35.9	15.6	27.6	10.8	5.85	15.5
1959	6.90	8.82	9.69	9.07	6.95	9.45	27.8	45.7	34.1	21.4	7.24	3.07	16.0
1960	9.18	9.61	11.3	9.13	7.43	24.1	9.1	13.4	6.00	3.01	.95	.49	8.74

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	336	497	456	343	346	438	628	856	1,360	1,350	524	394	7,530
1952	526	660	598	495	438	662	5,420	2,940	1,240	658	347	240	14,220
1953	207	300	432	452	342	469	581	622	733	461	279	100	4,980
1954	85	128	228	243	146	119	118	207	90	47	29	24	1,460
1955	21	20	25	30	40	60	169	968	807	226	61	28	2,460
1956	37	52	131	174	142	147	143	1,550	221	254	31	32	2,910
1957	17	29	83	117	121	133	1,540	6,360	3,440	3,130	743	550	16,260
1958	785	820	829	558	494	567	1,450	2,080	930	1,700	666	348	11,210
1959	424	525	596	558	497	581	1,660	2,810	2,030	1,310	445	183	11,620
1960	564	572	695	561	427	1,480	590	822	357	185	59	29	6,340

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	8.65	6,260
1951	1210	592	July 29, 1951	2.7	10.4	7,530	11.1	8,020
1952	1240	560	Apr. 8, 1952	1.5	19.6	14,220	18.4	13,390
1953	1280	960	July 29, 1953	1.1	6.88	4,980	6.19	4,480
1954	1340	114	May 22, 1954	.4	2.02	1,460	1.50	1,090
1955	1390	416	June 26, 1955	.3	3.39	2,460	3.60	2,610
1956	1440	1,870	May 26, 1956	.4	4.02	2,910	3.89	2,820
1957	1510	1,250	July 21, 1957	.2	22.4	16,260	25.6	18,570
1958	1560	1,600	July 16, 1958	4.7	15.5	11,210	14.3	10,320
1959	1630	82	May 25, 1959	1.3	16.0	11,620	16.4	11,900
1960	1710	96	Mar. 28, 1960	.3	8.74	6,340	-	-

## 6649. Bluegrass Creek near Wheatland, Wyo.

Location--Lat 41°52'14", long 105°12'51", in NE<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub> sec.22, T.22 N., R.70 W., on right bank 150 ft upstream from State Highway 34, 0.2 mile upstream from Sybille Creek, and 18.2 miles southwest of Wheatland.

Drainage area--139 sq mi.

Records available--August 1958 to September 1960.

Gage--Water-stage recorder. Altitude of gage is 5,250 ft (from topographic map).

Extremes--1958-60: Maximum discharge, 768 cfs Aug. 15, 1958 (gage height, 5.04 ft); minimum not determined.

Remarks--Most of flow during irrigation season is water released from Wheatland Reservoir No. 2 (capacity, 98,930 acre-ft) on Laramie River and diverted through a tunnel 15 miles upstream; some diversions for irrigation of hay meadows above station.



Monthly and yearly mean discharge, in cubic feet per second, of Bluegrass Creek near Wheatland, Wyo.

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1958	-	-	-	-	-	-	-	-	-	-	-	-	-
1959	8.05	6.65	5.55	6.33	9.68	11.1	36.8	36.8	342	308	396	82.6	-
1960	14.3	11.4	11.4	7.55	10.2	47.8	6.80	46.3	216	305	277	161	101
											209	34.8	77.2

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1958	-	-	-	-	-	-	-	-	-	-	24,330	4,920	-
1959	495	396	341	389	538	680	2,190	2,260	20,330	18,950	17,030	9,560	73,160
1960	879	676	701	464	585	2,940	404	2,850	12,880	18,740	12,850	2,070	56,040

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30						Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet		Mean		Acre-feet	
		Discharge	Date								
1958	1630	-	a768	Aug. 15, 1958	-	-	-	-	-	-	-
1959	1630	-	566	June 29, 1959	2.5	101	-	73,160	102	-	74,180
1960	1710	-	570	June 10, 1960	1.5	77.2	-	56,040	-	-	-

a Maximum during period August to September.

6650. Sybille Creek below Bluegrass Creek, near Wheatland, Wyo.

Location.--Lat 41°52'40", long 105°12'17", in S½ sec.14, T.22 N., R.70 W., on left bank three-quarters of a mile downstream from Bluegrass Creek, 1 mile upstream from Wheatland Canal No. 1, and 17 miles southwest of Wheatland.

Drainage area.--366 sq mi (revised).

Records available.--March 1950 to September 1960.

Gage.--Water-stage recorder. Altitude of gage is 5,220 ft (from topographic map). Prior to Mar. 18, 1959, at site 120 ft downstream at same datum.

Average discharge.--10 years (1950-60), 106 cfs (76,740 acre-ft per year).

Extremes.--1950-60: Maximum discharge, 3,060 cfs Apr. 7, 1952 (gage height, 4.77 ft), from rating curve extended above 670 cfs on basis of velocity-area study; minimum daily, 0.1 cfs July 2-4, Sept. 9-12, Dec. 15, 1954.

Remarks.--Most of flow during irrigation season is water released from Wheatland Reservoir No. 2 (capacity, 98,930 acre-ft) on Laramie River and diverted down Bluegrass Creek for irrigation of land near Wheatland. Diversions for irrigation of about 4,400 acres above station. Ten small reservoirs above station (combined capacity, about 400 acre-ft) for irrigation.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	38.4	26.1	21.7	19.0	24.4	26.4	42.2	65.7	397	595	308	211	149
1952	62.3	32.1	27.3	30.1	25.1	26.5	189	251	590	581	357	221	200
1953	17.5	15.7	18.6	18.9	19.3	32.9	33.6	18.5	345	329	177	46.1	89.5
1954	13.0	10.8	10.7	11.8	12.3	10.3	10.1	6.28	9.41	102	1.92	1.48	16.7
1955	.46	.46	.41	.54	.82	4.78	21.3	34.2	147	14.7	20.5	1.54	20.5
1956	.71	1.45	3.56	3.33	3.48	12.3	6.83	129	497	114	59.5	3.86	69.3
1957	.60	.59	1.65	2.16	5.54	3.98	54.6	140	419	611	474	120	154
1958	24.5	21.0	18.1	15.3	23.0	31.4	62.9	232	487	521	372	79.9	158
1959	14.9	15.6	15.3	15.6	18.6	19.6	60.2	77.8	374	341	306	168	119
1960	22.8	21.5	18.3	15.4	15.5	61.0	11.8	57.4	230	321	213	43.8	86.4

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	2,360	1,560	1,330	1,170	1,360	1,620	2,510	4,040	23,640	36,590	18,970	12,550	107,700
1952	3,830	1,910	1,680	1,440	1,850	1,630	11,250	15,450	35,090	35,720	21,950	13,160	144,900
1953	1,080	932	1,150	1,160	1,070	2,020	2,000	1,020	20,540	20,220	10,890	2,750	64,830
1954	798	642	657	724	684	632	600	386	560	6,240	118	28	12,070
1955	29	27	25	33	45	294	1,270	2,100	8,760	902	1,260	91	14,840
1956	44	86	219	205	200	758	406	7,920	29,600	6,990	3,660	230	50,320
1957	37	35	102	133	307	245	3,250	8,640	24,940	37,540	29,130	7,140	111,500
1958	1,500	1,250	1,110	942	1,280	1,930	3,740	14,270	28,970	32,040	22,900	4,750	114,700
1959	918	926	942	958	1,030	1,210	3,580	4,780	22,250	20,950	18,790	10,020	86,340
1960	1,400	1,280	1,120	948	893	3,750	704	3,530	13,680	19,720	13,110	2,600	62,740

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30						Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet		Mean		Acre-feet	
		Discharge	Date								
1950	-	-	-	-	-	-	-	-	-	-	-
1951	1210	-	2,270	July 29, 1951	12	149	-	107,700	152	-	109,900
1952	1240	-	3,060	Apr. 7, 1952	18	200	-	144,900	194	-	140,700
1953	1280	-	2,810	July 29, 1953	6.5	89.5	-	64,830	88.1	-	63,770
1954	1340	-	566	July 6, 1954	.1	15.7	-	12,070	13.9	-	10,050
1955	1390	-	1,240	June 14, 1955	.1	20.5	-	14,840	20.9	-	15,100
1956	1440	-	1,480	May 26, 1956	.4	69.3	-	50,320	69.1	-	50,140
1957	1510	-	1,730	July 21, 1957	.4	154	-	111,500	159	-	115,200
1958	1560	-	1,380	July 16, 1958	10	158	-	114,700	157	-	113,600
1959	1630, 1710	-	598	June 29, 1959	10	119	-	86,340	121	-	87,350
1960	1710	-	598	June 10, 1960	2.7	86.4	-	62,740	-	-	-

## 6655. Wheatland Canal No. 1 near Wheatland, Wyo.

Location.--Lat 41°53'08", long 105°11'14", in NE¼NW¼ sec.13, T.22 N., R.70 W., on left bank 0.4 mile downstream from point of diversion from Sybille Creek and 16 miles southwest of Wheatland.

Records available.--May 1952 to September 1960.

Gage.--Water-stage recorder. Altitude of gage is 5,190 ft (from topographic map).

Average discharge.--8 years (1952-60), 58.2 cfs (42,140 acre-ft per year).

Extremes.--1952-60: Maximum daily discharge, 494 cfs July 11, 1952; no flow for many days in each year.

Remarks.--Flow is Laramie River water released from Wheatland Reservoir No. 2, then diverted down Bluegrass and Sybille Creeks to canal.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	-	-	-	189	395	447	232	170	-
1952	-	-	-	-	-	-	-	0	232	222	125	33.8	-
1953	5.29	0	0	0	0	0	9.29	0	232	222	125	33.8	52.4
1954	1.04	0	0	0	0	0	0	1.06	.01	79.4	0	0	6.92
1955	0	0	0	0	0	0	0	.39	110	9.78	16.8	.41	11.4
1956	0	0	0	0	0	0	0	56.3	295	65.3	38.2	2.06	37.9
1957	0	0	0	0	0	0	33.8	118	292	399	336	87.9	106
1958	18.9	0	0	0	0	21.8	53.7	171	349	354	282	62.3	110
1959	3.14	1.89	0	0	0	0	29.5	46.9	269	256	213	118	78.4
1960	6.25	0	0	0	0	38.2	5.00	51.1	17.7	25.0	190	29.0	62.7

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	-	-	-	11,640	23,520	27,500	14,270	10,100	-
1952	-	-	-	-	-	-	-	0	13,790	13,630	7,660	2,010	37,970
1953	325	0	0	0	0	0	553	65	4	4,880	0	0	5,010
1954	64	0	0	0	0	0	0	24	6,550	601	1,030	24	8,230
1955	0	0	0	0	0	0	0	0	3,460	17,540	4,010	2,350	27,480
1956	0	0	0	0	0	0	2,010	7,240	17,360	24,540	20,680	5,230	77,060
1957	0	0	0	0	0	0	1,340	3,200	10,540	20,790	21,760	17,340	79,840
1958	1,160	0	0	0	0	0	0	1,750	2,880	15,990	15,750	13,070	7,010
1959	193	113	0	0	0	0	0	0	1,750	2,880	15,990	15,750	56,760
1960	385	0	0	0	0	2,350	297	3,140	10,530	15,360	11,700	1,720	45,480

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Maximum day		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950								
1951								
1952	1240	a494	July 11, 1952	-	-	-	-	-
1953	1280	267	June 22, 1953	0	52.4	37,970	52.1	37,710
1954	1340	293	July 6, 1954	0	6.92	5,010	6.83	4,950
1955	1390	217	June 9, 1955	0	11.4	8,230	11.4	8,230
1956	1440	378	June 12, 1956	0	37.9	27,480	37.9	27,480
1957	1510	433	July 27, 1957	0	106	77,060	108	78,220
1958	1560	411	June 9, 1958	0	110	79,840	109	78,990
1959	1630	403	June 18, 1959	0	78.4	56,760	78.4	56,840
1960	1710	362	June 10, 1960	0	62.7	45,480	-	-

a Maximum daily during period May to September.

6658. Wheatland Canal No. 3 near Wheatland, Wyo.

Location.--Lat 41°56'09", long 105°06'22", in NW $\frac{1}{4}$ SE $\frac{1}{4}$  sec.27, T.23 N., R.69 W., on left bank 0.3 mile downstream from point of diversion from Sybille Creek, 3.1 miles southwest of Natwick, and 11 miles southwest of Wheatland.

Records available.--October 1958 to September 1960.

Gage.--Water-stage recorder. Altitude of gage is 4,980 ft (from topographic map).

Extremes.--1958-60: Maximum daily discharge, 67 cfs Mar. 22, 1960; no flow for many days in 1959.

Remarks.--Flow past station consists of Sybille Creek water diverted into Wheatland Reservoir No. 1 during winter months.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1959	12.4	17.8	20.8	20.4	23.4	25.2	3.42	0.23	4.12	0.2	0.15	0.06	11.0
1960	24.0	23.4	24.3	20.9	19.9	23.9	4.83	1.03	4.40	.90	.58	.72	12.4

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1959	759	1,060	1,280	1,260	1,300	1,550	203	14	245	12	9.5	3.4	7,700
1960	1,470	1,390	1,500	1,290	1,140	1,470	287	63	262	55	36	43	9,010

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Maximum day		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1959	1710	45	June 28, 1959	0	11.0	7,700	12.4	8,960
1960	1710	67	Mar. 22, 1960	.1	12.4	9,010	-	-

6660. Wheatland Canal No. 2 near Wheatland, Wyo.

Location.--Lat 42°02'28", long 105°04'00", in NE¼ sec.24, T.24 N., R.69 W., on left bank 2½ miles downstream from point of diversion from Sybille Creek, 3¼ miles downstream from outlet gates of Wheatland Reservoir No. 1, and 5½ miles west of Wheatland.

Records available.--May 1952 to September 1960.

Gage.--Water-stage recorder. Altitude of gage is 4,769 ft (from topographic map).

Average discharge.--8 years (1952-60), 24.7 cfs (17,880 acre-ft per year).

Extremes.--1952-60: Maximum daily discharge, 235 cfs July 19, 1957; no flow for many days in each year.

Remarks.--Flow is Laramie River water released from Wheatland Reservoir No. 2, diverted down Bluegrass and Sybille Creeks to Canal No. 2; or from Sybille Creek through Canal No. 3, Wheatland Reservoir No. 1, and No. 2 supply canal to Canal No. 2.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	-	-	-	56.0	147	163	111	59.6	-
1952	2.18	0	0	0	0	0	0	8.44	109	107	66.1	16.5	25.7
1954	4.78	0	0	0	0	0	0	2.60	.70	37.2	3.49	0	4.14
1955	0	0	0	0	0	0	0	14.3	46.4	.66	.63	0	5.13
1956	0	0	0	0	0	0	0	30.5	134	35.8	18.7	.04	18.2
1957	0	0	0	0	0	0	2.75	1.54	136	188	138	46.8	43.1
1958	14.1	0	0	0	0	0	0	57.6	124	165	125	30.9	43.4
1959	3.68	0	0	0	0	0	0	17.4	121	112	91.0	48.0	32.8
1960	0	0	0	0	0	0	.41	10.5	74.1	130	69.5	11.6	24.8

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	-	-	-	3,440	8,740	10,020	6,820	3,550	-
1952	134	0	0	0	0	0	0	396	6,470	6,580	4,060	981	18,620
1954	294	0	0	0	0	0	0	160	42	2,290	215	0	3,000
1955	0	0	0	0	0	0	0	876	2,760	41	39	0	3,720
1956	0	0	0	0	0	0	0	1,870	7,950	2,200	1,150	2.4	13,170
1957	0	0	0	0	0	0	163	95	8,090	11,570	8,510	2,790	31,220
1958	865	0	0	0	0	0	0	3,540	7,370	10,160	7,880	1,240	31,480
1959	219	0	0	0	0	0	0	1,070	7,170	6,870	5,590	2,850	23,770
1960	0	0	0	0	0	0	24	644	4,410	7,990	4,270	690	18,030

Yearly diacharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Maximum day		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950								
1951								
1952	1240	a204	June 27, 1952	-	-	-	-	-
1953	1280	144	July 28, 1953	0	25.7	18,620	25.9	18,780
1954	1340	70	July 14,15, 1954	0	4.14	3,000	3.73	2,710
1955	1390	216	June 22, 1955	0	5.13	3,720	5.13	3,720
1956	1440	232	May 31, 1956	0	18.2	13,170	18.2	13,170
1957	1510	235	July 19, 1957	0	43.1	31,220	44.3	32,080
1958	1560	210	July 3, 1958	0	43.4	31,480	42.6	30,810
1959	1630	200	June 15, 1959	0	32.8	23,770	32.5	23,550
1960	1710	176	June 10, 1960	0	24.8	18,030	-	-

a Maximum daily during period May to September.

6665. Sybille Creek near Muleshoe Ranch, near Wheatland, Wyo.

Location.--Lat 42°01'47", long 105°04'20", in NW $\frac{1}{4}$  sec.25, T.24 N., R.69 W., on left bank  $\frac{1}{2}$  miles downstream from Wheatland Canal No. 2,  $\frac{1}{2}$  miles upstream from Mule Shoe Ranch,  $\frac{1}{2}$  miles southwest of Wheatland, and 6 $\frac{1}{2}$  miles upstream from mouth.

Drainage area.--507 sq mi (revised).

Records available.--March 1950 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 4,740 ft (from topographic map).

Average discharge.--8 years (1950-58), 13.5 cfs (9,770 acre-ft per year).

Extremes.--1950-58: Maximum discharge, 2,070 cfs Apr. 8, 1952 (gage height, 7.81 ft), from rating curve extended above 120 cfs on basis of slope-area measurement at gage height 6.65 ft; no flow at times in 1954-55.

Remarks.--Part of flow past station is return flow from lands irrigated by water from Laramie River. Diversions for irrigation of about 18,000 acres above station. Twenty small reservoirs above station (combined capacity, about 800 acre-ft) for irrigation and stock water. Wheatland Reservoir No. 1 above station (capacity, 7,160 acre-ft) is used mainly for storage of irrigation water diverted from Sybille Creek during winter.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	14.2	14.9	15.1	15.3	23.2	23.4	52.5	18.8	35.4	54.9	14.8	4.55	23.9
1952	26.5	40.5	27.6	40.1	38.0	41.0	192	20.0	21.8	6.47	4.77	5.24	38.3
1953	11.7	12.0	17.1	13.9	20.6	36.7	12.1	3.41	4.17	17.4	1.96	3.74	12.9
1954	2.63	9.97	12.1	13.5	9.96	1.67	1.51	1.39	.95	2.27	1.33	.10	4.76
1955	1.74	3.77	4.30	4.67	4.19	.62	.87	1.40	2.07	.75	.21	0	2.04
1956	.18	2.29	3.64	4.01	1.35	1.09	.84	12.7	.57	7.60	.90	2.18	3.14
1957	.34	.55	3.52	2.43	5.60	2.35	1.09	6.02	2.92	18.5	5.20	8.77	4.78
1958	5.98	25.2	32.1	21.8	11.1	13.5	28.0	27.9	18.7	23.3	4.70	.85	17.8
1959													
1960													

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	871	884	930	940	1,290	1,440	3,120	1,160	2,110	3,380	912	271	17,310
1952	1,630	2,410	1,700	2,470	2,190	2,520	11,400	1,230	1,300	398	293	312	27,850
1953	719	714	1,050	857	1,140	2,260	721	209	248	1,070	120	223	9,330
1954	161	593	746	827	553	103	90	85	56	140	82	6.0	3,440
1955	107	224	285	287	232	38	52	86	123	46	13	0	1,470
1956	11	136	224	247	78	67	50	783	34	467	55	130	2,280
1957	21	33	217	149	313	145	85	370	174	1,130	320	522	3,460
1958	368	1,500	1,970	1,340	618	828	1,670	1,720	1,120	1,430	289	51	12,900
1959													
1960													

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	-	-	-
1951	1210	1,480	July 29, 1951	1.2	23.9	17,310	28.1	20,360	
1952	1240	2,070	Apr. 8, 1952	1.4	38.3	27,850	33.9	24,600	
1953	1280	1,160	July 29, 1953	.8	12.9	9,330	11.5	8,350	
1954	1340	182	May 16, 1954	0	4.76	3,440	3.51	2,540	
1955	1390	118	June 15, 1955	0	2.04	1,470	1.73	1,250	
1956	1440	936	May 27, 1956	.1	3.14	2,280	3.00	2,180	
1957	1510	1,000	July 22, 1957	.2	4.78	3,460	9.71	7,020	
1958	1560	845	July 16, 1958	.2	17.8	12,900	-	-	
1959									
1960									

6666. Sybille Creek at Muleshoe Ranch, near Wheatland, Wyo.

Location.--Lat 42°02'45", long 105°04'56", in NE $\frac{1}{4}$  sec.23, T.24 N., R.69 W., on right bank 40 ft downstream from Palmer Canyon road bridge, 2 $\frac{1}{2}$  miles downstream from Wheatland Canal No. 2, 5 miles upstream from mouth, and 8 miles west of Wheatland.

Drainage area.--508 sq mi.

Records available.--September 1958 to September 1960.

Gage.--Water-stage recorder. Altitude of gage is 4,700 ft (from topographic map).

Extremes.--1958-60: Maximum discharge, 325 cfs Mar. 23, 1960 (gage height, 3.85 ft); minimum, 1.9 cfs Aug. 30, Sept. 2, 1960.

Remarks.--Part of flow past station is return flow from lands irrigated by water from Laramie River. Diversions for irrigation of about 18,000 acres above station. Twenty small reservoirs above station (combined capacity, about 800 acre-ft) for irrigation and stock water. Wheatland Reservoir No. 1 above station (capacity, 7,160 acre-ft) is used mainly for storage of irrigation water diverted from Sybille Creek during winter.

Monthly and yearly mean discharge, in cubic feet per second, of Sybille Creek at Muleshoe Ranch, near Wheatland, Wyo.

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1959	6.18	11.8	12.3	11.1	10.9	10.4	56.0	28.2	7.03	3.63	3.43	4.90	13.8
1960	13.1	12.8	11.6	11.8	10.6	22.6	7.06	6.32	7.15	3.12	2.62	3.03	9.34

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1959	380	702	756	685	606	638	3,330	1,730	418	223	211	292	9,970
1960	803	764	716	726	612	1,390	420	388	426	192	161	180	6,780

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1959	1630	131	Apr. 27, 1959	2.1	13.8	9,970	14.4	10,420	
1960	1710	325	Mar. 23, 1960	1.9	9.34	6,780	-	-	

6675. North Laramie River near Wheatland, Wyo.

Location.--Lat 42°09'58", long 105°12'23", in SE $\frac{1}{4}$  sec.2, T.25 N., R.70 W., on left bank 1,800 ft upstream from headgate of North Laramie Land Co.'s canal,  $1\frac{1}{4}$  miles downstream from Spring Creek, and 15 miles northwest of Wheatland.

Drainage area.--370 sq mi (revised).

Records available.--October 1914 to September 1923, July 1939 to September 1960. Monthly discharge only for some periods, published in WSP 1310. Published as "at upper station near Wheatland" in WSP 469. January 1912 to November 1914 at site  $1\frac{1}{4}$  miles downstream; records not equivalent owing to diversion.

Gage.--Water-stage recorder. Altitude of gage is 4,840 ft (from topographic map). Nov. 6, 1914, to Sept. 30, 1923, at site 340 ft downstream at different datum. July 25, 1939, to Aug. 12, 1954, at site 800 ft downstream at datum 1.84 ft lower.

Average discharge.--30 years (1914-23, 1939-60), 39.5 cfs (28,600 acre-ft per year).

Extremes.--1914-23, 1939-60: Maximum discharge, 9,260 cfs July 27, 1951 (gage height, 11.6 ft, from floodmarks, site and datum then in use), from rating curve extended above 500 cfs on basis of slope-area measurements at gage heights 7.84, 8.07, and 11.6 ft (site and datum then in use); no flow Nov. 29, 1915, at times July to September 1919, Aug. 3 to Oct. 24, 1954, Oct. 1-6, 1956, Aug. 25 to Sept. 8, 1960.

Remarks.--Diversions for irrigation of about 8,800 acres above station. Seven small reservoirs above station (combined capacity, about 290 acre-ft) for irrigation and stock water.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	6.19	8.23	6.77	5.45	7.28	9.81	38.3	12.7	63.8	74.2	19.7	10.5	31.7
1952	12.5	11.9	7.64	6.78	7.34	8.44	29.0	23.2	16.8	12.9	4.31	57.8	
1953	5.27	5.64	7.02	7.86	7.82	13.7	25.0	68.4	27.8	15.3	7.56	2.25	15.9
1954	1.73	3.45	3.49	3.07	3.18	4.82	12.4	7.83	3.52	6.68	0	0	3.68
1955	.03	.58	1.60	1.41	1.62	4.85	41.1	30.3	20.0	8.67	7.01	.84	9.91
1956	1.06	3.37	3.60	3.41	2.04	25.7	16.3	19.5	7.61	5.17	1.75	.29	7.52
1957	.57	1.89	1.60	1.26	3.61	7.27	45.4	22.2	116	26.9	16.1	10.7	38.0
1958	11.0	12.7	10.9	9.23	10.8	21.3	42.9	87.0	28.6	14.8	7.80	4.53	21.9
1959	5.34	5.54	6.10	5.57	6.56	11.1	30.6	93.7	32.2	18.6	4.54	3.23	18.7
1960	7.16	9.10	7.40	4.09	3.43	59.2	33.2	26.4	13.7	3.66	.30	.86	14.1

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	381	490	417	335	405	603	2,280	7,830	3,790	4,560	1,210	625	22,930
1952	771	708	470	415	420	519	17,240	14,150	5,160	1,030	793	256	41,930
1953	324	335	432	484	435	844	1,490	4,210	1,660	815	465	134	11,630
1954	106	205	215	189	177	297	739	482	209	42	.4	0	2,660
1955	1.8	35	99	87	90	298	2,450	1,860	1,190	533	477	50	7,170
1956	65	201	221	210	118	1,580	968	1,200	453	318	108	17	5,460
1957	35	113	98	78	201	447	2,700	13,670	6,890	1,850	980	639	27,510
1958	679	757	671	568	602	1,310	2,550	5,350	1,700	913	480	270	15,850
1959	328	330	375	342	364	683	1,820	5,760	1,920	1,140	279	192	13,530
1960	440	541	455	251	197	3,640	1,980	1,620	814	225	51	51	10,230

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	-	-	-
1951	1210	9,260	July 27, 1951	3.8	31.7	22,930	26.7	19,330	
1952	1240	4,420	Apr. 7, 1952	3.0	57.8	41,930	32.6	23,590	
1953	1280	1,570	July 29, 1953	1.4	16.0	11,630	56.6	41,070	
1954	1340	40	Apr. 7, 1954	0	3.68	2,660	15.3	11,060	
1955	1390	354	July 28, 1955	0	9.91	7,170	3.13	2,270	
							10.4	7,520	
1956	1440	325	Mar. 25, 1956	.1	7.52	5,460	7.18	5,220	
1957	1510	1,170	Aug. 4, 1957	0	36.0	27,510	40.6	29,370	
1958	1560	202	May 15, 1958	3.8	21.9	15,850	20.4	14,780	
1959	1630	158	(a)	1.5	18.7	13,530	19.3	13,940	
1960	1710	462	Mar. 24, 1960	0	14.1	10,230	-	-	

a May 5, 24, 1959.

6700. Laramie River near Uva, Wyo.

Location.--Lat 42°08'16", long 104°46'33", in NW $\frac{1}{4}$ SE $\frac{1}{4}$  sec.16, T.25 N., R.66 W., on right bank at private bridge, 7 $\frac{1}{2}$  miles east of Uva and 9 $\frac{1}{2}$  miles downstream from Chugwater Creek.

Drainage area.--4,440 sq mi, of which 622 sq mi (revised) is probably noncontributing.

Records available.--October 1952 to October 1957, June 1958 to September 1960.

Gage.--Water-stage recorder. Altitude of gage is 4,375 ft (from topographic map).

Average discharge.--7 years (1952-57, 1958-60), 61.7 cfs (44,670 acre-ft per year).

Extremes.--1952-60: Maximum discharge, 2,760 cfs May 29, 1957 (gage height, 6.35 ft), from rating curve extended above 600 cfs on basis of slope-area measurement at gage height, 6.02 ft; minimum daily, 0.3 cfs July 28, Aug. 2, 3, 1960.

Remarks.--Natural flow of stream affected by transbasin diversions, storage reservoirs, power developments, ground-water withdrawals and diversions for irrigation, and return flow from irrigated areas. Records of chemical analyses for the periods October 1956 to September 1957 and May 1958 to September 1959, suspended sediment loads and water temperatures for the period October 1952 to September 1957 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952													
1953	86.5	102	132	125	103	128	112	79.1	18.5	37.3	46.3	11.7	81.8
1954	28.2	66.9	80.8	83.8	71.8	65.4	53.0	22.4	7.73	18.3	6.35	2.79	42.2
1955	18.2	39.3	50.3	44.6	42.6	60.8	80.4	27.0	135	38.3	17.1	5.97	46.4
1956	20.6	54.6	60.6	57.6	63.6	72.7	54.1	42.5	6.11	9.75	8.23	1.31	37.6
1957	10.2	49.7	55.3	53.5	62.1	49.2	60.9	357	193	40.7	84.4	74.9	91.1
1958	83.2								81.4	75.6	27.8	27.4	-
1959	43.5	61.0	79.9	108	90.8	101	135	176	39.5	18.1	7.47	10.1	72.5
1960	82.4	89.4	90.6	90.3	84.9	152	74.8	40.9	8.59	1.43	.72	3.76	60.0

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952													
1953	5,320	6,090	8,090	7,680	5,700	7,890	6,680	4,860	1,100	2,290	2,849	697	59,240
1954	1,740	3,980	4,970	5,150	3,980	4,020	3,160	1,380	460	1,130	390	166	30,530
1955	1,120	2,340	3,090	2,740	2,360	3,740	4,780	1,660	8,020	2,360	1,050	355	33,620
1956	1,260	3,250	3,730	3,540	3,660	4,470	3,220	2,610	364	599	506	78	27,290
1957	625	2,960	3,400	3,290	3,450	3,030	3,620	21,930	11,500	2,500	5,190	4,460	65,960
1958	5,110	-	-	-	-	-	-	-	4,840	4,650	1,710	1,630	-
1959	2,680	3,630	4,910	6,630	5,040	6,210	8,040	10,840	2,350	1,110	459	599	52,500
1960	5,070	5,320	5,570	5,550	4,890	9,340	4,450	2,520	511	88	44	224	43,580

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950								
1951								
1952								
1953	1280	615	July 31, 1953	9.4	81.8	59,240	69.7	50,430
1954	1340	275	July 19, 1954	1.8	42.2	30,530	36.4	26,390
1955	1390	2,270	June 26, 1955	2.7	46.4	33,620	48.8	35,300
1956	1440	322	May 28, 1956	.4	37.6	27,290	35.9	26,030
1957	1510	2,760	May 29, 1957	1.0	91.1	65,960	-	-
1958	1560	a225	July 17, 1958	-	-	-	-	-
1959	1630	290	June 22, 1959	2.0	72.5	52,500	79.1	57,240
1960	1710	442	Mar. 24, 1960	.3	60.0	43,580	-	-

a Maximum recorded.

6705. Laramie River near Fort Laramie, Wyo.

Location.--Lat 42°12'06", long 104°32'39", in NE $\frac{1}{4}$  sec.28, T.26 N., R.64 W., on left bank half a mile east of Old Fort Laramie, 0.9 mile downstream from Deer Creek, 1.3 miles upstream from mouth, 1.4 miles southwest of Fort Laramie, and 5 miles downstream from point of diversion to Gering-Fort Laramie Canal.

Drainage area.--4,546 sq mi (revised), of which 631 sq mi is probably noncontributing.

Records available.--April 1915 to September 1960 (no winter records prior to 1927).

Monthly discharge only for some periods, published in WSP 1310. Records for water years 1926-39, previously published including diversions to Gering-Fort Laramie Canal, were adjusted to exclude flow in the canal in WSP 1310. Prior to October 1931, published as "at Fort Laramie."

Gage.--Water-stage recorder. Altitude of gage is 4,220 ft (from topographic map). Apr. 4, 1915, to Mar. 31, 1925, staff gage at bridge half a mile downstream at different datum. Apr. 1, 1925, to Sept. 30, 1932, staff gage and Oct. 1, 1932, to Aug. 20, 1935, water-stage recorder, at Gering-Fort Laramie Canal siphon 4 miles upstream at different datum.

Extremes (river only).--1915-60: Maximum discharge observed, 4,280 cfs June 6, 1917 (gage height, 4.20 ft, site and datum then in use), from rating curve extended above 2,800 cfs; no flow Jan. 31 to Mar. 20, Oct. 24 to Dec. 17, 1926, Mar. 1-26, 1927, Apr. 14, 1938 (all flow diverted by Gering-Fort Laramie Canal).

Remarks.--No diversion to Gering-Fort Laramie Canal since 1956. Natural flow of stream affected by transbasin diversions, storage reservoirs, power developments, ground-water withdrawals and diversions for irrigation, and return flow from irrigated areas.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	52.9	12.7	9.90	8.81	8.36	7.31	6.88	144	161	160	146	81.7	67.1
1952	113	11.3	884	8.69	11.4	12.5	279	331	311	81.6	57.6	59.3	107
1953	94.9	114	61.0	17.9	14.5	14.4	70.4	66.1	40.8	43.0	74.0	31.0	53.7
1954	45.0	54.3	9.87	9.66	8.19	8.27	9.51	31.8	26.3	33.3	25.1	15.1	23.1
1955	23.6	49.8	10.1	9.65	10.3	10.9	11.0	20.5	111	54.3	45.2	24.6	31.7
1956	32.1	56.5	59.6	63.0	60.1	69.4	57.4	45.2	25.9	35.0	30.4	19.0	46.1
1957	29.5	54.7	61.4	55.3	62.1	52.7	65.2	344	217	63.0	117	105	102
1958	101	140	139	123	114	129	163	224	99.6	94.3	58.1	49.1	121
1959	65.2	78.1	105	119	94.0	110	144	170	70.2	54.2	31.4	25.9	89.0
1960	86.0	101	96.4	90.0	94.1	136	75.9	38.7	26.4	28.2	21.1	15.5	67.4

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	3,250	758	609	541	464	449	410	8,850	9,560	9,870	8,960	4,860	48,580
1952	6,920	671	543	535	658	768	16,590	20,320	18,530	5,020	3,540	3,530	77,620
1953	5,840	6,790	3,750	1,100	805	887	4,190	4,060	2,430	2,640	4,550	1,840	38,980
1954	2,770	3,230	607	594	455	509	566	1,950	1,560	1,550	899	16,740	16,740
1955	1,450	2,970	618	593	573	669	657	1,260	6,590	3,340	2,780	1,460	22,960
1956	1,980	3,360	3,670	3,870	3,460	4,270	3,410	2,780	1,540	2,150	1,670	1,130	33,490
1957	1,610	3,250	3,770	3,400	3,450	3,240	3,880	21,130	12,890	3,880	7,190	6,260	74,150
1958	6,190	8,330	8,550	7,590	6,330	7,910	10,920	13,760	5,930	5,800	3,570	2,920	87,800
1959	4,010	4,650	6,440	7,290	5,220	6,770	8,580	10,470	4,180	3,330	1,930	1,540	64,410
1960	5,290	6,000	5,930	5,530	5,410	8,380	4,520	2,380	1,570	1,730	1,300	920	48,960

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	49.1	35,520	
1951	1210	992	July 30, 1951	6.0	67.1	48,580	72.0	52,100	
1952	1240	1,680	Apr. 10, 1952	7.0	107	77,620	118	85,870	
1953	1280	468	Aug. 1, 1953	11	53.7	38,860	40.2	29,110	
1954	1340	98	July 20, 1954	7.5	23.1	16,740	21.0	15,170	
1955	1390	2,940	June 27, 1955	8.5	31.7	22,960	37.2	26,950	
1956	1440	240	May 28, 1956	13	46.1	33,490	45.9	33,310	
1957	1510	1,460	Aug. 17, 1957	13	102	74,150	122	88,390	
1958	1560	516	May 17, 1958	36	121	87,800	110	79,830	
1959	1630	262	June 23, 1959	18	89.0	64,410	91.9	66,530	
1960	1710	338	Mar. 24, 1960	8.5	67.4	48,960	-	-	



6710. Rawhide Creek near Lingle, Wyo.

Location.--Lat 42°07'30", long 104°19'20", in sec.20, T.25 N., R.62 W., on right bank 200 ft upstream from bridge on U. S. Highway 26, 1 mile east of Lingle, and 1 mile upstream from mouth.

Drainage area.--376 sq mi (revised).

Records available.--May 1928 to September 1960. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Altitude of gage is 4,160 ft (from topographic map). Prior to June 12, 1935, staff gage at highway bridge 200 ft downstream at different datum. June 12, 1935, to Oct. 5, 1938, water-stage recorder at site 400 ft downstream at datum 0.24 ft lower than present datum. Oct. 6, 1938, to May 15, 1955, water-stage recorder on abandoned channel at present datum.

Average discharge.--32 years (1928-60), 23.2 cfs (16,800 acre-ft per year).

Extremes.--1928-60: Maximum discharge, 3,970 cfs Sept. 7, 1946 (gage height, 11.76 ft), by float measurement; minimum daily, 0.3 cfs June 26, 1960.

Remarks.--Low flow represents return water from lands irrigated by Interstate Canal in Rawhide Creek basin. Diversions for irrigation of about 4,900 acres above station. Six small reservoirs above station (combined capacity, about 460 acre-ft) for irrigation.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	31.0	22.6	21.3	18.0	18.9	18.6	20.5	32.9	21.9	30.7	38.5	45.7	26.8
1952	29.9	22.6	20.3	16.6	18.8	20.3	23.0	41.1	34.7	26.4	38.5	34.1	27.2
1953	23.5	19.7	21.3	20.4	17.4	16.2	20.4	27.8	26.4	17.9	32.4	27.9	22.8
1954	15.9	15.7	19.2	17.8	19.4	15.2	3.08	16.1	7.20	6.81	26.8	9.53	14.4
1955	7.34	11.5	13.6	11.7	11.0	15.9	21.7	25.6	36.6	11.2	12.7	10.5	15.8
1956	14.4	13.7	18.8	16.6	13.1	14.5	12.4	14.3	17.3	8.18	8.23	8.85	13.4
1957	3.61	6.61	12.2	9.50	10.8	14.5	17.9	42.4	34.0	17.9	29.9	32.4	19.3
1958	26.7	22.3	18.8	17.5	18.6	18.8	20.6	31.6	14.0	12.5	20.1	25.5	20.6
1959	23.5	17.7	20.0	17.5	16.1	18.1	17.0	29.1	11.6	7.07	12.1	29.7	18.3
1960	22.5	16.6	17.0	13.4	11.9	15.0	12.1	14.1	8.85	7.33	13.2	21.1	14.4

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1,900	1,350	1,310	1,100	1,050	1,140	1,220	2,030	1,300	1,890	2,360	2,720	19,370
1952	1,840	1,340	1,250	1,020	1,080	1,250	1,370	2,520	2,060	1,620	2,370	2,030	19,750
1953	1,450	1,170	1,310	1,250	966	1,120	1,220	1,710	1,570	1,100	1,990	1,660	16,520
1954	979	934	1,180	1,100	1,080	938	183	992	428	419	1,650	567	10,450
1955	451	686	835	722	613	978	1,290	1,570	2,180	688	778	627	11,420
1956	883	815	1,150	1,020	756	893	738	877	1,030	503	506	526	9,700
1957	254	394	748	584	600	891	1,060	2,600	2,020	1,100	1,840	1,350	14,000
1958	1,640	1,330	1,160	1,080	1,040	1,160	1,230	1,950	834	771	1,240	1,520	14,960
1959	1,450	1,060	1,230	1,080	897	1,110	1,010	1,790	689	435	741	1,770	13,260
1960	1,380	986	1,050	825	683	923	717	865	527	451	814	1,250	10,470

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	28.8	20,830
1951	1210	188	July 28, 1951	12	26.8	19,370	26.6	19,240
1952	1240	254	June 5, 1952	12	27.2	19,750	26.5	19,250
1953	1280	140	Aug. 10, 1953	6.4	22.8	16,520	21.7	15,680
1954	1340	419	Aug. 8, 1954	.5	14.4	10,450	12.9	9,330
1955	1390	734	June 26, 1955	4.9	15.8	11,420	17.0	12,290
1956	1440	80	July 2, 1956	4.0	13.4	9,700	11.3	8,220
1957	1810	982	May 24, 1957	1.8	19.3	14,000	23.1	16,760
1958	1560	58	June 10, 1958	6.5	20.6	14,960	20.1	14,560
1959	1630	96	June 22, 1959	1.4	18.3	13,260	17.9	12,940
1960	1710	46	May 5, 1960	.3	14.4	10,470	-	-

6725. Cherry Creek drain near Torrington, Wyo.

Location.--Lat 42°02'20", long 104°09'40", in sec.23, T.24 N., R.61 W., on left bank 50 ft downstream from county highway bridge, three-quarters of a mile upstream from mouth, and 2 miles southeast of Torrington.

Drainage area.--356 sq mi.

Records available.--May to September 1931, May to September 1932, May 1935 to September 1960. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Altitude of gage is 4,090 ft (from topographic map). Prior to June 12, 1935, staff gage at site 1 mile upstream at different datum. June 12, 1935, to Sept. 30, 1945, water-stage recorder at site 100 ft downstream at datum 2.00 ft higher. Oct. 1, 1945, to Nov. 27, 1950, water-stage recorder at site 100 ft downstream at present datum.

Average discharge.--25 years (1935-60), 21.6 cfs (15,640 acre-ft per year).

Extremes.--1931-32, 1935-60: Maximum discharge, 2,420 cfs June 27, 1955 (gage height, 10.31 ft, from floodmark), from rating curve extended above 1,500 cfs; minimum daily, 0.4 cfs Jan. 28, 29, 1949.

Remarks.--Flow is mainly return water from irrigation.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	21.6	14.7	12.7	11.0	10.9	9.95	9.48	20.3	40.8	58.8	66.0	77.5	29.6
1952	25.9	16.8	13.3	12.2	13.7	13.3	11.0	29.2	52.9	54.1	58.4	74.6	31.3
1953	34.1	17.7	15.9	14.5	12.9	14.2	11.8	21.6	47.1	49.5	69.9	62.6	31.1
1954	23.6	14.5	10.1	9.70	9.23	9.23	8.60	40.6	18.8	23.4	25.7	38.0	19.4
1955	15.8	9.36	9.13	7.54	8.07	10.0	18.0	18.5	87.0	28.9	40.8	55.0	25.6
1956	17.9	14.3	8.03	8.29	6.07	7.21	7.14	12.3	18.6	30.9	30.9	32.7	16.1
1957	12.3	9.81	8.08	5.78	6.64	7.47	8.60	25.0	16.1	37.3	56.0	49.8	20.4
1958	19.9	9.84	8.44	8.51	7.90	7.05	12.0	12.7	29.6	40.8	46.3	55.8	21.6
1959	20.3	11.9	12.2	10.4	9.66	9.82	8.07	8.32	33.6	28.1	45.4	53.1	20.9
1960	18.2	13.2	10.2	9.26	9.30	8.45	7.25	12.9	20.0	21.1	33.0	23.8	15.6

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1,330	875	785	678	603	612	564	1,250	2,430	3,610	4,060	4,610	21,400
1952	1,590	1,000	819	750	787	819	654	1,800	3,150	3,320	3,590	4,440	22,720
1953	2,090	1,050	976	893	714	875	703	1,330	2,800	3,050	4,300	3,720	22,500
1954	1,450	865	624	596	513	568	512	2,490	1,120	1,440	1,580	2,260	14,020
1955	970	557	562	463	448	615	1,070	1,140	5,170	1,780	2,510	3,270	18,560
1956	1,100	849	493	510	349	443	425	756	1,110	1,840	1,900	1,950	11,720
1957	758	584	497	355	369	460	512	1,600	957	2,290	3,440	2,960	14,780
1958	1,220	586	519	523	439	434	715	780	1,760	2,510	2,840	3,320	15,650
1959	1,250	708	751	640	537	604	480	512	2,000	1,730	2,790	3,160	15,160
1960	1,120	785	630	569	535	520	432	791	1,190	1,300	2,030	1,420	11,320

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	29.6	21,450
1951	1210	256	July 20, 1951	7.6	29.6	21,400	30.2	21,650
1952	1240	158	June 28, 1952	9.2	31.3	22,720	32.3	23,420
1953	1260	573	June 7, 1953	9.6	31.1	22,500	29.5	21,320
1954	1540	900	May 23, 1954	7.0	19.4	14,020	18.2	13,170
1955	1590	2,420	June 27, 1955	5.2	25.6	18,560	26.1	18,910
1956	1440	220	July 2, 1956	5.0	16.1	11,720	15.3	11,120
1957	1510	485	May 24, 1957	4.5	20.4	14,780	21.1	15,270
1958	1560	141	July 20, 1958	6.2	21.6	15,650	22.2	16,030
1959	1630	328	June 29, 1959	6.5	20.9	15,160	20.7	14,990
1960	1710	92	June 12, 1960	6	15.6	11,320	-	-

6735. Katzer drain near Henry, Nebr.

Location.--Lat 41°58'00", long 104°04'00", in sec.15, T.23 N., R.60 W., on left bank 0.5 mile upstream from county highway bridge in Wyoming, 1½ miles upstream from mouth, and 3 miles southwest of Henry.

Drainage area.--45.9 sq mi (revised), of which 8.2 sq mi is probably noncontributing.

Records available.--May 1928 to September 1960 (no winter records prior to 1932).

Gage.--Water-stage recorder. Altitude of gage is 4,080 ft (from topographic map). May 11 to Aug. 24, 1928, staff gage at bridge 1½ miles downstream at different datum. Aug. 25, 1928, to June 23, 1935, staff gage at bridge 0.5 mile downstream and June 24, 1935, to Nov. 30, 1950, water-stage recorder 250 ft downstream from same bridge, at different datum. Datum lowered 0.75 ft Oct. 1, 1938.

Average discharge.--29 years (1931-60), 18.4 cfs (13,320 acre-ft per year).

Extremes.--1928-60: Maximum discharge, 1,230 cfs May 19, 1938 (gage height, 9.47 ft, site and datum then in use), from rating curve extended above 330 cfs on basis of slope-area measurement of peak flow; minimum daily, 0.5 cfs Jan. 14, 1937.

Remarks.--Flow is mainly return water from land irrigated by Fort Laramie Canal. Katzer drain empties into North Platte River in Wyoming, 1 mile upstream from Nebraska State line.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	16.7	12.8	11.2	9.62	9.71	8.62	8.47	16.0	40.4	58.2	63.4	64.0	26.7
1952	24.3	13.9	11.2	9.35	11.3	13.7	9.08	22.0	46.8	46.7	49.0	63.7	26.8
1953	23.2	14.4	12.6	13.5	12.1	11.8	9.40	14.9	45.9	49.1	55.1	63.5	26.7
1954	16.1	12.1	10.7	9.60	9.11	9.32	7.57	21.5	8.52	22.2	30.6	33.7	16.0
1955	12.0	9.71	8.38	7.45	8.18	10.4	13.4	16.1	49.5	20.3	36.5	38.1	19.3
1956	10.5	9.10	8.90	8.18	7.31	7.09	5.94	13.9	19.8	32.8	36.5	28.6	15.9
1957	9.46	8.83	8.25	6.51	6.54	6.39	8.05	16.8	11.9	54.0	60.1	45.4	20.5
1958	12.6	10.0	8.70	8.19	7.38	6.77	12.0	12.9	36.2	54.0	50.7	58.1	23.2
1959	14.5	10.8	12.4	7.92	6.72	9.16	9.11	8.65	28.4	31.2	41.2	55.5	19.6
1960	13.5	10.7	8.90	8.21	7.84	7.55	7.52	6.47	15.7	33.8	41.0	32.7	16.2

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1,030	762	688	591	540	530	504	981	2,410	3,560	3,900	3,810	19,330
1952	1,490	825	689	575	649	843	540	1,350	2,780	2,870	3,010	3,790	19,410
1953	1,430	855	774	817	670	725	559	916	2,730	3,020	3,390	3,480	19,370
1954	992	720	659	590	506	573	438	1,320	507	1,360	1,860	2,000	11,540
1955	740	578	515	458	454	638	796	1,110	2,950	1,250	2,240	2,270	14,000
1956	645	541	547	503	420	436	353	857	1,180	2,020	2,370	1,700	11,570
1957	582	525	508	388	363	393	479	1,160	705	3,320	3,690	2,700	14,810
1958	774	596	535	504	410	416	717	795	2,150	3,320	3,120	3,480	16,800
1959	891	640	762	487	373	563	542	532	1,690	1,920	2,530	3,290	14,220
1960	831	635	547	505	451	464	447	398	931	2,080	2,520	1,940	11,750

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	23.5	-	17,040
1951	1210	696	June 18, 1951	6.4	26.7	19,330	27.4	19,850	
1952	1240	553	June 27, 1952	7.5	26.8	19,410	26.8	19,470	
1953	1280	740	June 7, 1953	7.5	26.7	19,370	25.8	18,680	
1954	1340	208	May 22, 1954	4.7	16.0	11,540	15.2	11,010	
1955	1390	975	June 27, 1955	4.2	19.3	14,000	19.2	13,900	
1956	1440	187	May 26, 1956	3.0	15.9	11,570	15.8	11,450	
1957	1510	1,050	July 18, 1957	4.5	20.5	14,810	20.9	15,100	
1958	1560	191	July 20, 1958	5.0	23.2	16,800	23.7	17,180	
1959	1630	319	June 29, 1959	3.8	19.6	14,220	19.3	13,940	
1960	1710	56	Sept. 17, 1960	3.3	16.2	11,750	-	-	

## PLATTE RIVER BASIN

## 6745. North Platte River at Wyoming-Nebraska State line

Location.--Lat 41°59'40", long 104°03'00", in sec.3, T.23 N., R.60 W., on left bank 800 ft upstream from Wyoming-Nebraska State line and half a mile west of Henry, Nebr.

Drainage area.--26,003 sq mi (revised), of which 5,878 sq mi (including 3,950 sq mi in Great Divide Basin in southern Wyoming) is probably noncontributing.

Records available.--April 1929 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 4,024.77 ft above mean sea level, datum of 1929, supplementary adjustment of 1940. Prior to Nov. 6, 1929, chain gage and Nov. 6, 1929, to Dec. 14, 1942, water-stage recorder, at site 200 ft upstream at datum 1.00 ft higher. Dec. 15, 1942, to Sept. 30, 1959, at datum 1.00 ft higher.

Average discharge.--31 years (1929-60), 694 cfs (502,400 acre-ft per year).

Extremes.--1929-60: Maximum discharge observed, 17,900 cfs June 2, 1929 (gage height, 7.04 ft, present datum, at site then in use), from rating curve extended above 13,000 cfs; minimum daily, 21 cfs May 16, 1934.

Remarks.--Natural flow of stream affected by transbasin diversions, storage reservoirs, power developments, ground-water withdrawals and diversions for irrigation, and return flow from irrigated area.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	543	491	557	478	500	371	320	515	613	918	998	671	583
1952	780	644	425	394	410	464	825	1,825	3,176	1,127	1,133	886	1,007
1953	618	537	550	522	499	478	328	451	690	1,072	839	706	609
1954	434	382	338	285	257	248	186	182	382	819	787	543	405
1955	152	268	219	215	196	219	246	366	633	876	715	541	388
1956	246	289	276	242	214	215	198	369	479	867	1,056	599	422
1957	150	296	271	206	209	198	211	936	513	1,134	1,097	649	492
1958	438	377	337	295	283	269	338	543	427	1,013	1,174	707	519
1959	467	387	375	316	284	280	290	368	475	1,026	1,101	808	517
1960	475	356	304	260	273	291	248	137	540	1,194	1,054	596	479

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	33,410	29,220	34,250	29,420	27,770	22,800	19,050	31,670	36,490	56,450	61,340	39,910	421,800
1952	47,950	38,320	26,140	24,250	23,590	28,520	49,060	112,200	189,000	69,310	69,680	52,730	730,700
1953	37,980	31,960	33,820	32,120	27,730	29,420	19,520	27,720	41,060	65,900	51,580	42,040	440,800
1954	26,660	22,700	20,770	17,530	14,250	15,250	11,100	11,180	22,760	50,390	48,360	32,330	293,300
1955	9,360	15,920	13,460	13,240	10,880	13,450	14,630	22,500	37,690	53,880	43,940	32,200	281,200
1956	15,140	17,220	17,000	14,910	12,330	13,240	11,760	22,670	28,510	53,360	64,950	35,670	306,700
1957	9,240	17,590	16,670	12,650	11,590	12,180	12,530	57,550	30,500	69,750	67,460	38,600	356,300
1958	26,960	22,420	20,720	18,160	15,740	16,510	20,120	33,410	25,380	62,270	72,180	42,080	376,000
1959	28,700	23,050	23,080	19,420	15,750	17,240	17,260	22,650	28,260	63,100	67,680	48,060	374,200
1960	29,200	21,180	18,670	16,010	15,680	17,900	14,770	8,420	32,110	73,390	64,790	35,440	347,600

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	653	473,000	
1951	1210	2,120	July 28, 1951	157	583	421,800	604	437,300	
1952	1240	4,830	June 6, 1952	330	1,007	730,700	995	722,100	
1953	1280	2,350	June 7, 1953	115	609	440,800	563	407,200	
1954	1340	1,540	July 14, 1954	68	405	293,300	362	261,900	
1955	1390	11,500	June 27, 1955	90	368	281,200	403	291,800	
1956	1440	1,430	July 3, 1956	136	422	306,700	414	300,800	
1957	1510	2,420	May 21, 1957	130	492	356,300	529	382,900	
1958	1560	1,330	July 19, 1958	236	519	376,000	526	360,700	
1959	1630	1,470	July 22, 1959	125	517	374,200	509	368,500	
1960	1710	1,500	July 30, 1960	72	479	347,600	-	-	

6775. Horse Creek near Lyman, Nebr.

Location.--Lat 41°56'14", long 103°59'00", in NE $\frac{1}{4}$  sec.25, T.23 N., R.58 W., on right bank 135 ft (corrected) upstream from county highway bridge, three-quarters of a mile upstream from mouth, 1 mile downstream from Kiowa drain, and 3 $\frac{1}{4}$  miles northeast of Lyman.

Drainage area.--1,600 sq mi, approximately (revised), of which about 40 sq mi is noncontributing.

Records available.--February 1931 to September 1960.

Gage.--Water-stage recorder. Altitude of gage is 4,010 ft (from topographic map). Prior to Nov. 23, 1938, staff gage at site half a mile upstream at different datum. Nov. 23, 1938, to Mar. 31, 1944, water-stage recorder at site 50 ft downstream at datum 1.00 ft higher. Apr. 1, 1944, to Apr. 12, 1946, at site 115 ft upstream at datum 1.00 ft higher and Apr. 13, 1946, to Nov. 5, 1953, at site 115 ft upstream at present datum.

Average discharge.--29 years (1931-60), 59.5 cfs (43,080 acre-ft per year).

Extremes.--1931-60: Maximum discharge, 2,040 cfs July 29, 1957 (gage height, 7.28 ft); minimum daily, 0.4 cfs Feb. 1, 2, 1949.

Remarks.--Natural flow of stream affected by ground-water withdrawals and diversions for irrigation and return flow from irrigated areas.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	76.3	46.6	36.8	25.8	30.1	21.3	19.0	85.8	189	129	107	325	91.0
1952	89.0	52.9	35.6	29.5	42.2	108	67.0	158	194	135	114	159	98.7
1953	117	56.5	40.0	38.6	31.0	30.0	22.6	60.5	189	94.5	140	131	79.4
1954	74.7	38.3	29.8	22.9	19.3	22.9	15.2	90.2	31.9	39.1	54.0	70.7	42.7
1955	40.4	28.5	21.0	14.9	16.9	28.6	35.1	35.5	51.3	36.9	63.1	119	41.0
1956	56.2	33.7	28.0	21.9	18.4	17.7	11.0	37.8	66.0	88.0	47.4	67.6	41.2
1957	37.1	35.3	26.1	15.2	17.9	17.0	20.3	54.2	103	199	172	185	73.9
1958	66.4	37.5	26.0	21.2	33.3	68.2	107	78.9	196	163	75.1	145	84.9
1959	79.1	44.5	35.4	25.6	20.9	20.6	29.4	27.9	115	68.0	69.2	140	56.3
1960	75.4	38.6	27.5	20.7	21.8	19.5	14.4	20.3	51.7	34.4	36.0	64.0	35.3

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	4,690	2,770	2,260	1,580	1,670	1,310	1,130	5,280	11,270	7,960	6,580	19,350	65,850
1952	5,470	3,150	2,070	1,810	2,430	6,640	3,990	9,730	11,570	8,320	7,020	9,450	71,650
1953	7,210	3,360	2,460	2,380	1,720	1,850	1,340	3,720	11,240	5,810	8,590	7,800	57,480
1954	4,600	2,280	1,830	1,410	1,070	1,410	906	5,540	1,900	2,410	3,320	4,210	30,890
1955	2,490	1,700	1,290	914	938	1,760	2,090	2,180	3,050	2,270	3,880	7,100	29,660
1956	3,460	2,010	1,720	1,350	1,060	1,090	655	2,320	3,930	5,410	2,920	4,020	29,940
1957	2,280	2,100	1,600	936	996	1,050	1,210	3,330	6,120	12,250	10,570	11,030	53,470
1958	4,080	2,230	1,600	1,300	1,850	4,190	6,380	4,850	11,690	10,030	4,620	8,620	61,440
1959	4,860	2,650	2,180	1,570	1,160	1,270	1,750	1,720	6,940	4,180	4,250	8,320	40,750
1960	4,630	2,290	1,690	1,280	1,250	1,200	857	1,250	3,080	2,110	2,220	3,810	25,670

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	69.3	-	50,170
1951	1210	762	Sept. 3, 1951	12	91.0	65,850	92.3	66,820	
1952	1240	1,130	June 27, 1952	13	98.7	71,650	102	73,990	
1953	1280	1,160	June 7, 1953	16	79.4	57,480	73.4	53,160	
1954	1340, 1710	629	May 23, 1954	5.5	42.7	30,890	38.2	27,660	
1955	1390	742	May 26, 1955	10	41.0	29,660	43.3	31,370	
1956	1440	1,350	July 3, 1956	6.7	41.2	29,940	39.6	28,740	
1957	1510	2,040	July 29, 1957	9.0	73.9	53,470	76.5	55,400	
1958	1560	1,420	June 9, 1958	17	84.9	61,440	87.3	63,220	
1959	1630	485	July 15, 1959	13	56.3	40,750	54.8	39,670	
1960	1710	308	June 10, 1960	10	35.3	25,670	-	-	

6780. Sheep Creek near Morrill, Nebr.

Location--Lat 41°57'50", long 103°56'20", in NW¼SW¼ sec.16, T.23 N., R.57 W., on right bank 40 ft upstream from Chicago, Burlington & Quincy Railroad bridge, 50 ft downstream from bridge on U. S. Highway 26, 1 mile west of Morrill, and 1½ miles upstream from mouth.

Drainage area--357 sq mi, of which about 25 sq mi is noncontributing.

Records available--October 1931 to September 1960.

Gage--Water-stage recorder. Datum of gage is 3,995.04 ft above mean sea level, datum of 1929, supplementary adjustment of 1940. Prior to Apr. 14, 1940, staff gage at site 20 ft upstream at same datum.

Average discharge--29 years (1931-60), 52.4 cfs (37,940 acre-ft per year).

Extremes--1931-60: Maximum discharge, 413 cfs June 27, 1955 (gage height, 6.52 ft, from floodmark); maximum gage height, 6.75 ft Aug. 2, 1932 (from floodmark), due to break in Interstate Canal (discharge not determined); minimum daily discharge, 0.1 cfs Dec. 16, 23, 1956, Jan. 18, Mar. 12, 1957 (result of diversion for construction upstream).

Remarks--Natural flow of stream affected by diversions and ground-water withdrawals for irrigation and return flow from irrigated areas.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	129	111	101	92.1	87.3	80.3	78.3	21.7	58.6	51.9	8.58	93.5	76.0
1952	130	111	98.7	87.2	85.5	80.9	74.1	69.6	53.2	7.48	9.32	16.2	68.5
1953	142	127	110	104	97.0	91.4	84.8	23.2	39.9	8.34	31.3	17.7	72.9
1954	115	102	92.9	85.1	78.1	77.9	31.0	31.3	6.88	6.44	5.35	3.98	52.8
1955	57.3	74.7	72.0	68.5	68.4	63.5	4.87	19.3	24.4	5.92	5.63	19.6	40.1
1956	81.9	73.0	73.6	67.6	62.8	57.4	30.4	9.89	3.86	20.7	6.39	3.17	40.9
1957	77.9	77.0	31.5	.67	.82	32.5	59.3	58.8	52.2	6.87	12.7	29.4	36.7
1958	95.5	85.5	76.3	68.5	66.0	64.5	66.7	47.2	61.2	34.3	4.31	11.4	56.7
1959	113	95.5	88.6	79.2	76.1	73.8	71.9	60.8	5.14	4.19	3.70	27.3	58.2
1960	104	92.4	84.6	80.8	78.1	69.5	63.2	33.5	2.99	4.46	3.80	9.72	52.2

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	7,980	6,630	6,210	5,680	4,850	4,940	4,660	1,330	3,480	†3,190	527	5,570	55,020
1952	7,980	6,590	6,070	5,360	4,920	4,980	4,410	4,280	3,170	460	573	953	49,760
1953	8,740	7,560	6,760	6,380	5,390	5,620	5,050	1,420	2,370	513	1,920	1,050	52,770
1954	7,070	6,060	5,710	5,230	4,340	4,790	1,840	1,930	410	396	206	237	38,220
1955	3,520	4,440	4,430	4,210	3,800	3,900	290	1,180	1,450	364	235	1,160	28,980
1956	5,040	4,340	4,520	4,160	3,610	3,530	1,810	608	230	1,270	393	189	29,700
1957	4,790	4,580	1,940	41	46	2,000	3,530	3,620	3,110	422	780	1,750	26,610
1958	5,870	5,090	4,690	4,210	3,660	3,970	3,970	2,900	3,640	2,110	265	680	41,060
1959	6,920	5,680	5,450	4,870	4,230	4,540	4,280	3,740	306	257	228	1,620	42,120
1960	6,400	5,500	5,200	4,970	4,490	4,270	3,760	2,060	178	274	234	578	37,910

† Corrected.

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	68.2	-	49,400
1951	1210	314	July 28, 1951	3.1	76.0	55,020	75.8	54,860	
1952	1240	248	June 27, 1952	3.6	68.5	49,760	71.9	52,180	
1953	1280	197	June 7, 1953	2.4	72.9	52,770	67.1	48,550	
1954	1340	360	July 21, 1954	1.6	52.8	38,220	43.9	31,770	
1955	1390	413	June 27, 1955	.7	40.1	28,980	42.1	30,490	
1956	1440	287	July 2, 1956	1.5	40.9	29,700	37.4	27,110	
1957	1510	184	Mar. 16, 1957	.1	36.7	26,610	42.7	30,950	
1958	1560	135	July 18, 1958	1.8	56.7	41,060	60.0	43,460	
1959	1630	144	June 19, 1959	2.2	58.2	42,120	56.9	41,170	
1960	1710	115	Oct. 5, 1960	.9	52.2	37,910	-	-	

6790. Dry Spottedtail Creek at Mitchell, Nebr.

Location.--Lat 41°56'45", long 103°49'35", at southeast corner of sec.20, T.23 N., R.56 W., on right bank 5 ft upstream from bridge on county road, half a mile west of Mitchell, and three-quarters of a mile upstream from mouth.

Drainage area.--50.8 sq mi.

Records available.--October 1948 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 3,943.75 ft above mean sea level, datum of 1929, Western Wyoming supplementary adjustment of 1940. Prior to Oct. 1, 1958, at datum 1.00 ft higher.

Average discharge.--12 years (1948-60), 36.6 cfs (26,500 acre-ft per year).

Extremes.--1948-60: Maximum discharge, 2,010 cfs June 24, 1951 (gage height, 8.55 ft, present datum); minimum daily, 6.3 cfs July 1, 1956.

Remarks.--Natural flow of stream affected by ground-water withdrawals and diversions for irrigation and return flow from irrigated areas.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	71.8	53.5	40.0	37.1	32.0	28.6	33.0	47.0	69.3	64.7	80.2	102	55.0
1952	51.9	37.9	34.2	33.6	29.9	29.0	30.4	53.2	73.0	76.4	93.9	102	53.8
1953	84.7	53.7	42.0	47.2	40.6	34.0	30.7	38.6	49.3	44.3	63.5	50.8	48.4
1954	44.0	32.2	32.3	32.9	30.1	27.4	27.6	31.6	19.3	25.5	27.2	23.2	29.5
1955	19.6	14.4	16.4	18.9	17.7	17.4	15.7	19.5	38.3	18.4	26.1	32.6	21.2
1956	22.5	14.1	18.3	18.4	16.6	15.4	27.3	26.7	13.3	36.7	24.4	23.4	21.5
1957	19.2	14.7	13.2	16.7	15.6	16.1	20.3	47.6	28.5	37.9	42.8	43.2	26.4
1958	33.1	19.7	16.1	18.9	17.1	17.0	15.5	37.8	56.1	48.4	40.5	47.4	30.7
1959	45.6	26.5	25.2	27.6	23.0	21.6	20.8	28.2	30.1	22.5	28.8	39.7	28.3
1960	40.3	25.2	18.2	19.5	23.2	21.8	20.2	24.9	17.6	13.4	10.9	20.8	21.3

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	4,410	3,180	2,460	2,280	1,780	1,760	1,970	2,890	4,120	3,980	4,930	6,050	39,810
1952	3,190	2,260	2,000	2,070	1,720	1,780	1,810	3,270	4,340	4,700	5,770	6,080	39,100
1953	5,210	3,190	2,580	2,900	2,260	2,090	1,820	2,370	2,930	2,730	3,910	3,020	35,010
1954	2,710	1,910	1,990	2,030	1,670	1,680	1,640	1,940	1,150	1,570	1,670	1,380	21,340
1955	1,210	855	1,010	1,160	984	1,070	932	1,200	2,280	1,130	1,610	1,940	15,380
1956	1,380	841	1,130	1,130	954	948	1,630	1,640	790	2,260	1,500	1,390	15,590
1957	1,180	875	811	1,030	885	890	1,210	2,930	1,700	2,330	2,630	2,570	19,120
1958	2,030	1,170	988	1,160	952	1,040	922	2,330	3,340	2,980	2,490	2,820	22,220
1959	2,800	1,580	1,550	1,700	1,280	1,330	1,240	1,730	1,790	1,390	1,770	2,360	20,520
1960	2,490	1,500	1,120	1,200	1,330	1,340	1,200	1,530	1,050	826	669	1,240	15,480

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	49.5	35,820
1951	1210	2,010	June 24, 1951	23	55.0	39,810	51.5	37,310
1952	1240	707	June 22, 1952	22	53.8	39,100	58.6	42,530
1953	1280	389	June 7, 1953	21	48.4	35,010	42.3	30,640
1954	1340	122	July 21, 1954	12	29.5	21,340	24.6	17,800
1955	1390	1,670	June 27, 1955	8.6	21.2	15,380	21.6	15,660
1956	1440	1,500	July 2, 1956	6.3	21.5	15,590	20.8	15,110
1957	1510	324	Aug. 28, 1957	9.3	26.4	19,120	28.2	20,440
1958	1560	523	June 8, 1958	12	30.7	22,220	33.1	23,960
1959	1630	314	June 29, 1959	14	28.3	20,520	27.2	19,690
1960	1710	212	May 24, 1960	7.6	21.3	15,480	-	-

## 6795. North Platte River at Mitchell, Nebr.

Location.--Lat 41°55'55", long 103°48'10", in SW $\frac{1}{4}$  sec. 27, T. 23 N., R. 56 W., near center of main channel on downstream side of pier of bridge on State Highway 29, half a mile south of Mitchell. Prior to Apr. 12, 1960, near left bank.

Drainage area.--28,200 sq mi, approximately, of which about 5,960 sq mi is noncontributing.

Records available.--June 1901 to September 1910, May to December 1911, February 1912 to July 1913 (gage heights only), May 1916 to October 1918 (irrigation season only), May 1920 to September 1960. Monthly discharge only for some periods, published in WSP 1810.

Gage.--Water-stage recorder. Datum of gage is 3,930.3 ft above mean sea level, datum of 1929, Western Wyoming supplementary adjustment of 1940. Prior to October 1927, staff or chain gages near present site at different datums. Water-stage recorder at site 30 ft downstream October 1927 to Apr. 30, 1936, at datum 3.00 ft higher and May 1, 1936, to June 30, 1942, at datum 2.00 ft higher. July 1, 1942, to May 26, 1960, water-stage recorder at present site at datum 1.00 ft higher.

Extremes.--1901-11, 1916-18, 1920-60: Maximum discharge, 27,500 cfs June 3, 1909 (gage height, 6.45 ft, datum then in use, from graph based on gage readings), from rating curve extended above 17,000 cfs; minimum daily observed, 25 cfs Sept. 25-29, 1908.

Remarks.--Natural flow of stream affected by transmountain diversion, storage reservoirs, power developments, diversions and ground-water withdrawals for irrigation, and return flow from irrigated areas.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	942	783	795	703	698	557	493	353	597	574	371	798	638
1952	1,222	974	699	583	634	760	1,026	1,487	2,839	458	416	512	965
1953	1,093	832	805	756	672	671	534	291	542	264	448	326	603
1954	722	821	573	490	461	450	235	271	135	136	146	144	365
1955	314	459	449	395	365	405	395	256	694	199	117	235	356
1956	435	484	473	416	380	372	235	138	115	331	135	143	305
1957	363	508	441	376	381	366	376	1,198	568	437	377	390	483
1958	682	584	525	455	437	465	564	332	493	422	188	306	454
1959	741	584	558	493	445	446	466	321	211	159	168	374	414
1960	830	585	516	443	435	442	402	236	154	154	176	171	379

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	57,940	46,590	48,680	43,210	38,780	34,240	29,350	21,680	35,530	35,320	22,810	47,480	461,800
1952	75,110	57,970	42,980	35,840	36,470	46,740	61,070	91,440	68,900	28,150	25,590	30,450	700,700
1953	67,220	49,490	49,530	46,460	37,320	41,250	31,780	17,880	32,260	16,230	27,550	19,380	436,400
1954	44,400	36,930	35,230	30,100	25,590	27,680	13,990	16,690	8,040	8,330	8,970	8,540	264,500
1955	19,310	27,300	27,580	24,280	20,140	24,910	23,490	15,770	41,280	12,220	7,180	13,960	257,400
1956	26,740	28,830	29,060	25,560	21,860	22,860	13,980	8,500	6,830	20,370	8,280	8,530	221,400
1957	22,320	30,230	27,140	23,100	21,190	22,520	22,400	73,690	33,830	26,860	23,200	23,210	349,700
1958	41,940	34,720	32,260	27,950	24,250	28,590	33,570	20,420	29,310	25,930	11,560	18,200	328,700
1959	45,540	34,750	34,280	30,330	24,720	27,440	27,720	19,730	12,540	9,750	10,360	22,240	299,400
1960	51,060	34,810	31,740	27,220	25,020	27,180	23,890	14,480	9,170	9,480	10,820	10,150	275,000

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet		
		Discharge	Date							
1950	-	-	-	-	-	-	620	448,100		
1951	1210	2,540	June 24, 1951	178	638	461,800	669	484,500		
1952	1240	4,090	June 6, 1952	337	965	700,700	952	690,900		
1953	1280	2,760	June 7, 1953	156	603	436,400	534	386,700		
1954	1340	1,230	May 23, 1954	83	365	264,500	307	222,100		
1955	1390	10,600	June 28, 1955	78	356	257,400	370	267,900		
1956	1440	2,710	July 3, 1956	66	305	221,400	298	216,500		
1957	1510	3,160	May 25, 1957	109	483	349,700	523	378,900		
1958	1560	1,460	June 8, 1958	157	454	328,700	462	334,400		
1959	1650	1,190	Sept. 30, 1959	98	414	299,400	418	302,400		
1960	1710	1,160	Oct. 1, 1959	75	379	275,000	-	-		



6800. Tub Springs near Scottsbluff, Nebr.

Location.--Lat 41°55', long 103°43', at southeast corner of sec.32, T.23 N., R.55 W., 50 ft upstream from bridge, a quarter of a mile downstream from headgates of Enterprise Canal,  $\frac{1}{2}$  miles upstream from mouth, and  $\frac{3}{4}$  miles northwest of Scottsbluff.

Records available.--October 1948 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 3,926.54 ft above mean sea level, datum of 1929, Western Wyoming supplementary adjustment of 1940. Prior to May 31, 1932, staff gage at site 1 mile downstream at different datum. June 1 to Sept. 30, 1932, staff gage at bridge 50 ft downstream at different datum. Oct. 1, 1932, to Apr. 30, 1944, staff gage at site 1 mile downstream at different datum. May 1, 1944, to Sept. 8, 1952 (corrected), water-stage recorder at bridge 50 ft downstream at present datum.

Average discharge.--12 years (1948-60), 35.9 cfs (25,990 acre-ft per year).

Extremes.--1948-60: Maximum discharge, 1,610 cfs June 21, 1952 (gage height not determined), on basis of slope-area measurement of peak flow caused by break in Interstate Canal; minimum daily, 0.8 cfs June 3, 1949, June 4, 7, 8, 1950.

Remarks.--Natural flow of stream affected by diversions for irrigation, spill from Enterprise Canal, and return flow from irrigated areas.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	77.4	58.5	48.5	40.4	39.0	31.1	28.4	15.4	64.4	39.4	11.8	78.8	44.2
1952	70.8	56.7	41.7	34.6	32.1	31.4	23.3	35.8	42.5	15.7	4.09	36.3	35.4
1953	90.6	70.1	52.4	44.3	39.5	34.7	35.9	23.3	60.8	23.6	48.0	28.9	46.0
1954	65.4	50.9	42.1	34.6	31.6	40.3	31.4	24.0	39.1	16.5	9.20	29.3	34.4
1955	37.3	32.5	33.3	27.4	26.0	23.4	25.7	26.7	54.2	10.8	12.2	43.8	29.2
1956	44.0	34.0	30.5	25.8	23.9	23.0	20.0	30.1	29.2	25.2	10.4	26.3	26.9
1957	51.8	42.7	30.1	27.9	26.1	27.0	31.8	40.7	51.8	36.8	20.5	68.0	37.9
1958	53.2	41.6	36.7	32.0	28.0	27.1	26.0	36.0	73.6	43.0	16.9	43.1	38.1
1959	64.4	45.1	38.7	33.6	28.6	28.5	33.6	32.9	32.7	21.5	13.5	41.7	34.6
1960	55.9	43.1	35.5	30.5	27.6	25.1	29.3	14.1	10.5	4.10	3.86	10.4	24.2

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	4,760	3,480	2,980	2,480	2,170	1,910	1,690	822	3,830	2,420	727	4,690	31,960
1952	4,560	3,380	2,560	2,130	1,840	1,930	1,580	2,200	2,530	967	252	2,160	25,690
1953	5,570	4,170	3,220	2,720	2,190	2,130	2,140	1,430	3,620	1,450	2,950	1,720	33,310
1954	3,900	3,030	2,590	2,130	1,760	2,480	1,870	1,480	2,330	1,010	565	1,740	24,880
1955	2,290	1,930	2,050	1,690	1,450	1,440	1,410	1,640	3,230	665	749	2,610	21,150
1956	2,710	2,020	1,880	1,590	1,370	1,410	1,190	1,850	1,740	1,550	640	1,570	19,520
1957	3,190	2,540	1,850	1,720	1,450	1,660	1,890	2,510	3,080	2,260	1,260	4,050	27,460
1958	3,270	2,470	2,260	1,970	1,560	1,660	1,550	2,210	4,380	2,640	1,040	2,560	27,570
1959	3,960	2,680	2,380	2,060	1,590	1,750	2,000	2,020	1,940	1,320	833	2,480	25,010
1960	3,440	2,560	2,190	1,870	1,590	1,540	1,740	866	625	252	237	620	17,530

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	39.7	28,770
1951	1210	1,130	June 24, 1951	1.0	44.2	31,960	42.9	31,040
1952	1240	1,610	June 21, 1952	1.0	35.4	25,690	39.1	28,350
1953	1280	*775	June 14, 1953*	2.2	46.0	33,310	41.3	29,870
1954	1340	540	June 25, 1954	2.2	34.4	24,880	29.9	21,640
1955	1390	1,180	June 27, 1955	1.2	29.2	21,150	28.7	21,490
1956	1440	*564	July 2, 1956	4.5	26.9	19,520	28.2	20,490
1957	1510	*420	May 23, 1957	3.0	37.9	27,460	38.5	27,880
1958	1560	*810	June 11, 1958	2.8	38.1	27,570	39.5	28,590
1959	1630	210	June 23, 1959	7.6	34.6	25,010	33.4	24,180
1960	1710	121	Oct. 1, 1959	1.5	24.2	17,530	-	-

\* Revised.

6810. Winter Creek near Scottsbluff, Nebr.

Location.--Lat 41°52', long 103°37', near center of sec.30, T.22 N., R.54 W., on right bank half a mile downstream from bridge on U. S. Highway 26, 1 mile upstream from mouth, and 1½ miles east of Scottsbluff.

Records available.--October 1931 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 3,860.8 ft above mean sea level, datum of 1929, Western Wyoming supplementary adjustment of 1940. Prior to Nov. 19, 1938, staff gage at site half a mile upstream at different datum. Nov. 19, 1938, to Sept. 30, 1958, water-stage recorder at present site at datum 1.00 ft higher.

Average discharge.--29 years (1931-60), 53.9 cfs (39,020 acre-ft per year).

Extremes.--1931-60: Maximum discharge, 1,090 cfs June 10, 1957 (gage height, 8.95 ft, present datum); maximum gage height, 9.34 ft, present datum, Jan. 7, 1949 (backwater from snowdrifts); minimum daily discharge, 1 cfs July 24, 1934, Aug. 16, 17, 1935.

Remarks.--Natural flow of stream affected by diversions and ground-water withdrawals for irrigation and return flow from irrigated areas.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	93.0	70.6	59.5	58.1	54.1	49.4	47.4	36.9	76.7	38.8	48.9	112	62.0
1952	84.1	64.3	56.7	52.4	45.6	43.6	46.1	28.5	55.3	51.6	57.5	84.9	55.8
1953	101	71.6	57.2	57.3	54.6	48.9	46.6	23.2	61.9	31.6	49.5	60.8	55.3
1954	80.8	57.3	48.4	53.5	48.0	48.7	44.4	31.3	27.4	22.6	23.4	25.1	42.6
1955	59.8	43.1	41.5	46.6	43.1	40.4	40.1	45.9	37.2	12.7	17.4	54.9	40.2
1956	60.4	48.3	42.9	43.0	40.4	38.7	38.6	25.1	11.3	17.6	14.8	44.1	35.4
1957	62.5	66.7	56.1	47.6	47.8	41.8	40.6	49.8	68.0	56.5	44.4	63.4	53.8
1958	67.5	47.9	41.1	43.3	44.6	45.1	41.0	30.4	87.9	63.5	49.7	85.6	53.9
1959	84.8	55.2	49.5	50.2	47.8	46.7	42.6	28.9	59.7	20.5	44.5	83.9	51.1
1960	71.2	55.8	46.7	44.1	43.9	43.3	41.0	34.6	22.2	19.6	40.1	59.9	43.5

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	5,720	4,200	3,660	3,570	3,010	3,040	2,820	2,270	4,570	2,380	3,000	6,670	44,910
1952	5,170	3,820	3,480	3,220	2,620	2,680	2,740	1,750	3,290	3,170	3,530	5,050	40,520
1953	6,190	4,260	3,520	3,520	3,030	3,010	2,770	1,420	3,680	1,940	3,040	3,620	40,000
1954	4,970	3,410	2,970	3,290	2,670	2,990	2,640	1,920	1,630	1,390	1,440	1,490	30,810
1955	3,680	2,560	2,550	2,870	2,390	2,490	2,390	2,820	2,210	778	1,070	3,270	29,080
1956	3,710	2,880	2,640	2,640	2,330	2,380	2,290	1,540	674	1,080	908	2,620	25,690
1957	3,850	3,970	3,450	2,930	2,660	2,570	2,420	3,060	4,050	3,470	2,730	3,770	38,930
1958	4,150	2,850	2,520	2,660	2,480	2,770	2,440	1,870	5,230	3,910	3,050	5,090	39,020
1959	5,220	3,290	3,050	3,090	2,650	2,870	2,530	1,770	3,550	1,260	2,740	4,990	37,010
1960	4,380	3,320	2,870	2,710	2,530	2,660	2,440	2,130	1,320	1,210	2,470	3,580	31,600

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950		-	-	-	-	-	60.1	43,540
1951	1210	-	June 25, 1951	13	62.0	44,910	60.5	43,800
1952	1240	693	June 27, 1952	10	55.8	40,520	57.9	42,020
1953	1280	880	June 14, 1953	6.2	55.3	40,000	51.7	37,380
1954	1340	*1,020	June 25, 1954	1.8	42.6	30,810	39.0	28,250
1955	1390	605	(a)	3.6	40.2	29,080	40.8	29,520
1956	1440	416	July 2, 1956	3.6	35.4	25,690	38.2	27,730
1957	1510	1,090	June 10, 1957	4.4	53.8	38,930	51.4	37,180
1958	1560	696	June 11, 1958	1.5	53.9	39,020	56.7	41,060
1959	1630	851	June 19, 1959	5.0	51.1	37,010	49.8	36,020
1960	1710	253	Aug. 24, 1960	2.7	43.5	31,600	-	-

\* Revised.

a May 16, June 27, 1955.

6815. Gering drain near Gering, Nebr.

Location.--Lat 41°49', long 103°37', in SE¼NE¼ sec.6, T.21 N., R.54 W., near left bank on downstream side of bridge piling on county road, a quarter of a mile downstream from bridge on State Highway 86, 1 mile upstream from mouth, and 2 miles east of Gering.

Records available.--February 1931 to September 1945, October 1948 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 3,856.62 ft above mean sea level, datum of 1929 (levels by Corps of Engineers). Prior to Apr. 19, 1935, staff gage at bridge 0.4 mile downstream at present datum. Apr. 19, 1935, to Apr. 28, 1943, chain gage at bridge 0.3 mile downstream at datum 1.0 ft higher. Apr. 29, 1943, to Sept. 30, 1945, staff gages at various sites at or near bridge a quarter of a mile upstream at different datums. Aug. 16, 1948, to June 26, 1958, water-stage recorder at site 140 ft upstream at datum 1.0 ft higher.

Average discharge.--26 years (1931-45, 1948-60), 39.2 cfs (28,380 acre-ft per year).

Extremes.--1931-45, 1948-60: Maximum discharge, 9,560 cfs June 8, 1958 (gage height, 12.0 ft, present datum, from floodmarks), from rating curve extended above 1,600 cfs on basis of slope-area measurements at gage heights 7.10, 8.87, 10.00, and 11.33 ft; minimum daily, 5 cfs Aug. 13, 16, 19, 1940.

Remarks.--Base flow is mainly return water from land irrigated by Fort Laramie Canal.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	54.2	43.5	37.9	34.8	30.4	28.0	24.6	35.7	52.7	58.5	74.6	86.3	46.9
1952	44.5	39.7	37.1	30.4	29.1	30.5	27.3	65.6	76.3	62.5	71.5	92.1	50.6
1953	57.6	45.5	39.3	35.4	33.5	29.8	28.6	41.7	76.8	76.4	92.6	70.1	52.4
1954	44.5	37.6	35.2	32.3	25.5	25.0	24.8	62.6	26.9	41.2	52.9	33.5	37.0
1955	27.8	25.9	24.8	24.5	23.8	22.8	27.2	75.9	39.2	36.6	44.8	55.6	35.8
1956	35.6	32.7	29.7	24.2	22.1	20.5	19.2	25.4	37.2	73.7	43.5	41.0	33.8
1957	29.1	30.2	24.4	22.9	22.5	22.1	21.9	45.9	47.2	120	58.8	71.0	43.2
1958	36.6	28.7	27.4	26.2	23.9	22.9	22.4	38.9	105	87.4	65.0	90.9	48.0
1959	39.9	28.1	26.7	24.2	21.9	22.5	25.0	21.4	38.5	68.2	47.5	69.5	36.2
1960	39.3	29.8	29.7	25.5	25.6	23.1	21.7	22.3	29.0	30.7	37.2	38.5	29.4

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	3,330	2,590	2,330	2,140	1,690	1,720	1,470	2,190	3,140	4,590	5,140	5,140	33,930
1952	2,740	2,360	2,280	1,870	1,670	1,870	1,620	4,040	4,540	3,840	4,400	5,480	36,710
1953	3,540	2,710	2,420	2,180	1,860	1,830	1,700	2,560	4,570	4,700	5,690	4,170	37,930
1954	2,730	2,240	2,170	1,990	1,420	1,540	1,470	3,850	1,600	2,530	3,250	1,990	26,780
1955	1,710	1,540	1,530	1,510	1,320	1,400	1,620	4,670	2,330	2,260	2,760	3,310	25,960
1956	2,190	1,950	1,830	1,490	1,270	1,260	1,140	1,560	2,210	4,530	2,680	2,440	24,550
1957	1,790	1,800	1,500	1,410	1,250	1,360	1,300	2,820	2,810	7,390	3,610	4,230	31,260
1958	2,250	1,710	1,690	1,610	1,330	1,410	1,330	2,390	6,260	5,380	4,000	5,410	34,770
1959	2,450	1,670	1,640	1,490	1,220	1,390	1,490	1,320	2,290	4,190	2,920	4,140	26,210
1960	2,420	1,770	1,820	1,570	1,470	1,420	1,290	1,410	1,730	1,890	2,290	2,290	21,370

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	46.8	33,850
1951	1210	555	Sept. 3, 1951	22	46.9	33,930	45.7	33,060
1952	1240	4,020	June 27, 1952	23	50.6	36,710	52.4	38,000
1953	1280	*1,730	June 7, 1953	26	52.4	37,930	50.3	36,400
1954	1340	*2,020	May 22, 1954	20	37.0	26,780	33.7	24,420
1955	1390	*2,540	May 16, 1955	18	35.8	25,960	37.5	27,150
1956	1440	6,150	July 2, 1956	18	33.8	24,550	32.6	23,670
1957	1510	6,220	July 29, 1957	19	43.2	31,260	43.9	31,820
1958	1560	9,560	June 8, 1958	18	48.0	34,770	48.2	34,880
1959	1630	2,530	July 15, 1959	15	36.2	26,210	36.5	26,460
1960	1710	1,100	June 11, 1960	14	29.4	21,370	-	-

\* Revised.

6820. North Platte River near Minatare, Nebr.

Location.--Main channel gage: Lat 41°47', long 103°31', in NW $\frac{1}{4}$ SW $\frac{1}{4}$  sec.18, T.21 N., R.53 W., on left bank 50 ft downstream from highway bridge and  $\frac{1}{2}$  miles southwest of Minatare. Nine Mile channel gage: on left bank 50 ft upstream from highway bridge and 750 ft north of main channel.

Drainage area.--28,700 sq mi, approximately.

Records available.--May to August 1916, May 1917 to September 1918, May to October 1919, April to September 1922, June 1923 to September 1960. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Main channel: Water-stage recorder. Datum of gage is 3,811.0 ft above mean sea level, datum of 1929, Western Wyoming supplementary adjustment of 1940. Prior to October 1919, staff gage at bridge 50 ft upstream at different datum. April 1922 to Apr. 11, 1932, staff gage and Apr. 12, 1932, to July 20, 1936, water-stage recorder, at bridge 50 ft upstream at datum 2.21 ft higher. July 21, 1936, to Apr. 30, 1941, water-stage recorder at site 400 ft upstream at datum 2.87 ft higher. May 1, 1941, to July 19, 1955, at datum 1.87 ft higher, and July 20, 1955, to Mar. 21, 1956, at datum 1.00 ft higher. Mar. 22 to May 22, 1956, water-stage recorder at present site at datum 1.00 ft higher.

Nine Mile channel: Water-stage recorder. Datum of gage is 3,813.3 ft above mean sea level, datum of 1929, Western Wyoming supplementary adjustment of 1940. No records collected prior to May 16, 1934. May 16, 1934, to May 19, 1940 (irrigation seasons only), staff gage at bridge 50 ft downstream at same datum. May 20, 1940, to June 28, 1955, water-stage recorder 25 ft downstream at same datum. June 29 to Sept. 30, 1955, staff gage 25 ft downstream at datum 1.02 ft lower.

Extremes.--1916-19 1922-60: Maximum discharge, 19,500 cfs July 2, 1917 (from graph based on mean daily discharge and discharge measurement published by State engineer of Nebraska); minimum daily, 11 cfs Aug. 16-18, 1940.

Flood of June 18, 1921, may have been greater than flood of July 2, 1917.

Remarks.--Natural flow of stream affected by transmountain diversion, storage reservoirs, power developments, diversions and ground-water withdrawals for irrigation, and return flow from irrigated areas. River flows in two channels for which separate records are computed; figures given herein represent combined discharge.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1,295	1,130	1,076	983	959	810	697	477	941	789	555	1,321	918
1952	1,608	1,374	964	873	892	1,015	1,171	1,588	3,035	580	534	799	1,200
1953	1,522	1,209	1,146	1,075	938	925	745	440	871	351	668	529	868
1954	1,031	951	844	724	708	679	505	431	256	182	213	223	562
1955	544	739	653	573	566	580	576	433	833	258	144	397	523
1956	746	725	696	616	566	539	398	226	156	408	138	217	453
1957	602	719	868	530	535	527	565	1,240	844	594	495	691	668
1958	852	856	767	667	635	654	749	490	942	749	267	612	695
1959	1,075	870	817	726	662	643	667	495	397	235	206	586	614
1960	1,116	896	765	703	667	641	582	333	209	83.6	173	266	536

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	79,660	67,240	66,170	60,460	53,260	49,790	41,450	29,320	55,980	48,530	34,100	78,630	664,600
1952	98,880	81,740	59,280	53,670	51,310	62,420	69,650	87,620	180,600	35,640	32,810	47,520	871,100
1953	93,560	71,960	70,470	66,100	52,110	56,900	44,330	27,070	51,810	21,590	41,050	31,460	628,500
1954	65,400	56,580	51,870	44,500	39,310	41,770	30,070	26,520	15,250	11,170	13,100	13,280	406,800
1955	33,430	43,950	40,130	35,260	31,460	35,640	34,260	26,610	49,550	15,840	8,860	23,620	378,600
1956	45,860	43,160	42,800	37,860	32,570	33,140	23,660	13,900	9,410	25,060	8,460	12,930	328,800
1957	37,030	42,770	41,050	32,580	29,690	32,390	33,600	76,270	50,220	36,500	30,440	41,150	483,700
1958	58,520	50,920	47,160	41,030	35,280	40,230	44,550	30,150	56,060	46,040	16,440	36,410	502,800
1959	66,090	51,790	50,220	44,650	36,790	39,530	39,710	30,460	23,650	14,430	12,690	34,870	444,900
1960	68,610	53,300	47,030	43,250	38,390	39,420	34,620	20,470	12,460	5,140	10,610	15,860	389,200

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean
		Discharge	Date				
1950	-	-	-	-	-	-	850
1951	1210	3,160	June 25, 1951	240	918	664,600	955
1952	1240	4,550	June 22, 1952	386	1,200	871,100	1,195
1953	1280	3,620	June 7, 1953	128	868	628,500	779
1954	1340	1,700	May 22, 1954	30	562	406,800	487
1955	1390	9,440	June 26, 1955	35	523	378,600	543
1956	1440	3,370	July 3, 1956	20	453	328,800	438
1957	1510	3,840	May 20, 1957	39	668	483,700	717
1958	1560	5,220	June 9, 1958	161	695	502,800	710
1959	1630	1,410	Sept. 30, 1959	106	614	444,900	616
1960	1710	1,450	Oct. 1, 1959	24	536	389,200	-

6825. Ninemile drain near McGrew, Nebr.

Location.--Lat 41°46', long 103°24', near southeast corner of sec.23, T.21 N., R.53 W., on right bank 15 ft upstream from highway bridge, half a mile upstream from mouth, and  $\frac{1}{2}$  miles north of McGrew.

Records available.--January 1932 to September 1960.

Gage.--Water-stage recorder. Altitude of gage is 3,800 ft (from topographic map). Prior to Apr. 14, 1939, staff gage at same site and datum.

Average discharge.--28 years (1932-60), 116 cfs (83,980 acre-ft per year).

Extremes.--1932-60: Maximum discharge, 844 cfs Sept. 3, 1951 (gage height, 6.38 ft); minimum daily, 49 cfs Apr. 25, 1960.

Remarks.--Flow affected by ground-water withdrawals and diversions for irrigation and return flow from irrigated areas.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	161	121	108	91.3	82.6	74.3	73.0	104	164	148	207	234	131
1952	157	127	110	93.7	86.5	82.2	73.5	127	169	203	216	236	140
1953	185	135	124	106	95.8	90.2	83.1	87.5	164	159	195	196	135
1954	154	114	104	85.6	81.9	82.6	77.7	94.3	104	94.8	143	139	107
1955	110	86.8	79.4	73.5	67.2	65.2	64.4	81.5	95.4	87.2	116	135	88.5
1956	124	87.9	76.1	66.6	61.9	58.2	62.1	71.8	91.6	115	119	133	89.0
1957	115	89.7	76.1	70.4	63.3	62.1	63.3	84.7	96.1	138	158	187	100
1958	128	93.9	81.6	72.1	68.3	68.0	61.3	84.5	147	190	159	234	116
1959	152	107	90.5	80.6	71.2	70.6	68.7	89.6	106	112	159	198	109
1960	136	102	88.4	75.5	71.1	67.2	61.4	78.0	79.2	98.4	139	156	96.1

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	9,880	7,220	6,640	5,820	4,590	4,570	4,350	6,390	9,760	9,080	12,730	13,950	94,780
1952	9,640	7,540	6,790	5,760	4,970	5,050	4,380	7,790	10,050	12,480	13,260	14,050	101,800
1953	11,350	8,010	7,600	6,520	5,320	5,550	4,950	5,380	9,730	9,760	11,970	11,680	97,820
1954	9,500	6,780	6,410	5,260	4,550	5,080	4,620	5,800	6,210	5,830	8,820	8,280	77,120
1955	6,730	5,160	4,880	4,520	3,730	4,010	3,830	5,010	5,680	5,360	7,120	8,050	64,080
1956	7,600	5,230	4,680	4,100	3,560	3,580	3,700	4,420	5,450	7,060	7,320	7,890	64,590
1957	7,070	5,340	4,680	4,330	3,510	3,820	3,770	5,210	5,720	8,470	9,720	11,110	72,750
1958	7,860	5,590	5,020	4,440	3,790	4,180	3,650	5,190	6,760	11,690	9,810	13,900	83,880
1959	9,350	6,390	5,570	4,960	3,960	4,340	4,090	5,510	6,280	6,880	9,780	11,770	78,880
1960	8,330	6,090	5,430	4,640	4,090	4,130	3,650	4,800	4,710	6,050	8,520	9,290	69,730

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	133	96,100
1951	1210	844	Sept. 3, 1951	68	131	94,780	131	95,010
1952	1240	448	June 22, 1952	68	140	101,800	144	104,800
1953	1280	533	June 7, 1953	72	135	97,820	129	93,550
1954	1340	597	Aug. 20, 1954	59	107	77,120	98.4	71,200
1955	1390	529	June 28, 1955	55	88.5	64,080	89.5	64,820
1956	1440	776	July 3, 1956	52	89.0	64,590	88.4	64,170
1957	1510	694	June 11, 1957	58	100	72,750	102	74,130
1958	1560	738	June 2, 1958	51	116	83,880	120	86,720
1959	1630	559	June 19, 1959	56	109	78,880	107	77,420
1960	1710	298	Aug. 25, 1960	49	96.1	69,730	-	-

6830. Bayard Sugar Factory drain near Bayard, Nebr.

Location.--Lat 41°44', long 103°19', in SE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 5, T.20 N., R.52 W., on right bank 600 ft upstream from mouth and  $1\frac{1}{4}$  miles south of Bayard.

Records available.--October 1931 to September 1960.

Gage.--Water-stage recorder and concrete flume. Altitude of gage is 3,760 ft (from topographic map). Prior to Jan. 7, 1939, staff gage at same site and datum.

Average discharge.--29 years (1931-60), 31.3 cfs (22,660 acre-ft per year).

Extremes.--1931-60: Maximum discharge, 391 cfs July 3, 1956 (gage height, 4.32 ft), from rating curve extended above 180 cfs; no flow June 1, 2, July 4-8, 1934, May 16, 17, 1936, Aug. 8, 9, 1960.

Remarks.--Flow affected by ground-water withdrawals and diversions for irrigation and return flow from irrigated areas.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	45.7	36.9	30.3	26.7	26.5	23.8	25.1	16.0	46.1	27.1	40.0	66.9	34.2
1952	46.4	36.7	29.9	27.5	25.0	25.6	22.9	12.0	27.1	18.4	36.5	47.2	29.6
1953	44.6	39.6	35.6	32.5	28.5	25.9	24.1	8.37	28.9	19.9	60.7	39.5	32.4
1954	49.5	34.0	28.2	25.8	24.6	25.2	11.9	15.1	27.3	8.94	37.6	26.9	26.3
1955	35.2	26.8	24.7	22.0	21.9	21.6	20.7	14.8	15.3	14.6	25.0	31.2	22.8
1956	34.0	25.7	24.6	21.5	19.2	17.9	12.2	6.97	17.4	26.1	27.6	11.6	20.4
1957	23.0	29.8	24.2	21.6	21.2	21.4	12.8	32.9	14.8	23.6	33.4	39.3	24.9
1958	39.4	27.6	24.3	22.5	20.9	23.7	20.5	17.4	44.2	41.6	40.1	29.0	29.2
1959	35.5	29.0	35.3	25.4	22.5	24.1	21.4	16.1	9.58	11.5	13.2	27.2	22.4
1960	37.0	45.6	37.1	23.7	22.6	22.5	16.5	1.39	9.29	0.67	2.77	19.0	19.8

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	2,810	2,200	1,860	1,640	1,470	1,470	1,490	986	2,750	1,670	2,460	3,980	24,790
1952	2,850	2,190	1,840	1,690	1,440	1,570	1,360	738	1,610	1,130	2,240	2,810	21,470
1953	2,740	2,360	2,190	2,000	1,580	1,590	1,430	515	1,720	1,220	3,730	2,350	23,420
1954	3,040	2,020	1,740	1,590	1,370	1,550	709	931	1,630	550	2,310	1,600	19,040
1955	2,170	1,600	1,520	1,350	1,210	1,330	1,230	908	912	898	1,540	1,860	16,530
1956	2,090	1,530	1,510	1,320	1,100	1,100	726	428	1,030	1,610	1,700	689	14,830
1957	1,420	1,760	1,490	1,350	1,180	1,320	762	2,030	884	1,450	2,050	2,340	18,040
1958	2,360	1,640	1,490	1,390	1,160	1,460	1,220	1,070	2,630	2,560	2,460	1,730	21,170
1959	2,180	1,720	2,050	1,560	1,250	1,480	1,270	991	570	709	812	1,620	16,220
1960	2,280	2,720	2,280	1,460	1,300	1,390	982	85	553	41	170	1,130	14,390

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	-	-	-
1951	1210	280	Sept. 3, 1951	3.2	34.2	24,790	29.7	21,490	-
1952	1240	141	Sept. 25, 1952	1.7	29.6	21,470	34.2	24,800	-
1953	1280	201	Aug. 16, 1953	2.2	32.4	23,420	30.1	21,880	-
1954	1340	176	May 22, 1954	.7	26.3	19,040	31.7	22,940	-
1955	1390	215	May 26, 1955	.5	22.8	16,530	24.2	17,530	-
1956	1440	391	July 3, 1956	.3	20.4	14,830	22.6	16,370	-
1957	1510	357	May 20, 1957	5.2	24.9	18,040	19.8	14,390	-
1958	1560	321	July 19, 1958	3.7	29.2	21,170	26.0	18,840	-
1959	1630	235	June 19, 1959	1.5	22.4	16,220	29.9	21,640	-
1960	1710	119	Sept. 30, 1960	0	19.8	14,390	24.2	17,540	-

6840. Red Willow Creek near Bayard, Nebr.

Location.--Lat 41°43', long 103°15', in NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec.13, T.20 N., R.52 W., on left bank 75 ft downstream from timber bridge, a quarter of a mile downstream from Wild Horse drain, three-quarters of a mile upstream from mouth, and  $\frac{1}{2}$  miles southeast of Bayard.

Records available.--October 1931 to September 1960. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 3,716.29 ft above mean sea level, datum of 1929, Western Wyoming supplementary adjustment of 1940. Prior to Nov. 18, 1938, staff gage and Nov. 18, 1938, to Apr. 15, 1946, water-stage recorder, at site 65 ft upstream at datum 1.00 ft higher, and Apr. 16, 1946, to June 12, 1957, at present datum.

Average discharge.--29 years (1931-60), 81.3 cfs (58,860 acre-ft per year).

Extremes.--1931-60: Maximum discharge, 2,320 cfs July 3, 1956; maximum gage height, 7.8 ft May 10, 1942, from floodmark, present datum; minimum daily discharge, 15 cfs Apr. 23, 1935.

Remarks.--Natural flow of stream affected by diversions and ground-water withdrawals for irrigation, return flow from irrigated areas, and occasional waste into creek from Tri-State canal.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	114	90.0	74.7	66.5	62.0	53.5	54.7	74.6	140	128	116	302	106
1952	120	87.6	78.7	63.8	59.9	59.7	51.3	99.9	74.6	66.1	92.7	148	83.6
1953	156	118	95.2	83.8	76.4	67.5	61.1	69.6	111	85.3	131	139	99.6
1954	120	93.2	79.6	65.1	58.5	59.4	62.1	67.0	57.5	36.9	59.5	86.0	70.5
1955	90.1	70.7	63.1	56.4	53.3	50.0	45.7	59.6	52.9	38.3	49.2	100	60.8
1956	117	76.1	67.0	55.8	49.6	44.0	51.5	44.6	87.7	119	50.0	85.6	70.7
1957	84.8	75.9	64.8	54.9	52.0	47.9	55.2	65.7	63.6	90.6	80.3	118	71.3
1958	91.5	74.8	65.5	57.6	53.8	54.1	53.0	73.7	140	142	71.8	141	84.9
1959	97.3	76.6	69.2	59.7	52.0	53.2	48.9	83.0	77.7	57.7	53.0	137	72.0
1960	104	80.1	71.3	64.1	55.1	50.9	34.4	35.2	47.1	49.3	56.3	74.6	60.2

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	7,010	5,360	4,590	4,090	3,440	3,290	3,250	4,590	8,310	7,860	7,150	17,990	76,930
1952	7,390	5,210	4,840	3,930	3,440	3,670	3,050	6,140	4,440	4,060	5,700	8,800	60,670
1953	9,620	7,000	5,850	5,150	4,240	4,150	3,640	4,280	6,630	5,250	8,030	8,290	72,130
1954	7,400	5,550	4,890	4,000	3,250	3,650	3,700	4,120	3,420	2,270	3,660	5,120	51,030
1955	5,540	4,210	3,880	3,470	2,960	3,070	2,720	3,670	3,150	2,350	3,020	5,980	44,020
1956	7,180	4,530	4,120	3,430	2,850	2,710	3,060	2,740	5,220	7,340	3,070	5,090	51,340
1957	5,220	4,520	3,980	3,380	2,890	2,950	3,280	4,040	3,780	5,570	4,940	7,040	51,590
1958	5,620	4,450	4,030	3,540	2,990	3,330	3,160	4,530	8,310	8,750	4,410	8,380	61,500
1959	5,980	4,580	4,250	3,610	2,890	3,270	2,910	5,110	4,620	3,550	3,260	8,150	52,160
1960	6,410	4,760	4,380	3,940	3,170	3,130	2,040	2,160	2,800	2,970	3,460	4,440	43,660

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	93.0	67,310	
1951	1210	1,620	Sept. 3, 1951	28	106	76,930	107	77,410	
1952	1240	253	May 25, 1952	29	83.6	60,670	90.5	65,700	
1953	1280	770	June 19, 1953	48	99.6	72,130	93.2	67,500	
1954	1340	970	June 18, 1954	29	70.5	51,030	64.7	46,820	
1955	1390	418	Sept. 20, 1955	18	60.8	44,020	63.8	46,330	
1956	1440	2,320	July 3, 1956	28	70.7	51,340	67.8	49,220	
1957	1510	2,140	July 29, 1957	28	71.3	51,590	71.8	51,970	
1958	1560	1,940	June 15, 1958	38	84.3	61,500	85.9	62,190	
1959	1630	534	June 19, 1959	38	72.0	52,160	73.1	52,920	
1960	1710	265	June 11, 1960	25	60.2	43,660	-	-	

## 6845. North Platte River at Bridgeport, Nebr.

Location.--Main channel gage: Lat 41°40', long 103°06', in sec.28, T.20 N., R.50 W., on downstream side of pier near center of bridge on U. S. Highway 26, half a mile north of Bridgeport. Browns Creek channel gage: Lat 41°41', long 103°06', in sec.28, T.20 N., R.50 W., on left bank a quarter of a mile upstream from culvert on U. S. Highway 26 and three-quarters of a mile north of Bridgeport.

Drainage area.--29,400 sq mi, approximately.

Records available.--June 1896 to October 1900 (no winter records most years), May 1902 to November 1906; June to August 1915, May 1916 to September 1960. Monthly discharge only for some years, published in WSP 1310. Published as "near Camp Clark" 1896-1900.

Gage.--Main channel: Water-stage recorder. Datum of gage is 3,656.14 ft above mean sea level, datum of 1929. Prior to October 1900, staff gage at site 4 miles upstream at different datum. May 1902 to November 1906 wire-weight gage, June to August 1915, May 1916 to May 1917 staff gage, and June 1917 to Oct. 6, 1927, water-stage recorder, all at present site at datum 0.31 ft higher.  
Browns Creek channel: Water-stage recorder. Datum of gage is 3,663.51 ft above mean sea level, datum of 1929. No gage maintained prior to June 1, 1934. June 1, 1934, to Aug. 31, 1936, staff gage at site a quarter of a mile downstream at different datum. Sept. 1, 1936, to May 31, 1943, staff gages near present site at present datum. Prior to May 1, 1943, gage read during irrigation seasons only.

Extremes.--1896-1900, 1902-6, 1915-60: Maximum discharge, 24,900 cfs June 26, 1899 (gage height, 5.39 ft, site and datum then in use, from graph based on gage readings); minimum daily, 55 cfs May 28, 1934, Aug. 15, 1940, but may have been less during periods of no record for Browns Creek channel.

Remarks.--Natural flow of stream affected by transmountain diversion, storage reservoirs, power developments, ground-water withdrawals and diversions for irrigation, and return flow from irrigated areas. River flows in two independently rated channels for which separate records are computed; figures given herein represent combined discharge.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1,833	1,513	1,428	1,223	1,355	1,100	984	774	1,405	1,211	826	2,211	1,319
1952	2,064	1,660	1,314	1,238	1,158	1,262	1,490	1,918	3,087	1,798	759	1,206	1,494
1953	2,027	1,603	1,594	1,438	1,316	1,250	1,047	666	1,020	502	1,134	868	1,205
1954	1,389	1,348	1,111	984	1,003	1,004	773	605	385	174	354	387	792
1955	814	1,006	941	805	780	834	855	623	954	351	218	564	727
1956	1,062	993	961	865	796	785	807	339	292	755	170	307	662
1957	831	1,023	962	756	841	756	842	1,649	1,125	794	706	1,050	945
1958	1,373	1,198	1,026	963	921	946	1,005	765	1,302	1,241	399	929	1,005
1959	1,480	1,219	1,113	997	931	902	982	829	549	324	275	919	876
1960	1,626	1,187	1,101	1,015	967	911	837	524	264	131	218	391	764

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	112,700	90,010	87,790	75,190	75,230	67,660	58,550	47,570	83,630	74,430	50,790	131,500	955,000
1952	125,900	98,800	80,800	76,110	68,600	77,810	88,680	117,900	183,700	49,070	46,700	71,740	1,085,000
1953	124,600	95,400	97,900	88,400	73,070	76,860	62,290	40,930	60,700	30,850	69,720	51,640	872,400
1954	85,430	80,210	68,300	60,490	55,700	61,740	46,010	37,190	22,930	10,700	21,790	23,050	573,500
1955	50,030	59,840	57,850	49,470	43,300	51,280	50,870	38,330	56,770	21,600	13,410	33,550	526,300
1956	65,310	59,060	59,110	53,220	45,800	48,270	36,090	20,860	17,390	47,060	10,480	18,270	480,900
1957	51,100	60,890	59,130	46,490	46,710	46,480	50,090	101,400	66,950	48,800	43,420	62,460	683,900
1958	84,440	71,270	63,080	59,200	51,180	58,180	59,820	47,010	77,480	76,330	24,520	55,290	727,800
1959	91,000	72,520	68,410	61,320	51,680	55,460	58,420	50,950	32,670	19,890	16,920	54,700	633,900
1960	99,990	70,650	67,700	62,420	55,610	56,010	49,830	32,220	15,730	8,040	13,390	23,290	554,900

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean
		Discharge	Date				
1950	-	-	-	-	-	-	1,172
1951	1210	4,680	Sept. 4, 1951	476	1,319	955,000	1,341
1952	1240	4,250	June 1, 1952	500	1,494	1,085,000	1,610
1953	1230	3,750	June 8, 1953	215	1,205	872,400	1,089
1954	1340	1,600	Oct. 21, 1954	79	792	573,500	701
1955	1390	8,330	June 29, 1955	94	727	526,300	749
1956	1440	6,910	July 3, 1956	82	662	480,900	645
1957	1510	4,200	May 20, 1957	123	945	683,900	1,011
1958	1560	4,860	July 18, 1958	239	1,005	727,800	1,023
1959	1630	2,220	Sept. 28, 1959	121	876	633,900	885
1960	1710	2,270	Oct. 1, 1959	81	764	554,900	-



6850. Pumpkin Creek near Bridgeport, Nebr.

Location.--Lat 41°38', long 103°02', in SW $\frac{1}{4}$  sec.12, T.19 N., R.50 W., on left bank 250 ft downstream from bridge on U. S. Highway 26, half a mile upstream from mouth, and 4 miles southeast of Bridgeport.

Drainage area.--1,080 sq mi, approximately.

Records available.--February 1931 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 3,635.99 ft above mean sea level, datum of 1929. Prior to June 25, 1934, staff gage on downstream side of bridge 240 ft upstream and June 25, 1934, to May 18, 1936, water-stage recorder at upstream side of bridge 260 ft upstream, both at datum 0.29 ft higher.

Average discharge.--29 years (1931-60), 32.7 cfs (23,670 acre-ft per year).

Extremes.--1931-60: Maximum discharge, 2,970 cfs Sept. 3, 1951 (gage height, 8.87 ft, from floodmark); minimum daily, 0.4 cfs Aug. 6, 1936, May 11, 1955.

Remarks.--Natural flow of stream affected by ground-water withdrawals and diversions for irrigation and return flow from irrigated areas.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	30.0	29.4	33.0	33.0	32.1	34.2	31.9	20.9	64.5	26.6	23.1	126	40.2
1952	39.1	38.4	38.1	38.1	42.7	52.8	46.9	37.5	6.86	11.7	17.8	33.5	33.6
1953	18.0	23.1	30.3	33.9	36.4	37.2	40.9	24.5	28.1	20.0	33.6	18.0	28.3
1954	32.5	26.5	29.7	29.4	28.2	28.2	34.5	27.3	27.0	8.41	5.51	7.93	23.7
1955	24.2	20.1	27.0	24.6	24.5	33.7	45.4	28.7	56.1	10.2	21.2	41.4	29.7
1956	48.1	35.6	36.0	35.6	33.2	31.7	35.4	14.5	9.53	16.8	10.2	17.7	27.0
1957	21.9	24.7	37.5	30.6	35.3	34.9	45.1	52.9	64.1	20.7	30.6	56.8	37.8
1958	44.0	47.1	46.5	46.8	48.9	50.5	52.7	46.5	34.7	43.3	16.9	47.2	43.7
1959	35.7	34.5	40.9	41.1	44.9	49.1	56.7	49.2	25.9	16.8	10.8	25.4	35.8
1960	31.8	35.8	35.0	30.7	39.8	43.7	36.9	28.5	15.9	10.3	6.52	15.3	27.6

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1,850	1,750	2,030	2,030	1,780	2,100	1,900	1,280	3,840	1,640	1,420	7,510	29,130
1952	2,400	2,280	2,340	2,340	2,460	3,250	2,790	2,310	408	722	1,090	1,990	24,380
1953	986	1,370	1,860	2,080	2,020	2,280	2,430	1,500	1,550	1,230	2,060	1,070	20,440
1954	2,000	1,570	1,820	1,810	1,570	1,740	2,050	1,680	1,610	517	339	472	17,180
1955	1,490	1,190	1,660	1,520	1,360	2,070	2,700	1,770	3,340	625	1,300	2,470	21,500
1956	2,960	2,120	2,210	2,190	1,910	1,950	2,100	992	567	1,030	627	1,060	19,620
1957	1,350	1,470	2,510	1,890	1,960	2,150	2,680	3,280	3,820	1,280	1,880	3,380	27,410
1958	2,710	2,800	2,860	2,880	2,710	3,100	3,140	2,860	2,060	2,660	1,040	2,810	31,630
1959	2,190	2,050	2,520	2,520	2,490	3,020	3,380	3,030	1,540	1,030	666	1,510	25,950
1960	1,960	2,130	2,150	1,890	2,290	2,690	2,200	1,750	944	634	524	910	20,070

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	-	-
1951	1210	2,970	Sept. 3, 1951	8.7	40.2	29,130	31.5	22,800
1952	1240	134	Mar. 30, 1952	3.1	33.6	24,380	29.7	21,580
1953	1280	117	July 18, 1953	4.8	28.3	20,440	29.9	21,610
1954	1340	88	May 2, 1954	3.8	23.7	17,180	22.3	16,130
1955	1390	342	Sept. 21, 1955	.4	29.7	21,500	33.7	24,440
1956	1440	111	July 2, 1956	1.4	27.0	19,620	24.0	17,460
1957	1510	188	June 1, 1957	10	37.8	27,410	42.3	30,650
1958	1560	326	July 21, 1958	7.3	43.7	31,630	41.5	30,020
1959	1630	87	Apr. 5, 1959	7.0	35.8	25,950	35.1	25,430
1960	1710	78	May 30, 1960	4.6	27.6	20,070	-	-

## 6860. North Platte River at Lisco, Nebr.

Location--Lat 41°30', long 102°38', in sec.33, T.18 N., R.46 W., near right bank on downstream side of pier of highway bridge, half a mile south of Lisco.

Drainage area--30,800 sq mi, approximately.

Records available--May to September 1916, June to October 1917, October 1931 to September 1960. Monthly discharge only for some periods, published in WSP 1310.

Gage--Water-stage recorder. Datum of gage is 3,475.5 ft above mean sea level, datum of 1929, Western Wyoming supplementary adjustment of 1940. Prior to Sept. 8, 1931, staff gage at present site at different datum and Sept. 8, 1931, to May 3, 1932, staff gage at present site and datum.

Extremes--1916-17, 1931-60: Maximum discharge, 20,100 cfs June 27, 29, 1917, from graph based on daily gage readings, from rating curve extended above 15,000 cfs; minimum daily, 8 cfs Aug. 4, 1934.

Remarks--Natural flow of stream affected by transmountain diversion, storage reservoirs, power developments, diversions and ground-water withdrawals for irrigation, and return flow from irrigated areas.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1,918	1,681	1,633	1,409	1,459	1,243	1,091	870	1,648	1,312	876	2,360	1,456
1952	2,196	1,876	1,564	1,305	1,390	1,501	1,580	1,979	3,040	780	696	1,284	1,597
1953	2,087	1,870	1,769	1,611	1,465	1,446	1,181	779	1,010	556	1,258	898	1,327
1954	1,508	1,473	1,273	1,155	1,104	1,174	923	702	449	173	375	394	891
1955	877	1,136	1,040	869	846	1,034	1,008	705	820	479	217	607	802
1956	1,143	1,138	1,009	966	929	988	747	444	267	752	170	321	731
1957	816	1,252	1,056	815	1,020	940	1,044	1,823	1,296	694	711	1,170	1,053
1958	1,464	1,422	1,285	1,054	1,014	1,221	1,231	918	1,571	1,349	437	982	1,160
1959	1,590	1,337	1,262	1,164	1,140	1,173	1,129	975	508	321	213	866	972
1960	1,728	1,307	1,205	1,080	1,052	1,142	925	645	263	101	188	404	837

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	117,900	100,000	100,400	86,640	81,020	76,440	64,910	53,520	98,120	80,660	53,840	140,400	1,054,000
1952	135,000	111,600	96,180	80,230	79,930	92,290	94,020	121,700	180,900	47,940	42,770	76,390	1,159,000
1953	128,300	111,300	108,800	99,050	81,340	88,920	70,280	47,900	60,100	34,210	77,380	53,310	960,900
1954	92,750	87,650	78,270	71,010	61,290	72,210	54,890	43,180	26,710	10,610	23,070	23,420	645,100
1955	53,930	67,600	63,970	53,480	46,980	63,580	59,970	43,350	48,820	29,440	13,330	36,110	580,500
1956	70,290	67,760	62,020	59,390	53,410	54,570	44,470	27,280	15,890	46,260	10,470	19,120	530,900
1957	50,190	74,520	65,540	50,110	56,670	57,820	62,140	112,100	77,130	42,680	43,740	69,600	762,200
1958	90,010	84,600	77,750	64,840	56,330	75,090	73,250	56,420	93,490	82,950	26,860	58,460	840,000
1959	97,770	79,560	77,610	71,590	63,300	72,100	67,200	59,930	30,270	19,770	13,080	51,530	703,700
1960	106,200	77,770	74,060	66,410	60,530	70,230	55,060	39,630	15,640	6,220	11,580	24,040	607,400

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	1,293	936,300	
1951	1210	5,120	Sept. 4, 1951	508	1,456	1,054,000	1,490	1,078,000	
1952	1240	3,800	June 3, 1952	416	1,597	1,159,000	1,604	1,165,000	
1953	1280	3,620	July 30, 1953	195	1,327	960,900	1,203	871,100	
1954	1340	1,810	Oct. 21, 1953	48	891	645,100	790	571,900	
1955	1390	5,900	July 1, 1955	61	802	580,500	822	595,100	
1956	1440	4,060	July 5, 1956	85	731	530,900	718	521,100	
1957	1510	3,960	May 21, 1957	93	1,053	762,200	1,139	824,400	
1958	1560	3,230	July 22, 1958	184	1,160	840,000	1,164	842,600	
1959	1630	2,150	Sept. 26, 1959	76	972	703,700	976	706,800	
1960	1710	2,290	Oct. 2, 1959	43	837	607,400	-	-	

6865. North Platte River at Oshkosh, Nebr.

Location.--Lat 41°23', long 102°21', near line between secs.3 and 10, T.16 N., R.44 N., on right bank 40 ft downstream from bridge on State Highway 27 and 1 mile south of Oshkosh.

Drainage area.--31,400 sq mi, approximately.

Records available.--May to September 1916, May to October 1917, March 1928 to September 1960. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 3,369.6 ft above mean sea level, datum of 1929, Western Wyoming supplementary adjustment of 1940. April 1916 to October 1917 staff gage at site 40 ft upstream at different datum. March 1928 to Apr. 22, 1933, staff gage and Apr. 23, 1933, to Apr. 13, 1955, water-stage recorder, at site 40 ft upstream at present datum. Supplementary staff gage on Midland channel read once daily during irrigation season.

Extremes.--1916, 1928-60: Maximum discharge, 19,500 cfs June 4, 1929; no flow July 21 to Aug. 8, Aug. 11, 21, 24-30, 1934.

Remarks.--Natural flow of stream affected by transmountain diversion, storage reservoirs, diversions and ground-water withdrawals for irrigation, and return flow from irrigated areas. River flows in two channels for which separate records are computed May to September; figures given herein represent combined discharge. Records of chemical analyses and water temperatures for the period November 1950 to September 1951 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1,946	1,706	1,675	1,420	1,559	1,251	1,161	804	1,597	1,338	831	2,452	1,475
1952	2,227	1,810	1,428	1,424	1,464	1,600	1,603	1,922	3,013	764	642	1,191	1,588
1953	2,064	1,781	1,759	1,700	1,468	1,413	1,254	829	991	523	1,296	846	1,327
1954	1,529	1,528	1,303	1,198	1,144	1,210	998	753	411	160	340	374	911
1955	917	1,126	1,056	877	922	1,117	1,020	755	849	552	216	534	827
1956	1,104	1,142	966	946	875	945	792	437	258	764	148	294	722
1957	795	1,228	1,073	808	956	990	1,075	1,760	1,389	623	757	1,148	1,049
1958	1,484	1,394	1,227	992	1,076	1,270	1,256	942	1,534	1,398	451	992	1,168
1959	1,657	1,359	1,277	1,168	1,194	1,199	1,165	1,038	506	329	198	813	890
1960	1,735	1,317	1,215	1,098	1,033	1,202	996	704	275	79.0	182	394	853

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	119,700	101,500	103,000	87,290	86,560	76,920	69,090	49,460	95,040	82,290	51,080	45,900	1,068,000
1952	136,900	107,700	87,830	87,560	84,200	98,380	95,370	118,200	179,300	46,990	39,460	70,890	1,153,000
1953	126,900	106,000	108,200	104,500	81,560	86,900	74,590	50,950	58,960	32,180	79,670	50,360	960,800
1954	94,020	90,900	80,150	73,690	63,550	74,420	59,360	46,290	24,470	9,850	20,920	22,260	659,900
1955	56,370	66,970	64,960	53,950	51,230	68,700	60,720	46,420	50,500	33,950	13,270	31,790	598,800
1956	67,860	67,980	59,430	58,320	50,350	58,110	46,530	26,900	15,380	46,970	9,130	17,520	524,500
1957	48,920	73,090	65,950	49,690	53,080	60,860	63,970	108,200	82,660	38,280	46,530	68,360	759,600
1958	91,230	82,950	75,450	60,990	59,780	78,110	74,720	57,940	91,490	85,940	27,740	59,040	845,400
1959	101,900	80,850	78,540	71,710	66,300	73,710	69,320	63,800	30,120	20,250	12,190	48,390	717,100
1960	106,700	78,350	74,700	67,500	59,420	73,920	59,270	43,300	16,340	4,860	11,200	23,440	619,000

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	1,278	925,200
1951	1210	5,040	Sept. 5, 1951	438	1,475	1,068,000	1,486	1,076,000
1952	1240	3,680	June 4, 1952	412	1,568	1,153,000	1,600	1,161,000
1953	1280	3,300	June 10, 1953	204	1,327	960,800	1,222	844,700
1954	1340, 1710	2,200	Oct. 21, 1953	39	911	659,900	805	583,100
1955	1390	5,640	July 1, 1955	70	827	598,800	837	605,800
1956	1440	4,420	July 5, 1956	71	722	524,500	712	517,200
1957	1510	3,740	May 22, 1957	113	1,049	759,600	1,134	821,300
1958	1560	3,340	July 22, 1958	180	1,168	845,400	1,184	857,000
1959	1630	2,190	Sept. 29, 1959	75	990	717,100	968	715,500
1960	1710	2,850	Nov. 23, 1959	28	853	619,000	-	-

a About.

6870. Blue Creek near Lewellen, Nebr.

Location.--Lat 41°20', long 102°10', in NE $\frac{1}{4}$  sec.30, T.16 N., R.42 W., on right bank 130 ft downstream from county highway bridge, half a mile downstream from bridge on U. S. Highway 26, three-quarters of a mile upstream from mouth, and 1 $\frac{1}{2}$  miles west of Lewellen.

Drainage area.--267 sq mi.

Records available.--October 1930 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 3,310.04 ft above mean sea level, datum of 1929, Western Wyoming supplementary adjustment of 1940. Prior to July 16, 1934, staff gage at site 110 ft upstream at datum 2.00 ft higher. July 16, 1934, to May 21, 1947, water-stage recorder at site 70 ft upstream at datum 2.00 ft higher, May 22, 1947, to May 10, 1950, at datum 1.00 ft higher, and May 11, 1950, to Apr. 9, 1958, at present datum.

Average discharge.--30 years (1930-60), 70.3 cfs (50,900 acre-ft per year).

Extremes.--1930-60: Maximum discharge, 720 cfs May 20, 1938 (gage height, 6.46 ft, present datum), from rating curve extended above 500 cfs; maximum gage height, 6.93 ft (present datum) Dec. 21, 1945 (backwater from ice); no flow Oct. 22, 1940, May 23-26, 1947, Aug. 14, 15, 1957, June 25-28, 1960.

Remarks.--Discharge measurements generally made once a week. Natural flow of stream affected by ground-water withdrawals and diversions for irrigation and return flow from irrigated areas.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	96.9	98.7	94.5	90.6	99.5	98.5	72.4	58.4	85.1	44.3	27.4	89.6	79.4
1952	78.4	99.2	85.4	98.3	100	102	102	99.7	25.0	3.65	.67	13.6	67.3
1953	26.1	86.7	93.3	98.2	96.1	92.3	96.9	53.6	20.1	14.6	46.9	7.02	60.8
1954	32.9	99.9	96.5	93.5	97.8	98.0	89.4	83.3	13.0	17.4	4.38	15.3	61.6
1955	30.1	77.8	98.4	93.7	82.8	100	87.7	36.7	79.5	7.91	17.2	18.1	60.6
1956	24.3	78.1	87.8	93.2	89.7	96.7	69.5	20.9	11.9	23.5	28.9	8.47	52.7
1957	19.9	102	94.9	82.8	99.8	96.3	91.3	89.9	94.5	25.2	4.10	19.4	68.0
1958	32.5	91.0	92.2	90.6	92.1	105	101	92.5	81.6	67.2	27.6	18.9	74.2
1959	52.4	95.3	97.8	95.5	94.6	100	90.9	76.7	29.7	11.4	19.2	15.28	63.9
1960	59.8	90.7	89.6	95.7	90.9	117	94.7	79.6	21.4	34.4	37.4	6.65	68.2

† Corrected.

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	5,960	5,870	5,810	5,570	5,530	6,060	4,310	3,590	5,060	2,720	1,690	5,330	57,500
1952	4,820	5,900	5,250	6,050	5,780	6,280	6,100	6,130	1,490	224	41	808	48,870
1953	1,610	5,160	5,740	6,040	5,340	5,670	5,760	3,290	1,190	900	2,890	418	44,010
1954	2,020	5,940	5,930	5,750	5,430	6,030	5,320	5,120	771	1,070	269	913	44,560
1955	1,850	4,630	6,050	5,760	4,600	6,150	5,220	2,250	4,730	487	1,060	1,080	43,870
1956	1,490	4,650	5,400	5,730	5,160	5,950	4,130	1,280	708	1,450	1,780	504	38,230
1957	1,220	6,060	5,830	5,090	5,540	5,920	5,430	5,530	5,620	1,550	252	1,150	49,190
1958	2,000	5,420	5,670	5,570	5,110	6,460	6,020	5,690	4,860	4,130	1,700	1,130	53,760
1959	3,220	5,670	6,000	5,880	5,260	6,170	5,410	4,720	1,760	700	1,180	314	46,280
1960	3,680	5,400	5,510	5,880	5,230	7,180	5,640	4,890	1,280	2,120	2,300	396	49,510

† Corrected.

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	82.4	-	59,630
1951	1210	281	May 20, 1951	0.8	79.4	57,500	77.1	55,830	
1952	1240	195	May 16, 1952	.1	67.3	48,870	62.5	45,410	
1953	1280	309	July 29, 1953	.2	60.8	44,010	62.7	45,390	
1954	1340	172	May 16, 1954	.3	61.6	44,560	59.7	43,200	
1955	1390	206	May 27, 1955	.1	60.6	43,870	59.2	42,880	
1956	1440	3130	Nov. 20, 1958	.2	52.7	38,230	54.8	39,800	
1957	1510	287	May 31, 1957	0	68.0	49,190	67.9	49,170	
1958	1560	376	July 18, 1958	2	74.2	53,760	76.7	55,560	
1959	1630	154	Mar. 27, 1959	.1	63.9	46,280	63.5	45,980	
1960	1710	210	Mar. 19, 1960	0	68.2	49,510	-	-	

† Corrected.

a About.

## 6875. North Platte River at Lewellen, Nebr.

Location.--Lat 41°19', long 102°08', in sec.34, T.16 N., R.42 W., near left bank on down-stream side of bridge over left channel and near left bank on downstream side of bridge over right channel, on U. S. Highway 26, half a mile upstream from high-water line of McConaughy Lake and 1 mile southeast of Lewellen.

Drainage area.--34,000 sq mi (revised), approximately.

Records available.--July to September 1931, December 1940 to September 1960.

Gage.--Water-stage recorders on two channels. Datums of gages on left and right channels are 3,284.6 and 3,283.7 ft, respectively, above mean sea level, datum of 1929, Western Wyoming supplementary adjustment of 1940. July to September 1931 staff gage at site 1 mile upstream at different datum.

Extremes.--1931, 1940-60: Maximum discharge, 9,140 cfs June 29, 1947; minimum daily, 44 cfs July 13, 1954.

Remarks.--Natural flow of stream affected by transmountain diversions, storage reservoirs, power developments, diversions and ground-water withdrawals for irrigation, and return flow from irrigated areas. River flows in two channels for which separate records are computed; figures given herein represent combined discharge.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	2,138	1,898	1,881	1,509	1,663	1,374	1,240	1,036	1,738	1,400	857	2,713	1,617
1952	2,385	2,138	1,444	1,452	1,589	1,858	1,917	2,152	3,031	776	627	1,226	1,713
1953	2,093	1,812	1,950	1,707	1,651	1,658	1,405	917	993	504	1,357	821	1,405
1954	1,559	1,640	1,422	1,287	1,338	1,291	1,064	822	448	169	316	374	975
1955	870	1,227	1,176	984	1,085	1,272	1,112	773	892	548	207	503	885
1956	1,140	1,256	1,215	1,184	1,090	1,093	834	513	252	849	187	262	823
1957	788	1,340	1,133	950	1,208	1,080	1,155	1,842	1,616	628	739	1,172	1,118
1958	1,473	1,479	1,351	1,127	1,208	1,325	1,515	1,073	1,699	1,502	494	997	1,269
1959	1,635	1,508	1,419	1,290	1,325	1,319	1,325	1,139	574	320	196	759	1,066
1960	1,848	1,484	1,331	1,089	1,224	1,516	1,096	778	295	115	197	371	944

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	131,500	113,000	115,700	92,760	92,350	84,500	73,800	63,680	103,400	86,090	52,720	161,500	1,171,000
1952	146,700	127,200	88,820	89,250	91,420	114,300	114,100	132,300	180,300	47,700	38,560	72,930	1,244,000
1953	128,700	107,800	199,900	104,900	91,700	101,900	83,600	56,390	59,100	31,010	83,420	48,860	1,017,000
1954	95,890	97,590	87,410	79,150	74,220	79,390	63,340	50,530	26,550	10,380	19,410	22,250	706,100
1955	53,520	73,010	72,340	60,510	60,250	78,230	66,170	47,520	53,090	33,710	12,730	29,920	641,000
1956	70,080	74,760	74,720	72,830	62,670	67,210	49,600	31,530	14,980	52,210	11,490	15,570	597,600
1957	48,440	79,760	69,680	52,250	67,060	66,410	68,700	113,300	90,190	38,470	45,390	69,720	809,400
1958	90,600	87,990	83,070	69,330	67,000	81,470	90,170	65,930	101,100	92,350	30,360	59,300	918,700
1959	100,500	89,750	87,250	79,310	73,610	81,100	78,940	70,050	34,140	19,690	12,050	45,160	771,400
1960	113,700	87,110	81,820	66,960	70,410	93,220	65,200	47,930	17,570	7,090	12,100	22,070	685,200

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	1,474	1,067,000
1951	1210	5,610	Sept. 6, 1951	582	1,617	1,171,000	1,621	1,174,000
1952	1240	4,010	June 4, 1952	406	1,713	1,244,000	1,704	1,237,000
1953	1280	3,300	June 10, 1953	213	1,405	1,017,000	1,301	941,800
1954	1340	2,230	Oct. 21, 1953	44	975	706,100	862	624,100
1955	1390	5,180	July 2, 1955	80	885	641,000	914	661,700
1956	1440	4,810	July 6, 1956	99	823	597,600	793	576,000
1957	1510	3,810	May 22, 1957	116	1,118	809,400	1,206	873,200
1958	1560	5,290	July 20, 1958	192	1,269	918,700	1,291	940,500
1959	1630	2,280	Jan. 27, 1959	76	1,066	771,400	1,073	776,600
1960	1710	3,560	Mar. 19, 1960	52	944	685,200	-	-

6900. Lake McConaughy near Keystone, Nebr.

Location.--Lat 41°13', long 101°40', in NW $\frac{1}{4}$ SW $\frac{1}{4}$  sec.3, T.14 N., R.38 W., near right bank at outlet tower of Kingsley Dam on North Platte River, 4 $\frac{1}{2}$  miles west of Keystone.

Records available.--February 1941 to September 1960.

Gage.--Electric tape gage. Gage is referred to mean sea level, datum of 1929.

Extremes.--1941-60: Maximum contents observed, 1,913,000 acre-ft July 4-9, 1951 (elevation, 3,268.9 ft); minimum observed since normal use of water started, 32,860 acre-ft Sept. 29, 1941 (elevation, 3,153.4 ft).

Remarks.--Reservoir is formed by earth-fill dam. Storage began Feb. 9, 1941. Capacity, 1,948,000 acre-ft between elevations 3,130.0 (sill of outlet gates) and 3,270.0 ft (top of morning-glory spillway gates). Elevation of crest of morning-glory spillway is 3,254.0 ft. Dead storage negligible. Figures given herein represent total contents. Water is used for power development and irrigation on Central Nebraska project of Nebraska Public Power System.

Cooperation.--Record of elevations and capacity table furnished by Nebraska Public Power System.

Contents, in thousands of acre-feet, on last day of month

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951	1,690	1,726	1,765	1,765	1,820	1,817	1,792	1,832	1,907	1,879	1,774	1,808
1952	1,838	1,879	1,882	1,882	1,832	1,796	1,805	1,860	1,904	1,720	1,576	1,512
1953	1,520	1,559	1,621	1,696	1,741	1,799	1,823	1,838	1,765	1,551	1,456	1,357
1954	1,337	1,390	1,443	1,482	1,528	1,573	1,587	1,576	1,504	1,266	1,132	1,041
1955	1,069	1,078	1,100	1,125	1,153	1,197	1,235	1,187	1,178	1,066	836	736.2
1956	734.4	745.4	776.9	824.5	869.3	919.2	923.4	885.2	782.2	635.9	508.3	418.4
1957	391.6	456.3	528.3	566.5	614	640.9	712.7	837.9	927.4	863.4	721.6	718
1958	754.6	826.4	865.4	925.4	993.8	1,076	1,162	1,232	1,317	1,375	1,263	1,232
1959	1,281	1,307	1,364	1,403	1,450	1,512	1,581	1,647	1,598	1,429	1,273	1,227
1960	1,261	1,278	1,322	1,357	1,401	1,480	1,542	1,593	1,551	1,390	1,194	1,103

6905. North Platte River near Keystone, Nebr.

Location.--Lat 41°12'30", long 101°37'50", in SW $\frac{1}{4}$  sec.1, T.14 N., R.38 W., on right bank a quarter of a mile downstream from diversion dam of Sutherland Reservoir supply canal and 2 $\frac{1}{2}$  miles southwest of Keystone.

Drainage area.--35,000 sq mi (revised), approximately.

Records available.--June to August 1917, July to September 1939, May to September 1940, January to April 1941, March 1942 to September 1960. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 3,105.59 ft above mean sea level (Platte Valley Public Power and Irrigation District bench mark). May to September 1917 staff gage at bridge 2 miles downstream at different datum. July 1939 to September 1940 staff gage at site three-quarters of a mile downstream at different datum. December 1940 to July 17, 1944, water-stage recorder at site three-quarters of a mile downstream at datum 0.6 ft lower. July 18, 1944, to Nov. 3, 1950, water-stage recorder at present site at datum 1.50 ft higher and Nov. 4, 1950, to Apr. 3, 1953, at datum 0.5 ft higher.

Extremes.--1917, 1939-60: Maximum discharge, 20,300 cfs June 30, 1917, from graph based on daily gage readings; observation of no flow was made Mar. 21, 1945.

Remarks.--Natural flow of stream affected by transmountain diversion, storage reservoirs, power developments, diversions and ground-water withdrawals for irrigation, and return flow from irrigated areas. Flow completely regulated by Lake McConaughy since Feb. 9, 1941 (see preceding page). Supply canal for Platte Valley Public Power and Irrigation District diverts a quarter of a mile above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	8.3	108	6.2	22.0	7.0	39.6	575	465	40.6	275	1,022	206	233
1952	106	10.0	67.0	304	1402	1,574	496	966	2,152	2,372	1,156	1,073	971
1953	74.8	6.3	4.1	1.6	22.2	7.2	12.7	355	517	1,988	1,154	615	393
1954	96.1	4.5	3.1	2.1	3.6	3.2	73.8	221	499	2,010	856	352	348
1955	287	26.5	9.9	2.9	8.3	3.6	42.4	422	193	1,658	1,235	320	354
1956	33.1	8.51	2.33	1.89	1.27	1.86	22.4	245	375	1,568	1,070	625	332
1957	993	5.14	1.65	1.46	1.49	5.71	37.8	28.5	1,037	1,298	195	295	310
1958	34.6	2.13	3.94	2.11	1.79	1.78	1.88	139	304	1,291	200	168	168
1959	12.5	4.51	2.58	2.58	2.03	1.88	2.13	120	575	1,275	1,094	661	315
1960	584	8.55	2.63	1.48	1.27	13.2	1.67	32.0	257	1,039	1,415	276	306

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	508	6,420	383	1,350	387	2,440	34,240	28,590	2,420	16,920	62,860	12,280	168,800
1952	6,540	597	4,120	18,690	80,620	96,790	29,510	59,410	128,100	145,800	71,080	63,820	705,100
1953	4,600	375	250	101	1,230	440	758	21,860	30,760	122,200	70,930	30,640	284,100
1954	5,910	268	190	129	200	194	4,390	13,620	29,720	123,600	52,610	20,960	251,800
1955	17,660	1,580	607	180	460	224	2,520	25,980	11,490	100,700	75,960	19,020	256,400
1956	2,040	507	143	116	73	114	1,340	15,060	22,290	96,420	65,800	37,180	241,100
1957	61,400	306	102	90	83	351	2,250	1,750	3,320	63,790	79,710	11,490	224,600
1958	2,120	127	242	130	99	108	112	115	8,290	18,720	79,370	11,920	121,400
1959	768	268	159	159	113	116	127	77,380	34,230	76,380	67,250	39,320	228,300
1960	35,920	509	162	91	73	813	99	1,970	15,290	63,920	87,030	16,440	222,300

† Corrected.

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	274	198,300
1951	1210	2,050	Aug. 12, 1951	2	233	169,800	239	172,700
1952	1240	3,680	July 4, 1952	4	971	705,100	963	689,000
1953	1280	3,110	July 6, 1953	1	393	284,100	394	285,300
1954	1340	2,840	July 29, 1954	1	348	251,800	366	265,300
1955	1390	2,420	Aug. 9, 1955	1	354	256,400	330	239,200
1956	1440	2,870	July 17, 1956	.2	332	241,100	414	300,200
1957	1510	2,260	Aug. 7, 1957	.7	310	224,600	228	185,300
1958	1560	4,040	July 2, 1958	.6	168	121,400	166	120,000
1959	1630	2,660	July 21, 1959	1.2	315	228,300	364	263,700
1960	1710	2,480	July 24, 1960	1.0	306	222,300	-	-

## 6910. North Platte River near Sutherland, Nebr.

Location.--Lat 41°12', long 101°06', in sec. 4, T.14 N., R.33 W., near left bank on downstream side of pier of highway bridge,  $2\frac{1}{2}$  miles upstream from Birdwood Creek and  $3\frac{1}{2}$  miles north of Sutherland.

Drainage area.--35,500 sq mi (revised), approximately.

Records available.--June to October 1917, July 1931 to August 1933 (irrigation seasons only), May to September 1935, May 1936 to September 1960. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Altitude of gage is 2,930 ft (from topographic map). Prior to Apr. 29, 1936, staff gages near present site at different datums.

Extremes.--1917, 1933, 1935-60: Maximum discharge, 20,300 cfs June 29, 1917, from discharge graph based on daily gage readings, from rating curve extended above 16,000 cfs; no flow July 24-28, 30, 31, 1931, Aug. 7, 1934, July 20-28, 1940.

Remarks.--Natural flow of stream affected by transmountain diversion, storage reservoirs, power developments, diversions and ground-water withdrawals for irrigation, and return flow from irrigated areas.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	56.3	212	146	138	155	167	675	590	263	340	801	231	315
1952	195	162	149	381	1,512	1,745	664	1,151	1,760	2,126	963	826	968
1953	110	142	145	160	158	174	128	207	234	1,651	869	309	361
1954	120	165	151	128	142	140	100	89.1	166	1,646	659	152	308
1955	404	160	135	131	161	191	126	343	61.8	1,223	1,006	128	343
1956	101	144	136	102	120	128	86.4	45.5	197	1,218	825	284	284
1957	952	165	131	105	128	138	180	212	55.0	700	1,071	77.1	330
1958	110	130	120	126	125	178	213	169	98.5	301	1,051	147	232
1959	70.1	121	140	116	134	168	142	104	306	920	916	436	299
1960	696	175	136	135	178	236	193	138	99.4	688	1,181	65.1	330

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	3,460	12,630	9,000	8,510	8,610	10,250	40,140	36,290	15,620	20,890	49,270	13,730	228,400
1952	12,010	9,640	9,180	23,420	86,950	107,300	39,500	70,750	104,800	130,700	59,190	49,120	702,600
1953	6,790	8,470	8,910	9,810	8,800	10,680	7,630	12,750	13,900	101,500	53,450	18,390	261,100
1954	7,360	9,800	9,290	7,880	7,870	8,630	5,970	5,480	9,860	101,200	40,550	9,050	222,900
1955	24,970	9,510	8,320	8,030	8,940	11,760	7,490	21,110	3,680	75,180	61,870	7,640	248,400
1956	6,180	8,540	8,390	6,250	6,920	7,850	5,140	2,790	11,730	74,900	50,740	16,900	206,300
1957	58,520	9,820	8,050	6,360	7,110	8,470	10,730	13,060	3,150	43,020	65,870	4,590	238,800
1958	6,770	7,710	7,350	7,770	6,940	10,810	12,670	10,410	5,860	18,510	64,600	8,300	167,700
1959	4,310	7,190	8,600	7,120	7,450	10,190	8,480	6,400	18,210	56,560	56,340	25,930	216,800
1960	42,820	10,410	8,360	8,330	10,240	14,500	11,460	8,510	5,910	42,320	72,630	3,870	239,400

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	312	225,600
1951	1210	1,230	May 15, 1951	18	315	228,400	323	234,100
1952	1240	3,080	June 10, 1952	95	968	702,600	959	695,900
1953	1280	2,360	July 9, 1953	17	361	261,100	364	263,400
1954	1340	2,100	July 20, 1954	13	308	222,900	330	239,200
1955	1390	1,980	July 28, 1955	9.0	343	248,400	316	228,800
1956	1440	1,840	July 19, 1956	9.0	284	206,300	358	259,600
1957	1510	1,960	July 22, 1957	9.6	330	238,800	254	184,200
1958	1560	4,060	Aug. 17, 1958	9.6	232	167,700	229	166,000
1959	1630	2,110	July 21, 1959	16	299	216,800	357	258,300
1960	1710	2,130	Aug. 9, 1960	30	330	239,400	-	-



## 6920. Birdwood Creek near Hershey, Nebr.

Location.--Lat 41°13', long 101°04', in NE¼NW¼ sec.2, T.14 N., R.33 W., on left bank 60 ft downstream from bridge on county road, 1 mile upstream from mouth, and 5 miles northwest of Hershey.

Drainage area.--286 sq mi.

Records available.--May 1931 to September 1960.

Gage.--Water-stage recorder. Altitude of gage is 2,920 ft (from topographic map). Jan. 1, 1931, to Dec. 16, 1934, staff gage and Dec. 17, 1934, to Nov. 4, 1953, water-stage recorder, at site 50 ft upstream at present datum.

Average discharge.--29 years (1931-60), 154 cfs (111,500 acre-ft per year).

Extremes.--1931-60: Maximum discharge, 1,770 cfs Apr. 1, 1949 (gage height, 4.35 ft), from rating curve extended above 680 cfs; maximum gage height, 5.12 ft Dec. 15, 1940 (back-water from ice); minimum daily discharge, 61 cfs Jan. 19, 1935, Apr. 7, 1938.

Remarks.--Natural flow of stream affected by ground-water withdrawals and diversions for irrigation and return flow from irrigated areas.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	148	163	170	159	169	170	167	186	180	164	142	151	164
1952	152	166	156	169	177	176	170	162	117	102	131	119	150
1953	139	137	164	169	178	171	160	150	121	107	112	110	143
1954	144	171	165	157	165	167	158	158	117	104	125	129	145
1955	146	149	169	155	177	182	159	152	135	112	106	115	146
1956	150	161	167	168	174	173	169	148	144	131	135	119	153
1957	146	169	167	146	179	178	183	185	153	123	132	145	159
1958	161	160	170	174	167	180	171	163	161	156	140	146	164
1959	149	157	160	164	174	172	161	168	133	121	119	127	150
1960	149	164	160	173	170	193	156	168	135	125	104	122	152

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	9,110	9,720	10,430	9,800	9,390	10,440	9,950	11,440	10,690	10,080	8,730	8,970	118,800
1952	9,350	9,850	9,580	10,370	10,170	10,840	10,120	9,980	6,960	6,250	8,070	7,060	108,600
1953	8,580	8,140	10,050	10,400	9,800	10,490	9,520	9,240	7,180	6,580	8,900	6,550	105,400
1954	8,860	10,190	10,120	9,670	9,150	10,270	9,300	8,510	8,990	6,410	7,680	7,690	104,800
1955	8,970	8,850	10,190	9,510	9,860	11,170	9,470	9,370	8,020	6,880	6,430	6,830	105,600
1956	9,250	9,570	10,240	10,300	9,980	10,630	10,040	9,000	8,540	8,030	8,320	7,100	111,000
1957	8,950	10,080	10,270	8,950	9,920	10,970	10,900	11,370	9,090	7,560	8,120	8,620	114,800
1958	9,880	9,520	10,440	10,720	9,300	11,040	10,200	11,260	9,590	9,620	8,600	8,710	118,900
1959	9,190	9,360	9,850	10,070	9,660	10,550	9,580	10,310	7,940	7,430	7,330	7,570	108,800
1960	9,140	9,770	9,850	10,640	9,770	11,850	9,260	10,330	8,050	7,700	6,360	7,270	110,000

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	153	111,100
1951	1210	723	June 21, 1951	120	164	118,800	163	118,200
1952	1240	465	Aug. 1, 1952	93	150	108,600	147	106,600
1953	1260	4267	Aug. 24, 1953	80	143	105,400	146	105,800
1954	1340	309	May 17, 1954	91	145	104,800	143	103,700
1955	1390	458	May 26, 1955	94	146	105,600	147	106,600
1956	1440	325	June 5, 1956	106	153	111,000	153	111,200
1957	1510	372	May 9, 1957	81	159	114,800	159	115,300
1958	1560	1,190	May 14, 1958	120	164	118,900	162	118,300
1959	1630	8325	Feb. 11, 1959	98	150	108,800	151	109,200
1960	1710	8590	Mar. 10, 1960	96	152	110,000	-	-

\* Not previously published.  
a About.

## PLATTE RIVER BASIN

6925. Lincoln County drain No. 1 near North Platte, Nebr.  
(Formerly published as Lincoln County drain at North Platte)

Location.--Lat 41°09'40", long 100°47'25", in NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec.30, T.14 N., R.30 W., on left bank 25 ft upstream from highway bridge, 0.8 mile upstream from mouth, and 1 $\frac{1}{2}$  miles northwest of city of North Platte.

Records available.--March 1931 to September 1932 (published as Lincoln County drain at North Platte), April 1955 to September 1960.

Gage.--Water-stage recorder. Altitude of gage is 2,805 ft (from topographic map). Prior to Apr. 29, 1955, staff gage at datum 1.0 ft higher.

Average discharge.--6 years (1932, 1955-60), 62.8 cfs (45,470 acre-ft per year).

Extremes.--1955-60: Maximum discharge, 428 cfs June 17, 1956 (gage height, 3.73 ft); minimum daily, 22 cfs Apr. 3, 1956.

Remarks.--Discharge is chiefly return flow from irrigated area.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952													
1953													
1954													
1955	-	-	-	-	-	-	-	46.6	64.7	81.7	97.3	92.6	-
1956	64.1	45.9	40.7	33.7	31.4	29.5	27.3	45.8	87.3	88.7	118	119	61.0
1957	88.9	55.3	41.8	35.2	33.5	29.6	29.4	51.9	60.0	78.8	108	102	59.7
1958	73.3	49.2	39.4	36.4	31.9	32.0	41.0	45.8	61.6	84.5	119	107	60.2
1959	64.3	45.7	36.9	31.0	28.9	26.5	26.8	62.9	84.2	95.6	117	140	63.5
1960	72.0	46.5	37.8	34.6	36.3	43.5	39.4	50.5	82.1	73.2	97.9	99.2	59.6

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952													
1953													
1954													
1955	-	-	-	-	-	-	-	2,860	3,850	5,020	5,980	5,510	-
1956	3,940	2,730	2,500	2,070	1,800	1,810	1,620	2,820	5,190	5,460	7,230	7,080	44,250
1957	5,470	3,290	2,570	2,160	1,860	1,820	1,750	3,190	3,570	4,850	6,640	6,040	43,210
1958	4,500	2,930	2,420	2,240	1,770	1,970	2,440	2,820	3,660	5,190	7,300	6,350	43,590
1959	3,960	2,720	2,270	1,910	1,600	1,630	1,590	3,870	5,010	5,880	7,200	8,360	46,000
1960	4,430	2,760	2,330	2,130	2,210	2,670	2,350	3,100	4,890	4,500	6,020	5,900	43,290

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950								
1951								
1952								
1953								
1954								
1955	1390	175	June 27, 1955	26	-	-	-	-
1956	1440	428	June 17, 1956	22	61.0	44,250	64.0	46,410
1957	1510	149	Aug. 29, 1957	26	59.7	43,210	57.6	41,730
1958	1560	175	Aug. 16, 1958	25	60.2	43,590	59.0	42,690
1959	1630	186	Sept. 8, 1959	24	63.5	46,000	64.3	46,570
1960	1710	136	June 13, 1960	32	59.6	43,290	-	-

6930. North Platte River at North Platte, Nebr.

Location.--Lat 41°09', long 100°46', in sec.28, T.14 N., R.30 W., near right bank on downstream side of pier of bridge on U. S. Highway 83, half a mile north of city of North Platte and 4½ miles upstream from confluence with South Platte River.

Drainage area.--36,400 sq mi (revised), approximately.

Records available.--February 1895 to September 1960. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 2,794.9 ft above mean sea level (city of North Platte bench mark). Prior to Apr. 10, 1910, staff gage at Union Pacific Railroad bridge 2 miles downstream at different datum. Apr. 10, 1910, to Sept. 30, 1930, staff or chain gages or water-stage recorder at or near present site at various datums.

Extremes.--1895-1960: Maximum discharge observed, 29,600 cfs June 11, 1909 (discharge measurement); minimum daily, 20 cfs Sept. 20, 1904.

Remarks.--Natural flow of stream affected by transmountain diversion, storage reservoirs, power developments, diversions and ground-water withdrawals for irrigation, and return flow from irrigated areas.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	296	441	397	347	419	402	931	1,129	770	664	1,039	528	615
1952	470	420	370	590	1,912	2,093	998	1,421	1,811	2,139	1,172	1,099	1,206
1953	384	388	378	389	417	458	377	444	410	1,737	1,107	537	589
1954	345	454	422	332	396	405	327	323	323	1,669	860	356	520
1955	682	411	368	345	323	457	345	570	332	1,256	1,114	298	546
1956	319	358	359	343	383	380	339	256	473	1,419	1,101	463	518
1957	1,221	440	387	301	401	387	494	585	312	837	1,271	356	586
1958	397	392	375	377	354	472	517	497	337	568	1,245	399	496
1959	307	362	322	305	380	433	388	378	461	1,027	1,099	648	511
1960	1,005	472	376	348	417	604	464	407	299	722	1,309	248	559

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	18,230	26,250	24,430	21,330	23,250	24,700	55,390	69,400	45,830	40,840	63,900	31,430	445,000
1952	28,920	24,970	22,750	36,290	110,000	128,700	59,370	87,580	107,800	131,500	72,090	65,410	875,200
1953	23,620	23,110	23,270	23,930	23,150	28,150	22,430	27,310	24,390	106,800	68,070	31,980	426,200
1954	21,200	27,000	25,970	20,410	21,980	24,900	19,440	19,880	19,190	102,600	52,860	21,170	376,600
1955	41,960	24,450	22,640	21,200	17,920	28,080	20,520	35,050	19,780	77,250	68,510	17,730	395,100
1956	19,590	21,320	22,080	21,100	22,010	23,350	20,170	15,730	28,150	87,220	67,700	27,560	376,000
1957	75,080	26,200	23,780	18,530	22,300	23,800	29,420	35,950	18,570	51,490	78,160	21,170	424,400
1958	24,430	23,320	23,050	23,160	19,650	29,050	30,790	30,540	20,080	34,910	76,550	23,760	359,300
1959	18,910	21,540	19,790	18,750	21,120	28,600	23,070	23,130	27,450	63,140	67,590	38,580	369,700
1960	61,770	28,080	23,140	21,420	23,960	37,130	27,580	25,000	17,800	44,410	80,490	14,730	405,500

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	563	407,400	
1951	1210	5,390	May 15, 1951	238	615	445,000	625	452,700	
1952	1240	3,050	June 11, 1952	185	1,208	755,200	1,196	869,500	
1953	1280	2,500	July 10, 1953	156	589	426,200	594	430,400	
1954	1340	2,160	July 21, 1954	117	520	376,800	541	391,500	
1955	1390	2,160	Aug. 9, 1955	100	548	395,100	510	369,000	
1956	1440	2,120	June 18, 1956	122	518	376,000	603	438,000	
1957	1510	1,980	July 23, 1957	171	586	424,400	511	370,200	
1958	1560	3,710	Aug. 18, 1958	100	496	359,300	482	348,700	
1959	1630	2,100	July 22, 1959	97	511	369,700	583	422,400	
1960	1710	2,080	Aug. 10, 1960	150	559	405,500	-	-	

9-420. Hoosier Pass tunnel at Hoosier Pass, Colo.  
(Transmountain diversion)

Location.--Lat 39°21'35", long 106°04'35", in sec.14, T.8 S., R.78 W., at south portal of Hoosier Pass tunnel, 0.8 mile west of Hoosier Pass.

Records available.--October 1951 to September 1960.

Gage.--Water-stage recorder and 8-foot Parshall flume. Altitude of gage is 10,830 ft (from topographic map).

Remarks.--Diversion is from tributaries of Blue River in Colorado River basin to Montgomery Reservoir (Middle Fork South Platte River) in sec.14, T.8 S., R.78 W., in Platte River basin; this water is again diverted to South Catamount Creek (tributary of Catamount Creek) in SE $\frac{1}{4}$  sec.14, T.13 S., R.69 W., in Arkansas River basin. Three collection conduits, from Monte Cristo Creek in SW $\frac{1}{4}$ NE $\frac{1}{4}$  sec.2, T.8 S., R.78 W., Bemrose Creek in SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec.6, T.8 S., R.77 W., and McCullough Gulch in sec.26, T.7 S., R.78 W., intercept intermediate tributaries and converge at north portal of the tunnel. Diversion began June 30, 1952.

Cooperation.--Records furnished by State engineer of Colorado.

Monthly and yearly diversion, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952	0	0	0	0	0	0	0	0	50	1,310	898	123	2,380
1953	0	0	0	0	0	0	0	294	2,320	1,500	646	85	4,840
1954	0	0	0	0	0	0	0	1,060	1,400	1,050	42	0	3,550
1955	0	0	0	0	0	0	0	688	1,780	2,110	1,970	0	6,450
1956	0	0	0	0	0	0	0	2,200	4,760	1,840	492	0	9,290
1957	0	0	0	0	0	0	0	374	4,660	2,080	0	0	7,110
1958	0	0	0	0	0	0	0	3,040	2,130	1,250	0	0	6,420
1959	0	0	0	0	0	0	0	489	5,040	2,470	496	0	8,500
1960	0	0	0	0	0	0	0	901	4,610	2,390	315	0	8,220

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

Location.--Lat 38°58'03", long 105°34'51", in sec.23, T.12 S., R.73 W., on left bank 250 ft downstream from highway bridge, 2.5 miles upstream from waterline of Elevenmile Canyon Reservoir at elevation 8,561 ft, and 13 miles southeast of Hartsel.

Drainage area.--880 sq mi (revised).

Records available.--June 1933 to September 1960 (no winter records prior to 1940). Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 8,590 ft (from topographic map). Prior to May 27, 1939, water-stage recorder near present site at different datum.

Average discharge.--21 years (1939-60), 81.7 cfs (59,150 acre-ft per year).

Extremes.--1933-60: Maximum discharge recorded, 1,290 cfs June 19, 1949; maximum gage height, 5.22 ft July 22, 1957; minimum daily discharge recorded, 0.9 cfs Apr. 22, 1940.

Remarks.--Flow regulated by Antero Reservoir (capacity, 22,300 acre-ft). Many small diversions above station for irrigation of about 24,000 acres.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	27.5	32.2	22	15	15	14	34	55.1	193	249	280	158	91.6
1952	52.5	62.2	40	40	30	32	109	127	306	219	183	61.7	105
1953	32.5	34.1	28	24	28	37.0	36.9	39.0	253	245	132	24.1	76.4
1954	25.5	42.2	30	27	25	29	30.1	105	94.3	75.0	38.2	21.0	45.3
1955	38.8	32.6	20	9.0	6.0	6.0	44.8	66.9	90.4	108	228	177	69.3
1956	99.3	23	21	19	17	22	55.0	115	248	111	64.8	17.4	67.7
1957	16.0	16	14	12	14	45	97.3	64.3	251	726	388	89.8	146
1958	70.8	53.5	30	25	35	45	115	224	187	80.2	47.1	21.0	78.0
1959	22.2	20.2	19	12	14.5	28	47.7	18.3	107	136	113	31.2	47.6
1960	95.1	43	27	12	15	138	53.6	26.4	68.0	138	52.3	18.6	57.7

Monthly and yearly discharge, in acre-feet, of South Platte River above Elevenmile Canyon Reservoir, near Hartsel, Colo.

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1,690	1,910	1,350	922	833	861	2,020	3,390	11,460	15,280	17,200	9,400	66,320
1952	3,230	3,700	2,460	2,460	1,730	1,970	6,480	7,790	18,230	13,450	11,230	3,670	76,400
1953	2,000	2,030	1,720	1,480	1,580	2,280	2,200	2,400	15,060	15,070	8,110	1,430	55,340
1954	1,570	2,510	1,840	1,860	1,390	1,780	1,790	6,460	5,810	4,610	2,350	1,250	32,820
1955	2,390	1,940	1,230	553	333	369	2,670	4,110	5,380	6,650	14,010	10,530	50,160
1956	6,110	1,370	1,290	1,170	978	1,350	3,270	7,050	14,740	6,810	3,980	1,030	49,150
1957	986	952	861	738	778	2,770	5,790	3,950	14,930	44,620	23,840	5,350	105,600
1958	4,350	3,180	1,840	1,540	1,940	2,770	6,840	13,790	11,130	4,930	2,900	1,250	56,460
1959	1,370	1,200	1,170	738	805	1,720	2,840	1,120	6,340	8,350	6,970	1,860	34,480
1960	5,850	2,580	1,660	738	863	8,500	3,190	1,620	4,060	8,490	3,210	1,110	41,860

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet		Mean
		Discharge	Date					
1950	-	-	-	-	-	-	-	44.2
1951	1210, 1240	796	July 30, 1951	-	91.6	66,320	97.8	70,760
1952	1240	830	Aug. 28, 1952	-	105	76,400	100	72,760
1953	1280	820	June 20, 1953	13	76.4	55,340	76.7	55,510
1954	1340	1,050	July 17, 1954	8.8	45.3	32,820	44.8	32,460
1955	1390	908	Aug. 7, 1955	-	69.3	50,160	73.7	53,380
1956	1440	375	June 4, 1956	12	67.7	49,150	59.5	43,180
1957	1510	1,240	July 22, 1957	-	146	105,600	155	112,100
1958	1560, 1630	589	June 7, 1958	11	78.0	56,460	70.2	50,830
1959	1630	728	July 25, 1959	-	47.6	34,480	56.4	40,830
1960	1710	a800	Mar. 27, 1960	-	57.7	41,860	-	-

a Maximum daily.

6955. Elevenmile Canyon Reservoir near Lake George, Colo.

Location.--Lat 38°54'19", long 105°28'30", in N $\frac{1}{2}$ SW $\frac{1}{4}$  sec.20, T.13 S., R.72 W., at north end of dam on South Platte River, 8 miles southwest of Lake George.

Drainage area.--963 sq mi (revised).

Records available.--October 1932 to September 1960. Prior to September 1938, published in WSP 1310.

Gage.--Staff gage. Datum of gage is at mean sea level (datum of Denver Board of Water Commissioners).

Extremes.--1932-60: Maximum contents observed, 103,400 acre-ft Mar. 29, 1960 (elevation, 8,598.62 ft); no contents at times in 1935.

Remarks.--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.

Cooperation.--Records furnished by Denver Board of Water Commissioners.

Contents, in acre-feet, on last day of month

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951	81,450	72,430	72,540	72,080	72,680	72,190	71,860	72,350	71,720	73,610	76,500	82,180
1952	82,750	82,720	82,720	82,690	82,750	82,870	84,450	82,750	84,960	85,440	83,200	82,720
1953	82,720	82,690	82,660	82,540	82,510	82,870	82,630	82,960	83,590	85,660	85,650	85,200
1954	85,540	85,240	85,050	85,050	84,840	83,290	82,990	70,770	63,020	50,020	31,770	29,120
1955	27,090	19,660	17,770	17,220	16,700	16,150	15,610	15,280	16,680	18,230	19,800	25,550
1956	28,400	27,860	27,300	26,740	26,220	25,660	24,860	24,810	28,910	29,410	28,910	28,390
1957	28,080	27,390	26,710	26,230	26,140	25,340	24,110	27,180	41,340	85,420	94,660	94,860
1958	95,180	98,180	98,120	98,150	98,420	98,720	97,490	97,990	a99,320	99,020	98,910	97,780
1959	97,640	98,120	98,500	98,470	98,600	99,120	98,810	98,120	98,050	98,050	98,050	98,050
1960	99,460	98,330	98,470	98,190	98,400	103,000	97,990	98,190	97,850	98,050	97,540	97,140

a New capacity table put in use June 1, 1958; contents May 31, 1958, from new capacity table, 98,260 acre-ft.

6960. South Platte River near Lake George, Colo.

Location.--Lat 38°54'19", long 105°28'22", in SW $\frac{1}{4}$  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 (revised); at site prior to Oct. 26, 1940, 965 sq mi.

Records available.--October 1929 to September 1960. 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.--31 years (1929-60), 69.4 cfs (50,240 acre-ft per year).

Extremes.--1929-60: 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.--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 preceding page) and Antero Reservoir (capacity, 22,300 acre-ft), diversions for irrigation, and return flow from irrigated areas..

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	11.9	165	12.0	18.1	16.4	43.4	41.9	31.7	191	210	208	29.2	81.8
1952	20.1	51.1	21.4	21.8	18.6	110	156	247	252	173	48.9	91.7	
1953	13.2	22.1	19.3	17.4	21.3	23.4	28.8	26.0	223	203	111	4.73	59.6
1954	4.14	39.1	13.5	15.2	35.4	48.9	21.9	295	212	300	325	152.8	114
1955	55.3	166	55.5	19.6	12.1	12.5	52.5	81.9	61.2	56.9	173	88.5	69.8
1956	46.6	27.7	12.0	33.5	27.9	33.7	91.6	131	187	92.0	74.8	16.0	64.5
1957	19.4	31.8	26.6	12.4	15.9	61.8	137	41.4	8.12	28.7	220	60.4	55.6
1958	50.4	40.6	20.1	15.2	25.6	44.7	170	219	153	66.8	33.8	15.7	71.4
1959	3.02	4.21	10.7	10.6	14.1	23.5	54.0	18.9	109	131	109	6.15	41.4
1960	79.1	57.0	21.9	14.9	18.3	92.6	139	19.9	62.3	126	36.1	5.57	56.2

† Corrected.

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	730	9,820	736	1,110	908	2,670	2,490	1,950	11,370	12,930	12,770	1,740	59,230
1952	1,240	1,850	1,310	1,340	1,070	1,140	6,540	9,580	14,720	14,240	10,610	2,910	66,550
1953	809	1,310	1,180	1,070	1,180	1,440	1,710	1,600	13,250	12,490	6,840	281	43,160
1954	254	2,330	833	937	1,860	3,010	1,300	18,150	12,630	18,430	19,980	3,140	82,850
1955	3,400	9,870	3,410	1,210	672	772	3,120	5,040	3,640	3,500	10,660	5,270	50,560
1956	2,860	1,650	738	2,060	1,600	2,070	5,450	8,040	11,120	5,660	4,800	949	46,800
1957	1,190	1,890	1,640	764	881	3,800	9,130	2,550	483	1,770	13,540	3,590	40,230
1958	3,100	2,420	1,240	936	1,420	2,750	10,130	13,450	9,100	4,110	2,060	836	51,670
1959	186	251	658	653	783	1,450	3,210	1,160	6,490	8,050	6,710	366	29,970
1960	4,860	3,390	1,350	914	1,050	5,690	8,280	1,220	3,710	7,770	2,220	332	40,790

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	51.6	37,360	
1951	1210	698	Aug. 6, 1951	6.4	81.8	59,230	72.3	52,340	
1952	1240	411	May 5, 1952	6.8	91.7	66,550	90.8	65,450	
1953	1280	459	June 20, 1953	3.6	59.6	43,160	59.8	43,280	
1954	1340	370	June 8, 1954	3.0	114	82,850	133	96,120	
1955	1390	400	Aug. 8, 1955	10	69.8	50,560	54.0	39,130	
1956	1440	381	June 19, 1956	8.0	64.5	46,800	63.7	46,270	
1957	1510	694	Aug. 17, 1957	4.0	55.6	40,230	58.4	42,270	
1958	1560	439	May 25, 1958	3.4	71.4	51,670	63.5	46,010	
1959	1630	339	June 21, 1959	2.6	41.4	29,970	53.1	38,470	
1960	1710	512	Mar. 29, 1960	1.6	56.2	40,790	-	-	

9-460. Boreas Pass ditch at Boreas Pass, Colo.  
(Transmountain diversion)

Location.--Lat 39°24'40", long 105°58'05", in sec.26, T.7 S., R.77 W., at Boreas Pass.

Records available.--October 1932 to September 1960. Diversion prior to 1948, published in WSP 1310.

Gage.--Water-stage recorder and 2-foot Parshall flume since June 2, 1960. Altitude of gage is 11,480 ft (from topographic map). Prior to June 2, 1960, water-stage recorder and 3-foot Parshall flume.

Remarks.--Diversion is 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. Ditch was first put in use about 1909.

Cooperation.--Records furnished by State engineer of Colorado.

Monthly and yearly diversion, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	0	0	0	0	0	0	0	0	42	114	20	0	176
1952	0	0	0	0	0	0	0	0	0	0	13	0	13
1953	0	0	0	0	0	0	0	0	135	112	26	0	273
1954	0	0	0	0	0	0	0	0	44	49	26	17	136
1955	0	0	0	0	0	0	0	2.8	75	55	82	53	268
1956	0	0	0	0	0	0	0	6.3	156	76	22	0	260
1957	0	0	0	0	0	0	0	0	77	248	136	14	40
1958	0	0	0	0	0	0	0	0	145	69	27	9	20
1959	0	0	0	0	0	0	0	0	123	60	14	0	197
1960	0	0	0	0	0	0	0	0	123	58	0	0	181

6995. Tarryall Creek near Lake George, Colo.

Location.--Lat 39°04'30", long 105°24'30", in sec.23, T.11 S., R.72 W., on left bank  $\frac{1}{2}$  miles upstream from mouth and 8 miles northwest of town of Lake George.

Drainage area.--434 sq mi (revised).

Records available.--October 1910 to June 1912 (published as "near Hayman"), June to October 1916, April 1925 to September 1955. No winter records prior to 1950 except water year 1944. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Altitude of gage is 8,250 ft (from topographic map). Prior to June 19, 1916, staff gage and June 19 to Oct. 26, 1916, water-stage recorder, at site 250 ft downstream at different datum. Apr. 1, 1925, to Nov. 7, 1940, water-stage recorder at site 250 ft downstream at present datum.

Extremes.--1910-12, 1916, 1925-55: Maximum discharge recorded, 1,030 cfs Apr. 21, 1948 (gage height, 6.08 ft, from floodmark); no flow Feb. 23, 1944, and probably at other times during winter periods of no gage-height record.

Remarks.--Transmountain diversion from Colorado River basin through Boreas Pass ditch enters above station (see elsewhere in this report). Diversions above station for irrigation of about 13,000 acres.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	6.41	8.90	9.0	7.0	7.0	7.0	12	22.1	103	75.5	90.0	21.8	31.0
1952	22.7	20.0	13.5	18.4	15.5	17.5	44.5	74.8	131	56.1	69.3	26.5	42.5
1953	14.4	14.1	13	11	13	15	18	21.4	104	89.6	96.1	11.7	35.3
1954	11.2	13.7	11	10	9.0	10	8.56	57.3	36.5	20.7	10.5	3.78	16.9
1955	8.87	9.53	11	10	10	15	21.0	29.6	49.2	24.9	91.4	54.2	28.0

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	394	530	553	430	388	430	714	1,360	6,140	4,640	5,530	1,300	22,410
1952	1,400	1,190	835	1,130	893	1,080	2,650	4,600	7,780	3,450	4,260	1,570	30,840
1953	887	841	799	676	722	922	1,070	1,320	6,180	5,510	5,910	697	25,530
1954	691	816	676	615	500	615	509	3,520	2,170	1,280	647	225	12,260
1955	546	567	676	615	555	922	1,250	1,820	2,930	1,530	5,620	3,220	20,250

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	20.3	14,700	
1951	1210	428	July 19, 1951	-	31.0	22,410	33.6	24,560	
1952	1240	236	June 11, 1952	-	42.5	30,840	41.2	29,940	
1953	1280	471	June 21, 1953	-	35.3	25,530	34.8	25,190	
1954	1340	142	May 25, 1954	1.3	16.9	12,260	16.4	11,870	
1955	1390	206	Aug. 29, 1955	-	28.0	20,250	-	-	

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.

Drainage area.--86.6 sq mi (revised).

Records available.--August to December 1899, October 1924 to September 1960 (no winter records in some years). Monthly discharge only for some periods, published in WSP 1310. Published as "at Lake Cheesman" 1899.

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

Average discharge.--23 years (1924-30, 1935-36, 1939-41, 1943-47, 1950-60), 27.3 cfs (19,760 acre-ft per year).

Extremes.--1924-60: 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.--Small diversions above station for irrigation of about 100 acres.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	7.75	6.44	5.6	5.0	5.4	6.5	22.1	47.2	38.2	21.7	27.8	12.9	17.3
1952	13.2	9.0	7.0	7.0	6.0	8.0	37.6	128	128	35.9	25.9	15.6	35.5
1953	9.70	8.4	7.0	5.1	5.0	7.4	20.5	55.9	47.8	34.4	62.2	21.0	23.8
1954	16.4	12	10	8.0	8.5	8.0	12.9	20.7	9.41	14.0	13.1	8.92	11.9
1955	8.33	8.6	8.8	9.0	8.5	12	28.0	35.2	32.8	18.1	38.0	24.0	19.3
1956	11.7	12	10	8	7	7.5	18.0	33.2	18.1	6.80	12.6	4.49	12.5
1957	5.16	6.5	6	5.5	6.5	7.5	15	120	306	102	92.7	30.9	58.7
1958	23.4	19.3	12	7.5	6.5	6.97	24.1	130	75.0	23.9	11.3	8.36	29.2
1959	6.47	5.8	5.5	6.0	6.5	7.2	18.7	55.4	33.9	14.4	13.2	7.37	15.1
1960	30.8	24	18	13	13	20	40.2	80.2	68.7	29.9	11.7	7.82	29.8

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	477	393	344	307	300	400	1,310	2,900	2,280	1,330	1,710	770	12,510
1952	809	536	430	430	345	492	2,240	7,880	7,840	2,210	1,590	930	25,730
1953	596	500	430	†314	278	455	1,220	3,440	2,840	2,110	3,830	1,250	17,260
1954	1,010	714	615	492	472	492	765	1,280	560	864	803	531	8,600
1955	512	512	541	553	472	738	1,660	2,160	1,950	1,110	2,340	1,430	13,980
1956	718	714	615	492	403	461	1,070	2,040	1,080	418	777	267	9,060
1957	317	387	369	338	361	461	893	7,380	18,200	6,280	5,700	1,840	42,530
1958	1,440	1,150	738	461	361	429	1,430	7,990	4,460	1,470	693	497	21,120
1959	398	345	338	369	361	443	1,120	3,410	2,020	885	809	439	10,940
1960	1,900	1,430	1,110	799	748	1,210	2,390	4,930	4,090	1,840	717	466	21,630

† Corrected.

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	-	-
1951	1210	104	May 23, 1951	-	17.3	12,510	18.0	13,080
1952	1240	227	June 4, 1952	-	35.5	25,730	35.1	25,480
1953	1280	170	Aug. 3, 1953	-	23.8	17,260	25.0	18,080
1954	1340	58	July 19, 1954	4.0	11.9	8,600	10.8	7,820
1955	1390	131	May 25, 1955	-	19.3	13,980	20.0	14,460
1956	1440	87	Apr. 27, 1956	3.4	12.5	9,060	11.1	8,080
1957	1510	487	June 9, 1957	-	58.7	42,530	61.8	44,780
1958	1560	246	May 23, 1958	-	29.2	21,120	26.1	18,870
1959	1630	133	May 1, 1959	-	15.1	10,940	19.7	14,300
1960	1710	199	May 22, 1960	-	29.8	21,630	-	-

7010. Cheesman Lake near Deckers, Colo.

Location.--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.

Drainage area.--1,752 sq mi (revised).

Records available.--September 1900 to December 1901, September 1902 to September 1960.

Prior to October 1938, published in WSP 1310. Published as Lake Cheesman prior to 1947.

Gage.--Staff gage. Datum of gage is 6,622.91 ft above mean sea level (datum of Denver Board of Water Commissioners).

Extremes.--1900-60: Maximum contents observed, 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).

Remarks.--Reservoir is formed by masonry dam completed under supervision of Denver Board of Water Commissioners 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.

Cooperation.--Records furnished by Denver Board of Water Commissioners.



## Contents, in acre-feet, on last day of month, of Cheesman Lake near Deckers, Colo.

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951	27,680	33,620	30,760	27,080	25,630	22,560	26,060	25,990	35,960	39,510	40,790	36,240
1952	33,830	33,760	33,240	32,220	31,210	31,070	42,140	59,610	79,430	77,930	69,990	66,120
1953	61,480	56,900	55,440	54,760	54,470	54,710	56,960	54,580	53,580	52,630	47,310	40,580
1954	32,410	30,530	29,800	27,820	25,700	28,690	22,820	27,530	25,590	27,109	34,170	26,070
1955	19,570	24,700	26,120	24,960	23,900	22,750	21,870	19,690	22,940	19,960	19,230	19,760
1956	19,890	20,750	20,820	21,630	23,510	24,990	28,390	28,340	33,190	31,930	31,360	25,640
1957	22,690	22,590	22,060	22,420	23,190	27,210	39,660	55,420	79,530	74,200	79,490	79,420
1958	79,280	78,750	78,560	78,540	78,760	78,780	79,510	79,950	79,410	74,320	66,130	58,880
1959	54,960	54,910	55,540	56,130	56,960	57,780	67,400	70,820	68,900	63,160	53,890	47,110
1960	51,650	57,040	58,570	59,670	60,560	70,300	79,220	79,370	79,010	72,940	62,440	59,070

7015. South Platte River below Cheesman Lake, Colo.

Location.--Lat 39°12'33", long 105°16'02", in SE<sup>1</sup>/<sub>4</sub> NW<sup>1</sup>/<sub>4</sub> sec.6, T.10 S., R.70 W., on left bank 1,400 ft downstream from toe of Cheesman Dam.

Drainage area.--1,752 sq mi (revised).

Records available.--October 1924 to September 1960. Monthly discharge only for some periods, published in WSP 1310.

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

Average discharge.--36 years (1924-60), 156 cfs (112,900 acre-ft per year).

Extremes.--1924-60: Maximum discharge, 3,020 cfs Apr. 23, 1942 (gage height, 8.46 ft, site and datum then in use), from rating curve extended above 1,800 cfs; minimum daily determined, 1.6 cfs Apr. 8-14, 1957.

Remarks.--Natural flow of stream affected by transmountain diversions and storage reservoirs (see elsewhere in this report), diversions for irrigation of about 40,000 acres, and return flow from irrigated areas.

## Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	103	81.7	61.9	61.9	49.1	101	40.0	119	134	242	341	138	123
1952	93.7	50.9	42.6	41.0	38.9	38.0	42.0	106	166	403	484	155	139
1953	108	111	45.3	36.1	30.2	32.0	36.8	148	326	420	406	141	154
1954	165	88.2	51.8	46.1	45.9	38.1	134	296	324	362	264	194	168
1955	162	74.6	44.4	38.5	37.4	35.2	103	212	79.4	131	337	184	121
1956	56.8	40.3	20.0	18.9	19.2	8.89	51.7	283	193	151	139	131	93.0
1957	59.2	42.8	31.7	18.3	2.76	3.11	2.00	34.9	112	463	505	162	121
1958	120	95.4	42.6	17.5	35.5	82.2	260	565	439	212	219	178	190
1959	83.0	20.5	14.9	7.58	7.50	7.55	4.59	51.5	271	305	322	144	104
1960	86.6	6.33	7.32	6.73	7.20	8.29	121	170	219	317	250	73.2	107

## Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	6,330	4,880	3,810	3,800	2,730	6,200	2,380	7,290	7,940	14,860	20,960	8,230	89,390
1952	5,760	3,030	2,620	2,520	2,240	2,340	2,500	6,520	9,860	24,790	29,780	9,220	101,200
1953	6,660	6,580	2,790	2,220	1,680	1,970	2,190	9,120	19,410	25,840	24,930	8,390	111,800
1954	10,160	5,250	3,190	2,830	2,550	2,340	8,000	18,180	19,290	22,250	16,260	11,530	121,800
1955	9,960	4,440	2,730	2,360	2,080	2,160	6,100	13,040	4,720	8,080	20,720	10,970	87,360
1956	3,490	2,400	1,230	1,160	1,110	547	3,080	17,370	11,500	9,300	8,540	7,800	67,530
1957	3,640	2,550	1,950	1,130	153	191	119	2,140	6,680	28,500	31,050	9,610	87,710
1958	7,390	5,680	2,620	1,070	1,970	5,050	15,460	34,770	26,130	13,030	13,480	10,600	137,200
1959	5,100	1,220	917	466	417	464	273	5,170	16,140	18,750	19,820	8,560	75,320
1960	5,320	376	450	414	414	510	7,210	10,480	13,030	19,520	15,360	4,360	77,460

## Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	137	93,480	
1951	1210	674	Aug. 3, 1951	18	123	89,390	119	85,800	
1952	1240	835	Aug. 3, 1952	26	139	101,200	146	105,800	
1953	1280	865	Aug. 1, 1953	30	154	111,800	158	114,400	
1954	1340	646	July 13, 1954	30	168	121,800	166	120,400	
1955	1390	628	Aug. 9, 1955	20	121	87,360	107	77,350	
1956	1440	692	June 8, 1956	3.1	93.0	67,530	94.4	68,550	
1957	1510	1,120	Aug. 18, 1957	1.6	121	87,710	132	95,260	
1958	1560	1,110	May 26, 1958	8.3	190	137,200	178	128,800	
1959	1630	906	June 23, 1959	5.9	104	75,320	103	74,230	
1960	1710	710	June 23, 1960	5.1	107	77,460	-	-	

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

Location.--Lat 39°27'28", long 105°39'28", in NW<sup>1</sup> sec.10, T.7 S., R.74 W., on left bank just east of Grant, 1,600 ft downstream from Geneva Creek.

Drainage area.--127 sq mi.

Records available.--July 1908 to November 1913 (published as "at Cassells"), June 1942 to September 1960. 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.--23 years (1908-13, 1942-60), 76.0 cfs (55,020 acre-ft per year).

Extremes.--1908-13, 1942-60: 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.--Small diversions above station for irrigation of about 200 acres.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	21.9	21.7	19.9	13.7	14.0	13.0	29.3	143	337	225	105	42.7	82.5
1952	34.5	25.7	20.3	18.9	16.1	13.9	37.1	159	405	139	62.3	33.7	80.2
1953	24.0	20.5	15.0	13.8	14.5	15.4	27.6	76.9	249	123	65.9	29.9	56.4
1954	25.3	23.6	21.6	17.7	17.9	16.0	29.2	82.1	79.1	54.0	34.6	28.7	35.9
1955	30.1	26.3	17.1	12.4	11.2	15.3	33.5	85.2	130	82.8	121	64.7	52.7
1956	32.8	28.1	21.3	17.6	14.6	16.0	30.4	193	274	93.3	50.8	27.8	66.7
1957	24.4	22	20	19	18	21	48	210	414	325	207	77.8	118
1958	50.1	42.9	32	24	20	22	32.2	244	225	82.4	43.8	30.8	70.8
1959	29.1	20.4	16.4	23	18	20.3	27.3	95.3	264	115	64.9	36.6	61.0
1960	44.1	34.0	23.4	16.2	15.1	22.1	44.6	127	278	130	51.0	27.9	67.8

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1,350	1,290	1,220	845	776	779	1,750	8,800	20,070	13,800	6,460	2,540	59,700
1952	2,120	1,530	1,250	1,160	924	857	2,210	9,800	23,990	8,580	3,830	2,010	58,260
1953	1,480	1,220	920	849	805	948	1,640	4,730	14,820	7,590	4,050	1,780	40,830
1954	1,560	1,410	1,330	1,090	992	982	1,740	5,050	4,710	3,320	2,130	1,710	26,020
1955	1,850	1,560	1,050	760	623	940	2,000	5,240	7,760	5,090	7,410	3,850	38,130
1956	2,020	1,670	1,310	1,080	839	988	1,810	11,890	16,300	5,730	3,130	1,650	48,420
1957	1,500	1,310	1,230	1,170	1,000	1,290	2,860	12,910	24,650	13,970	12,740	4,630	85,260
1958	3,080	2,550	1,970	1,480	1,110	1,350	1,920	14,980	15,280	5,070	2,690	1,820	51,290
1959	1,790	1,220	1,010	1,410	1,000	1,250	1,630	5,860	15,730	7,080	3,990	2,180	44,150
1960	2,710	2,020	1,440	996	871	1,360	2,660	7,830	16,530	8,010	3,140	1,660	49,230

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	53.9	38,990
1951	1210	563	June 19, 1951	10	82.5	59,700	83.9	60,740
1952	1240	788	June 10, 1952	12	80.2	58,260	78.5	56,980
1953	1280	496	June 13, 1953	12	56.4	40,630	57.3	41,510
1954	1340	155	May 22, 1954	13	35.9	26,020	36.2	26,190
1955	1390	236	Aug. 3, 1955	10	52.7	38,130	53.4	38,670
1956	1440	458	June 1, 1956	13	66.7	48,420	65.4	47,460
1957	1510	4590	June 7, 1957	-	118	85,260	123	88,820
1958	1560	599	May 21, 1958	-	70.8	51,280	65.9	47,700
1959	1630	370	June 16, 1959	6.5	61.0	44,150	64.0	46,300
1960	1710	418	June 17, 1960	11	67.8	49,230	-	-

a Maximum daily.

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

Location.--Lat 39°24'30", long 105°10'30", in SW $\frac{1}{4}$  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 (revised).

Records available.--June 1909 to September 1910, April 1913 to September 1960. 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.--48 years (1909-10, 1913-60), 158 cfs (114,400 acre-ft per year).

Extremes.--1909-10, 1913-60: Maximum discharge, 2,050 cfs June 13, 1949 (gage height, 6.30 ft); minimum observed, 4.0 cfs Dec. 8, 1932 (discharge measurement).

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

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	43.8	44.9	30.4	23.5	26.8	38.7	68.1	232	490	315	173	69.1	130
1952	51.9	40.0	27.3	45.3	34.1	36.9	92.6	372	688	248	125	66.2	152
1953	40.5	32.1	28.6	27.8	19.4	31.0	51.1	161	366	308	190	72.0	103
1954	54.3	48.0	37.6	36.6	27.2	26.1	50.0	121	94.6	94.1	62.9	45.5	58.4
1955	52.5	36.5	28.5	25.1	23.2	35.6	54.5	149	178	117	227	126	88.1
1956	83.8	62.7	45.2	32.6	40.4	38.1	65.7	275	345	144	92.3	41.7	106
1957	35.7	31.9	35.5	31.2	34.1	34.2	88.3	409	819	580	421	168	225
1958	108	62.1	52	43	48	51.2	85.6	465	411	160	87.4	63.4	137
1959	44.6	39.1	26.4	46	38	38.6	77.4	176	338	169	127	53.2	97.9
1960	84.0	57.3	42.3	40.5	36.1	75.3	140	277	386	209	95.8	50.5	125

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	2,690	2,670	1,870	1,450	1,490	2,380	4,050	14,270	29,130	19,380	10,610	4,110	94,100
1952	3,190	2,380	1,680	2,790	1,960	2,270	5,510	22,900	40,970	15,230	7,700	3,940	110,500
1953	2,490	1,910	1,760	1,710	1,080	1,900	3,040	9,920	21,800	12,810	11,680	4,280	74,380
1954	3,340	2,850	2,310	2,250	1,510	1,600	2,980	7,450	5,630	5,780	3,870	2,710	42,280
1955	3,230	2,170	1,750	1,540	1,290	2,190	3,240	9,180	10,590	7,180	13,950	7,480	63,790
1956	5,150	3,730	2,780	2,000	2,320	2,340	3,910	16,900	20,550	8,870	5,670	2,480	76,700
1957	2,200	1,900	2,180	1,920	1,890	2,100	5,260	25,180	48,720	35,670	25,860	10,000	162,900
1958	6,670	3,690	3,200	2,640	2,670	3,150	5,090	28,610	24,460	9,830	5,370	3,770	99,150
1959	2,740	2,530	1,620	2,830	2,110	2,380	4,600	10,840	20,080	10,420	7,780	3,170	70,900
1960	5,160	3,410	2,600	2,490	2,080	4,670	8,310	17,000	22,960	12,840	5,890	3,010	90,420

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	82.1	59,400
1951	1210	786	June 21, 1951	-	130	94,100	130	94,120
1952	1240	1,590	June 7, 1952	19	152	110,500	151	109,400
1953	1280	679	May 29, 1953	15	103	74,380	106	76,720
1954	1340	324	July 20, 1954*	12	58.4	42,280	56.5	40,930
1955	1390	561	Aug. 7, 1955	16	88.1	63,790	94.4	68,300
1956	1440	556	June 1, 1956	25	106	76,700	98.2	71,320
1957	1510	1,230	June 8, 1957	13	225	162,900	235	170,200
1958	1560	985	May 25, 1958	19	137	99,150	127	92,280
1959	1630	444	June 21, 1959	11	97.9	70,900	104	75,380
1960	1710	550	June 5, 1960	27	125	90,420	-	-

\* Revised.

## 7075. South Platte River at South Platte, Colo.

Location.--Lat 39°24'30", long 105°10'10", in SE $\frac{1}{4}$  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 (revised).

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 1960. 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.--67 years (1887-91, 1895-97, 1898-99, 1900-60), 359 cfs (259,900 acre-ft per year).

Extremes.--1887-92, 1895-97, 1898-1960: 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.--Natural flow of stream affected by transmountain diversions and storage reservoirs (see elsewhere in this report), diversions above station for irrigation of about 45,000 acres, and return flow from irrigated areas.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	180	145	117	86.5	88.9	145	155	370	663	538	499	208	268
1952	149	105	83.9	96.5	83.0	95.7	181	555	662	577	523	221	295
1953	156	150	87.3	83.8	66.0	87.6	124	360	698	625	582	224	272
1954	231	147	98.4	87.9	98.9	89.5	198	430	382	394	320	240	227
1955	215	116	63.2	70.0	70.1	81.6	173	400	293	255	608	330	224
1956	140	125	85.4	64.4	67.2	71.2	137	584	545	291	233	165	209
1957	104	85.9	82.5	61.5	68.0	52.1	148	564	1,042	1,092	958	332	363
1958	249	180	95.8	71.1	99.2	145	398	1,195	874	330	296	233	353
1959	140	66.0	51.2	58.7	53.8	74.1	148	265	612	423	441	195	212
1960	188	89.0	59.8	55.5	55.0	172	359	547	637	509	333	130	262

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	11,050	8,650	7,210	5,320	4,940	8,920	9,230	22,770	39,440	33,110	30,690	12,400	193,700
1952	9,130	6,260	5,160	5,930	4,780	5,880	10,780	34,110	51,260	35,470	32,160	13,170	214,100
1953	9,620	8,910	5,370	5,160	3,670	5,390	7,380	22,110	41,510	38,420	35,780	13,340	196,700
1954	14,230	8,760	6,050	5,410	5,490	5,500	11,750	26,440	22,710	24,200	19,700	14,280	164,500
1955	13,200	6,880	3,890	4,310	3,890	5,020	10,290	24,570	17,410	15,660	37,410	19,620	162,200
1956	8,600	7,440	5,250	3,960	3,870	4,410	8,170	35,910	32,410	17,870	14,300	9,810	152,000
1957	6,420	5,110	5,070	3,780	3,780	3,210	8,790	34,670	62,030	67,170	57,690	19,740	277,500
1958	15,290	10,720	5,770	4,370	5,510	8,910	23,680	73,460	52,030	23,960	18,190	13,880	255,800
1959	8,600	3,930	3,150	3,320	4,560	8,730	16,320	36,390	26,010	27,100	11,590	15,590	153,400
1960	11,590	5,300	3,680	3,410	3,170	10,550	21,350	33,640	37,900	31,330	20,480	7,730	190,100

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	239	172,800
1951	1210	1,010	Aug. 3, 1951	40	268	193,700	259	187,400
1952	1240	1,220	June 8, 1952	45	295	214,100	300	217,400
1953	1280	1,330	Aug. 3, 1953	44	272	196,700	279	201,800
1954	1340	702	July 14, 1954	61	227	164,500	220	159,400
1955	1390	1,130	Aug. 7, 1955	30	224	162,200	220	159,500
1956	1440	1,230	May 27, 1956	46	209	152,000	203	147,300
1957	1510	1,600	July 22, 1957	37	383	277,500	404	292,600
1958	1560	2,170	May 26, 1958	-	353	255,800	331	239,700
1959	1630	1,140	June 25, 1959	30	212	153,400	219	158,200
1960	1710	846	June 23, 1960	28	262	190,100	-	-

## 7080. South Platte River at Waterton, Colo.

Location.--Lat 39°29'18", long 105°05'32", in NE $\frac{1}{4}$  sec.34, T.6 S., R.69 W., on left bank 250 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 1960. 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.--34 years (1926-60), 177 cfs (128,100 acre-ft per year).

Extremes.--1926-60: 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.--Natural flow of stream affected by transmountain diversions and storage reservoir (see elsewhere in this report), diversions for irrigation of about 55,000 acres and municipal use, and return flow from irrigated areas.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	33.9	19.3	25.6	45.3	32.0	6.99	40.5	218	180	249	200	67.4	93.9
1952	41.0	21.8	14.7	14.3	6.39	19.7	68.2	262	404	302	245	47.8	121
1953	20.5	7.80	5.90	2.78	7.80	3.88	11.0	147	258	337	302	33.3	95.6
1954	35.5	35.9	19.1	3.30	2.41	7.65	41.4	220	105	134	89.8	36.8	61.2
1955	32.3	40.8	9.60	2.35	1.31	1.08	80.7	274	138	95.1	360	175	102
1956	37.3	23.1	23.6	13.1	10.9	11.5	57.3	369	278	126	94.9	40.7	90.8
1957	40.7	24.3	7.78	7.70	10.8	15.1	52.8	567	926	870	767	166	290
1958	128	154	55.8	16.0	17.5	66.7	314	959	628	169	74.3	65.2	221
1959	46.9	15.3	22.5	11.9	16.0	13.8	70.0	159	289	180	202	43.5	89.6
1960	145	48.5	15.5	7.87	14.4	111	278	285	328	277	114	46.8	140

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	2,080	1,150	1,570	2,790	1,780	430	2,410	13,410	10,730	15,320	12,330	4,010	68,010
1952	2,520	1,300	901	881	367	1,210	4,080	16,110	24,070	18,570	15,090	2,840	87,920
1953	1,260	464	363	171	433	239	657	9,040	15,340	20,710	18,550	1,980	69,210
1954	2,060	2,130	1,170	203	134	470	2,450	13,500	6,230	8,260	5,520	2,190	44,330
1955	1,980	2,430	590	144	73	66	4,800	16,840	8,240	5,850	22,170	10,400	73,580
1956	2,290	1,380	1,450	807	629	709	3,410	22,690	16,550	7,770	5,830	2,420	65,940
1957	2,500	1,450	477	474	602	930	3,140	34,850	55,070	53,460	47,150	9,890	210,000
1958	7,840	9,150	3,430	981	970	4,100	18,670	58,960	37,390	10,390	4,570	3,880	160,300
1959	2,880	909	1,390	731	887	849	4,160	9,760	17,200	11,100	12,420	2,590	64,880
1960	8,890	2,890	955	484	829	6,820	16,560	17,530	19,540	17,050	7,020	2,790	101,400

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	72.1	52,190
1951	1210	686	July 11, 1951	2.7	93.9	68,010	93.8	67,930
1952	1240	957	June 7, 1952	1.2	121	87,920	117	85,280
1953	1280	1,040	Aug. 3, 1953	1.6	95.6	69,210	100	72,480
1954	1340	813	July 20, 1954	.6	61.2	44,330	60.7	43,970
1955	1390	739	Aug. 11, 1955	.9	102	73,580	102	73,700
1956	1440	1,060	May 27, 1956	1.0	90.8	65,940	89.9	65,240
1957	1510	1,430	July 13, 1957	3.7	290	210,000	312	226,000
1958	1560	2,010	May 26, 1958	9.3	221	160,300	200	145,100
1959	1630	736	June 25, 1959	7.2	89.6	64,880	100	72,430
1960	1710	704	Apr. 12, 1960	3.0	140	101,400	-	-

7095. Plum Creek near Louviers, Colo.

Location.--Lat 39°29'04", long 105°00'07, in SE $\frac{1}{4}$  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,  $1\frac{1}{2}$  miles downstream from Indian Creek, and  $\frac{7}{8}$  miles upstream from mouth.

Drainage area.--302 sq mi; at site used prior to Feb. 12, 1957, 310 sq mi (revised).

Records available.--October 1947 to September 1960.

Gage.--Water-stage recorder. Altitude of gage is 5,585 ft (from topographic map). Prior to Feb. 12, 1957, at site  $2\frac{1}{2}$  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.--13 years (1947-60), 21.4 cfs (15,490 acre-ft per year).

Extremes.--1947-60: Maximum discharge, 3,800 cfs July 21, 1954 (gage height, 5.07 ft, site and datum then in use); no flow at times in 1951-52, 1956-60.

Remarks.--Diversions above station for irrigation.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	0.32	1.27	3.55	2.19	6.59	5.65	25.9	15.7	6.34	1.19	3.44	0.28	6.00
1952	1.14	4.17	3.53	6.87	4.51	6.03	42.1	95.4	17.5	.26	.47	.26	15.2
1953	.15	.52	3.50	5.26	5.99	7.14	10.3	82.4	7.50	23.6	2.58	.23	12.6
1954	.43	1.85	5.14	7.18	7.0	6.0	2.90	1.57	.37	20.1	22.2	.61	6.32
1955	.31	.39	1.68	2.99	3.62	3.58	5.04	96.3	19.6	.49	4.78	.43	11.7
1956	.42	3.05	4.77	4.56	6.13	6.88	5.92	4.86	.33	2.26	20.9	.06	5.03
1957	.22	.21	.50	2.30	4.49	5.05	67.0	308	130	31.3	17.3	3.66	47.9
1958	†12.4	10.7	9.63	10.3	15.5	16.5	27.1	102	19.5	3.00	.10	.09	19.0
1959	.46	4.56	4.93	3.65	14.7	21.1	109	123	16.9	.98	.25	.08	25.0
1960	2.31	6.99	9.48	7.12	12.3	152	178	249	45.7	10.2	1.76	.79	56.5

† Corrected.

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	19	75	218	135	366	348	1,540	964	377	73	212	17	4,340
1952	70	248	217	422	259	371	2,510	5,870	1,030	16	29	16	11,060
1953	8.9	31	215	324	333	439	614	5,070	446	1,450	159	14	9,100
1954	26	110	316	442	389	369	172	97	22	1,230	1,360	36	4,570
1955	19	23	103	184	201	220	300	5,920	1,170	30	294	26	8,490
1956	26	181	293	281	353	423	352	299	19	139	1,280	3.6	3,650
1957	14	12	31	142	250	311	3,980	18,960	7,740	1,930	1,070	218	34,660
1958	765	637	592	633	860	1,010	1,810	6,270	1,160	185	6.3	5.2	13,730
1959	29	272	303	224	816	1,300	6,500	7,550	1,000	60	15	4.8	18,070
1960	142	416	583	438	708	9,330	10,560	15,330	2,720	625	108	47	41,010

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	-	-
1951	1210	222	July 30, 1951	0	6.00	4,340	4.92	3,560
1952	1240	255	May 27, 1952	0	15.2	11,060	6.30	4,570
1953	1280	2,700	July 29, 1953	0	12.6	9,100	14.8	10,780
1954	1340	3,800	July 21, 1954	.1	6.32	4,570	12.8	9,300
1955	1390	405	May 20, 1955	.2	11.7	8,490	5.90	4,260
1956	1440	1,940	Aug. 1, 1956	0	5.03	3,650	12.2	8,840
1957	1510	800	July 13, 1957	0	47.9	34,660	4.42	3,210
1958	1560	215	May 9, 1958	0	19.0	13,730	50.5	36,600
1959	1630	500	Apr. 28, 1959	0	25.0	18,070	17.0	12,340
1960	1710	1,120	Mar. 24, 1960	0	56.5	41,010	25.7	18,610

7100. South Platte River at Littleton, Colo.

Location.--Lat 39°37'10", long 105°01'10", in NE $\frac{1}{4}$  sec.17, T.5 S., R.68 W., on left bank 200 ft downstream from Hazard Street Bridge at Littleton and 3.1 miles upstream from Bear Creek.

Drainage area.--3,069 sq mi (revised).

Records available.--July 1941 to September 1960.

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.--19 years (1941-60), 237 cfs (171,600 acre-ft per year).

Extremes.--1941-60: 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.--Natural flow of stream affected by transmountain diversions, storage reservoirs, power developments, diversions for irrigation and municipal use, and return flow from irrigated areas. Records of chemical analyses for the period October 1950 to August 1951 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	24.8	45.4	50.8	56.2	59.1	26.7	68.6	222	198	251	192	60.2	105
1952	62.0	58.6	35.0	30.2	22.7	36.3	121	370	378	317	257	65.1	147
1953	32.3	46.1	28.6	21.9	24.9	21.2	33.9	236	267	326	308	29.2	116
1954	32.0	61.8	26.2	24.6	21.0	24.5	34.1	171	71.3	125	86.3	27.2	59.2
1955	18.8	48.7	20.1	14.4	13.9	13.9	87.0	337	127	60.3	388	178	110
1956	42.5	40.5	24.5	18.8	17.7	24.9	56.7	294	222	102	79.3	13.2	78.3
1957	16.1	23.4	13.3	12.7	17.6	21.2	125	1,077	1,093	890	807	168	358
1958	157	180	82.9	45.9	51.4	95.7	374	1,166	690	190	86.8	51.4	265
1959	45.4	30.8	36.2	25.5	38.0	44.8	205	298	305	184	219	38.4	123
1960	137	55.5	41.7	37.4	42.1	308	541	509	394	281	113	35.4	208

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1,520	2,700	3,130	3,450	3,280	1,640	4,080	13,620	11,780	15,450	11,840	3,580	75,070
1952	3,810	3,480	2,150	1,850	1,310	2,230	7,230	22,750	22,470	19,490	15,800	3,870	106,400
1953	1,990	2,740	1,780	1,350	1,380	1,300	2,020	14,520	15,860	20,040	18,960	1,740	83,660
1954	1,970	3,680	1,610	1,510	1,170	1,500	2,030	10,530	4,240	7,660	5,310	1,820	42,830
1955	1,150	2,900	1,240	883	770	853	5,180	20,710	7,560	3,710	23,840	10,620	79,420
1956	2,610	2,410	1,510	1,150	1,020	1,530	3,380	18,100	13,210	6,270	4,870	783	56,840
1957	993	1,390	819	783	976	1,310	7,430	66,190	65,070	54,720	49,600	9,970	259,300
1958	9,630	10,680	5,100	2,820	2,860	5,880	22,280	71,670	41,040	11,700	5,340	3,060	192,100
1959	2,790	1,830	2,230	1,570	2,110	2,760	12,230	18,320	18,180	11,290	13,470	2,290	89,070
1960	8,420	3,300	2,560	2,300	2,420	18,930	32,220	51,320	23,430	17,310	6,960	2,110	151,300

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	87.7	63,520
1951	1210	592	Aug. 3, 1951	15	105	76,070	108	78,160
1952	1240	844	May 24, 1952	12	147	106,400	143	103,500
1953	1280	1,900	July 29, 1953	14	116	83,660	117	84,430
1954	1340	1,920	July 21, 1954	10	59.2	42,850	56.4	40,860
1955	1390	2,020	Aug. 7, 1955	10	110	79,420	111	80,660
1956	1440	1,190	Aug. 1, 1956	7.6	78.3	56,840	73.7	53,520
1957	1510	2,150	May 20, 1957	7.2	358	259,300	389	281,500
1958	1560	2,280	May 26, 1958	24	265	192,100	240	173,500
1959	1630	746	June 25, 1959	15	123	89,070	133	96,500
1960	1710	1,380	Mar. 27, 1960	16	208	151,300	-	-

## 7105. Bear Creek at Morrison, Colo.

Location.--Lat 39°39'11", long 105°11'42", in SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec.35, T.4 S., R.70 W., on right bank 100 ft upstream from bridge on U. S. Highway 285 at Morrison and a quarter of a mile upstream from Mount Vernon Creek.

Drainage area.--164 sq mi (revised).

Records available.--September 1887 to September 1891, May 1895 to December 1901, February 1902 (gage height only), October 1919 to September 1960. 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.

Average discharge.--45 years (1890-91, 1896-97, 1898-99, 1900-1901, 1919-60), 54.9 cfs (39,750 acre-ft per year).

Extremes.--1887-91, 1895-1901, 1919-60: Maximum discharge, 8,600 cfs (estimated) July 24, 1896; minimum daily, 0.8 cfs Nov. 26, 1939, result of freezeup.

Remarks.--Small diversions for irrigation of about 1,000 acres above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	12.5	14.3	9.71	7.42	8.13	12.5	30.8	57.9	112	63.2	67.5	25.7	35.3
1952	25.4	18.0	9.36	8.74	15.7	13.0	46.8	207	185	51.2	34.5	16.7	52.7
1953	14.0	12.3	10.6	8.16	10.4	10.7	15.6	57.4	87.5	53.0	71.5	24.4	31.4
1954	17.6	14.0	11.7	12.4	11.0	11.6	13.3	19.9	11.5	20.3	18.3	12.8	14.6
1955	13.8	13.1	10.9	9.24	8.11	14.5	17.1	25.8	24.6	19.7	89.9	57.6	25.5
1956	18.7	15.0	12.5	8.53	7.40	10.7	17.6	53.9	48.1	23.1	42.5	16.8	23.0
1957	12.3	9.59	11.3	6.85	12.0	11.4	50.4	358	365	181	143	80.0	104
1958	34.4	20.4	9.71	11.8	14.8	16.7	33.5	259	126	42	24.6	15.4	51.0
1959	15.7	16.9	8.93	14.2	16.1	18.7	41.5	69.0	82.5	40.6	38.3	27.7	32.5
1960	34.9	30.4	18.4	11.2	11.8	48.3	65.8	137	82.2	50.6	23.6	16.1	44.4

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	767	851	597	456	452	770	1,830	3,560	6,670	3,890	4,150	1,530	25,520
1952	1,560	1,070	575	538	900	797	2,780	12,730	11,010	3,150	2,120	994	38,220
1953	859	733	650	502	577	657	930	3,530	5,200	3,260	4,400	1,450	22,750
1954	1,080	831	718	760	612	714	791	1,230	682	1,250	1,120	759	10,550
1955	847	780	667	568	451	891	1,020	1,580	1,460	1,210	5,530	3,430	18,430
1956	1,150	891	766	525	426	658	1,050	3,310	2,860	1,420	2,610	1,000	16,670
1957	759	570	696	421	666	704	3,000	22,000	21,700	11,140	8,780	4,760	75,200
1958	2,110	1,220	597	724	819	1,030	1,990	15,900	7,510	2,580	1,510	916	36,910
1959	966	1,010	549	874	892	1,150	2,470	4,240	4,910	2,500	2,360	1,650	23,570
1960	2,140	1,810	1,130	688	678	2,970	3,910	8,450	4,890	3,110	1,450	958	32,180

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	20.6	14,890
1951	1210	238	Aug. 3, 1951	1.6	35.3	25,520	36.6	26,510
1952	1240	455	May 23, 1952	3.2	52.7	38,220	51.3	37,260
1953	1280	444	July 31, 1953	7.0	31.4	22,750	32.0	23,140
1954	1340	445	July 21, 1954	5.5	14.6	10,550	14.1	10,210
1955	1390	1,700	Aug. 10, 1955	5.6	25.5	18,430	26.2	18,950
1956	1440	348	May 23, 1956	5.3	23.0	16,670	21.9	15,880
1957	1510	1,640	Aug. 21, 1957	5.0	104	75,200	106	77,100
1958	1560	421	May 16, 1958	6.4	51.0	36,910	49.0	35,500
1959	1630	147	June 23, 1959	3.6	32.5	23,570	36.1	26,130
1960	1710	208	May 9, 1960	7	44.4	32,180	-	-



## 7110. Turkey Creek near Morrison, Colo.

Location.--Lat 39°38'10", long 105°10'05", in NE¼ sec.12, T.5 S., R.70 W., on left bank at downstream side of county bridge, 2 miles upstream from mouth and 2 miles southeast of Morrison.

Drainage area.--50.1 sq mi (revised).

Records available.--June 1942 to September 1946, March 1947 to September 1953.

Gage.--Water-stage recorder. Datum of gage is 5,717.54 ft above mean sea level, datum of 1929 (levels by Corps of Engineers). Prior to Mar. 8, 1947, staff gage at same site and datum.

Average discharge.--10 years (1942-46, 1947-53), 4.25 cfs (3,080 acre-ft per year).

Extremes.--1942-53: Maximum discharge, 1,200 cfs Aug. 24, 1946 (gage height, 5.79 ft, from floodmark), from rating curve extended above 180 cfs on basis of contracted-opening measurement of peak flow; no flow at times.

Remarks.--Small diversions above station for irrigation. Spickerman ditch, which diverts from Bear Creek and Turkey Creek, wastes some water above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	0.25	0.51	0.73	0.52	0.48	1.16	1.34	4.65	1.20	0.61	0.31	0.19	1.00
1952	.33	.63	.66	.48	.32	1.28	5.20	44.1	8.90	.36	.23	.20	5.27
1953	.17	.14	.60	.90	.78	1.18	3.02	7.75	3.44	1.12	.52	.15	1.65

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	15	30	45	32	27	71	80	286	72	38	19	11	726
1952	20	38	41	29	18	79	309	2,710	529	22	14	12	3,820
1953	10	8.1	37	55	43	72	180	477	204	69	32	7.5	1,190

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	0.83	597
1951	1210	47	May 22, 1951	0.1	1.00	726	1.01	735
1952	1240	185	May 24, 1952	.1	5.27	3,820	5.21	3,780
1953	1280	149	July 16, 1953	.1	1.65	1,190	-	-

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

Location.--Lat 39°39'08", long 105°01'57", in NW<sup>1</sup>/<sub>4</sub> NW<sup>1</sup>/<sub>4</sub> 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 (revised); at sites prior to Oct. 9, 1953, 262 sq mi.

Records available.--April to November 1914, March 1927 to September 1960. 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.--33 years (1927-60), 33.9 cfs (24,540 acre-ft per year).

Extremes.--1914, 1927-60: 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.--Storage and diversions above station for irrigation of about 12,000 acres.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	7.16	9.23	8.21	9.90	10.3	11.0	13.6	10.4	31.8	13.3	24.3	14.8	13.7
1952	21.7	16.0	22.6	15.2	9.63	12.1	38.2	213	142	13.1	11.9	12.4	44.1
1953	7.89	14.9	16.5	12.3	10.4	8.59	8.80	8.64	12.8	14.7	15.5	9.82	11.7
1954	10.2	10.2	10.2	11.8	8.60	8.78	4.77	4.72	2.20	1.90	3.05	2.01	6.53
1955	1.52	3.53	12.0	10.2	11.4	7.85	8.11	4.57	3.64	2.65	28.2	13.6	8.94
1956	5.76	15.6	13.4	9.16	8.53	9.65	6.93	6.17	3.18	7.09	10.2	1.82	8.13
1957	3.78	14.1	10.2	10.7	10.2	9.63	25.5	459	330	75.6	96.2	18.0	89.1
1958	21.1	37.8	29.9	20.5	14.8	19.1	37.0	234	66.8	10.9	5.38	5.68	42.2
1959	9.73	13.6	12.3	11.6	12.7	12.9	40.5	72.4	32.4	7.23	11.6	8.03	20.4
1960	23.4	17.5	15.8	13.0	25.3	94.4	61.2	167	46.4	17.1	8.97	5.53	41.3

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	440	549	505	609	574	677	806	639	1,890	817	1,490	879	9,880
1952	1,330	952	1,390	932	554	741	2,270	13,090	8,440	805	734	739	31,980
1953	485	885	1,010	756	575	528	523	531	762	906	955	584	8,500
1954	628	598	628	728	477	540	284	290	151	117	188	120	4,730
1955	94	210	735	630	634	483	483	281	217	163	1,740	809	6,480
1956	354	929	823	563	491	593	412	379	189	436	627	108	5,900
1957	233	839	625	658	565	592	1,520	28,190	19,660	4,650	5,920	1,070	64,520
1958	1,300	2,250	1,840	1,260	824	1,170	2,200	14,370	3,970	671	331	338	30,520
1959	598	807	758	713	706	792	2,410	4,450	1,950	444	716	478	14,800
1960	1,440	1,040	969	798	1,340	5,810	3,640	10,250	2,760	1,050	551	329	29,980

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	12.1	8,800
1951	1210	60	June 9, 1951	1.6	13.7	9,880	16.7	12,050
1952	1240	533	May 27, 1952	7.9	44.1	31,980	42.3	30,680
1953	1280	330	July 17, 1953	2.2	11.7	8,500	11.0	7,970
1954	1340	178	Aug. 6, 1954	0	6.53	4,730	5.41	3,910
1955	1390	1,170	Aug. 11, 1955	.4	8.94	6,480	10.4	7,550
1956	1440	314	May 23, 1956	.6	8.13	5,900	7.57	5,500
1957	1510	2,560	Aug. 21, 1957	.6	89.1	64,520	94.2	68,220
1958	1560	597	May 24, 1958	2.8	42.2	30,520	37.7	27,300
1959	1630	180	May 22, 1959	2.3	20.4	14,800	22.2	16,090
1960	1710	524	Mar. 22, 1960	3.6	41.3	29,980	-	-

7120. Cherry Creek near Franktown, Colo.

Location.--Lat 39°21'30", long 104°45'50", in NE $\frac{1}{4}$  sec.15, T.8 S., R.66 W., on right bank  $\frac{1}{4}$  miles upstream from Russellville Gulch and  $2\frac{1}{4}$  miles south of Franktown.

Drainage area.--169 sq mi (revised).

Records available.--November 1939 to September 1960.

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.--20 years (1940-60), 10.1 cfs (7,310 acre-ft per year).

Extremes.--1939-60: 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 Castewood Dam failed.

Remarks.--Many small diversions above station for irrigation of about 800 acres.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1.22	2.67	3.12	1.57	6.64	6.70	10.2	6.88	2.61	1.69	6.14	0.86	4.17
1952	2.27	4.85	2.17	3.65	3.13	8.75	7.76	5.23	1.53	1.08	19.9	2.03	5.22
1953	.97	1.52	1.60	5.10	6.81	5.77	7.66	5.29	2.00	5.62	6.33	.83	4.12
1954	1.14	1.40	1.88	2.80	3.21	2.74	1.79	1.65	1.12	1.49	14.0	1.24	2.89
1955	1.08	1.32	1.46	1.84	2.60	5.07	4.56	4.09	1.88	2.02	9.35	1.31	3.06
1956	1.15	1.43	1.74	1.73	1.99	3.22	1.75	4.88	1.37	17.9	18.8	.99	4.80
1957	1.31	2.18	1.96	2.23	4.62	6.08	22.2	40.8	15.0	43.8	41.3	4.20	15.6
1958	6.12	5.67	5.54	4.33	20.2	20.5	13.0	19.1	3.78	6.24	1.90	1.46	8.93
1959	2.08	2.83	3.87	4.30	13.2	13.2	28.8	9.71	2.62	1.06	1.02	1.28	6.93
1960	2.10	3.07	3.34	2.54	4.96	184	17.5	20.1	4.62	5.41	1.07	1.07	21.0

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	75	159	192	97	369	412	608	423	156	104	378	51	3,020
1952	139	286	133	224	180	538	482	322	91	67	1,230	121	3,800
1953	60	91	99	314	378	355	456	325	119	348	589	49	2,980
1954	70	83	115	172	178	168	106	102	66	92	863	74	2,090
1955	66	79	90	113	144	312	272	251	112	124	575	78	2,220
1956	70	85	107	107	114	198	104	300	82	1,100	1,160	59	3,490
1957	80	130	121	137	257	374	1,320	2,510	896	2,700	2,540	250	11,320
1958	376	338	341	268	1,120	1,260	774	1,180	225	384	117	87	6,470
1959	128	168	238	264	731	813	1,720	597	156	65	62	76	5,020
1960	129	182	205	156	285	11,290	1,040	1,230	275	333	66	64	15,260

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	4.04	-	2,930
1951	1210	81	Aug. 3, 1951	0.2	4.17	3,020	4.36	-	3,160
1952	1240	1,350	Aug. 28, 1952	.3	5.22	3,800	4.79	-	3,480
1953	1280	455	Aug. 16, 1953	.4	4.12	2,980	4.14	-	3,000
1954	1340	2,620	Aug. 7, 1954	.6	2.89	2,090	2.84	-	2,060
1955	1390	790	Aug. 5, 1955	.6	3.06	2,220	3.10	-	2,240
1956	1440	3,380	July 31, 1956	.8	4.80	3,490	4.89	-	3,560
1957	1510	5,380	July 30, 1957	.9	15.6	11,320	16.6	-	12,090
1958	1560	152	Feb. 18, 1958	.7	8.93	6,470	8.22	-	5,950
1959	1630	156	Feb. 16, 1959	.7	6.93	5,020	6.90	-	5,000
1960	1710	2,340	Mar. 24, 1960	.7	21.0	15,260	-	-	-

7125. Cherry Creek near Melvin, Colo.

Location.--Lat 39°36'18", long 104°49'19", in SE<sup>1</sup>/<sub>4</sub> NW<sup>1</sup>/<sub>4</sub> sec. 19, T.5 S., R.66 W., on left bank 400 ft downstream from Piney (South Cherry) Creek, 1½ miles southeast of former site of Melvin, and 6.8 miles northwest of Parker.

Drainage area.--360 sq mi (revised).

Records available.--October 1939 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 5,608.21 ft above mean sea level, datum of 1929.

Average discharge.--21 years (1939-60), 14.4 cfs (10,430 acre-ft per year).

Extremes.--1939-60: Maximum discharge, 17,600 cfs July 18, 1946 (gage height, 7.45 ft), from rating curve extended above 11,000 cfs; no flow at times in most years.  
Maximum stage known, 9.72 ft Aug. 3, 1933, from floodmarks (discharge, 34,000 cfs, by slope-area measurement of peak flow at Kenwood damsite 5 miles downstream), caused by failure of Castlewood Dam.

Remarks.--Diversions above station for irrigation of about 1,800 acres.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	0	0	0	0	9.24	3.77	10.8	2.54	1.60	1.88	2.97	0	2.67
1952	0	0	0	0	5.56	8.88	4.37	.29	0	3.83	0	0	1.93
1953	0	0	0	0	0	.58	2.22	4.65	0	2.79	4.25	0	1.22
1954	0	0	0	0	0	0	0	0	.12	1.78	5.35	0	.62
1955	0	0	0	0	0	0	.08	.68	.60	1.84	37.9	0	3.49
1956	0	0	0	0	0	0	0	3.57	.22	14.2	22.4	0	3.42
1957	0	0	0	0	0	0	2.52	45.4	11.2	70.2	85.4	0	18.2
1958	2.11	.15	.32	0	24.6	25.1	14.2	20.8	1.43	4.65	4.23	0	8.04
1959	0	0	0	17.3	6.48	24.3	43.6	15.1	1.08	0	0	0	8.98
1960	0	0	0	0	0	200	22.3	20.5	.50	.58	0	0	20.6

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	0	0	0	0	513	232	643	156	95	115	182	0	1,940
1952	0	0	0	12	0	342	528	269	17	0	235	0	1,400
1953	0	0	0	0	0	36	132	286	0	172	261	0	887
1954	0	0	0	0	0	0	0	0	6.9	109	329	5.0	450
1955	0	0	0	0	0	0	5.0	42	36	113	2,330	0	2,530
1956	0	0	0	0	0	0	0	219	13	871	1,360	0	2,480
1957	0	0	0	0	0	0	150	2,790	665	4,310	5,250	0	13,160
1958	130	8.7	20	0	1,360	1,550	845	1,280	85	286	260	0	5,820
1959	0	0	0	1,070	360	1,490	2,590	928	63	0	0	0	6,500
1960	0	0	0	0	0	12,330	1,320	1,260	30	36	0	0	14,980

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	6.11	4,430
1951	1210	1,040	Aug. 22, 1951	0	2.67	1,940	2.68	1,940
1952	1240	321	Aug. 29, 1952	0	1.93	1,400	1.93	1,400
1953	1280	1,670	Aug. 27, 1953	0	1.22	887	1.22	887
1954	1340	611	Aug. 13, 1954	0	.62	450	.62	450
1955	1390	4,510	Aug. 5, 1955	0	3.49	2,530	3.49	2,530
1956	1440	5,310	July 31, 1956	0	3.42	2,480	3.42	2,480
1957	1510	9,950	July 26, 1957	0	18.2	13,160	18.4	13,320
1958	1560	5,290	July 18, 1958	0	8.04	5,820	7.82	5,670
1959	1630	558	Mar. 22, 1959	0	8.98	6,500	8.98	6,500
1960	1710	2,720	Mar. 24, 1960	0	20.6	14,980	-	-

7130. Cherry Creek below Cherry Creek Reservoir, Colo.

Location.--Lat 39°39'10", long 104°51'40", in SW<sup>1</sup>SW<sup>1</sup> 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 south-east of Civic Center in Denver, and 11 miles upstream from mouth.

Drainage area.--385 sq mi (revised).

Records available.--June 1950 to September 1960.

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.--10 years (1950-60), 3.31 cfs (2,400 acre-ft per year), unadjusted.

Extremes.--1950-60: Maximum discharge, 1,440 cfs July 31, 1956 (gage height, 6.07 ft); no flow for many days in 1957-60.

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

Remarks.--Flow regulated by Cherry Creek Reservoir (capacity, 247,500 acre-ft). Reservoir was completed in June 1950. Permanent storage started May 15, 1957. Diversions above station for irrigation of about 1,800 acres.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	2.05	2.33	2.79	1.99	3.20	4.24	8.78	4.03	2.21	3.37	4.57	2.05	3.46
1952	2.60	2.05	2.01	1.99	2.09	6.33	8.91	5.19	2.15	1.28	4.16	1.56	3.36
1953	1.59	1.71	1.65	1.93	2.02	2.25	2.77	4.42	1.96	4.71	6.39	1.37	2.74
1954	1.34	1.21	1.42	1.64	1.83	1.46	1.66	1.18	1.43	7.55	4.00	.86	2.14
1955	1.05	1.37	1.09	1.05	1.22	1.28	1.01	1.37	1.42	2.79	28.4	1.27	3.65
1956	1.39	1.32	1.24	1.24	1.31	1.37	1.17	4.73	.78	5.87	26.1	.44	3.96
1957	.67	1.13	1.11	1.07	1.34	1.47	2.87	10.4	.10	.05	0	0	1.70
1958	0	0	0	0	0	0	0	.71	.82	5.63	3.47	.09	.85
1959	0	0	0	0	0	0	0	0	2.56	.04	0	0	.27
1960	0	0	0	0	0	94.9	4.58	30.0	2.21	.17	.02	.07	11.0

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	126	139	172	122	178	261	521	248	132	207	281	122	2,510
1952	160	122	124	122	120	389	530	319	128	79	256	93	2,440
1953	98	102	102	118	112	138	165	272	116	290	393	82	1,990
1954	82	72	87	101	102	90	99	72	85	464	246	51	1,550
1955	64	81	67	64	68	79	60	84	84	171	1,740	76	2,640
1956	85	79	76	76	75	84	69	291	46	361	1,600	26	2,870
1957	41	67	68	66	74	90	171	642	6.0	2.8	0	0	1,230
1958	0	0	0	0	0	0	0	0	49	346	214	5.6	615
1959	0	0	0	0	0	0	0	43	152	2.2	0	0	197
1960	0	0	0	0	0	5,840	272	1,850	12	11	1.4	4.4	7,990

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	-	-	-
1951	1210	635	Aug. 23, 1951	1.1	3.46	2,510	3.42	2,480	
1952	1240	321	Aug. 29, 1952	.3	3.36	2,440	3.22	2,340	
1953	1280	465	Aug. 27, 1953	1.0	2.74	1,990	2.66	1,930	
1954	1340	480	July 21, 1954	.6	2.14	1,550	2.10	1,520	
1955	1390	1,270	Aug. 5, 1955	.3	3.65	2,640	3.69	2,670	
1956	1440	1,440	July 31, 1956	.2	3.96	2,870	3.87	2,800	
1957	1510	315	May 9, 1957	0	1.70	1,230	1.45	1,050	
1958	1560	502	July 19, 1958	0	.85	615	.85	615	
1959	1630	106	June 3, 1959	0	.27	197	.27	197	
1960	1710	532	Mar. 26, 1960	0	11.0	7,990	-	-	

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 (revised); area at Washington Street site, 407 sq mi (revised).

Records available.--August 1942 to September 1960.

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.--18 years (1942-60), 16.9 cfs (12,240 acre-ft per year).

Extremes.--1942-60: 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.--Several diversions above station for irrigation of about 1,900 acres. Floodflow regulated by Cherry Creek Reservoir 17 miles upstream (capacity, 247,500 acre-ft).

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	7.07	5.03	5.01	5.05	4.78	5.10	11.7	13.4	18.9	8.88	15.2	8.07	9.03
1952	10.4	6.12	5.90	5.64	4.18	8.68	11.7	47.6	54.9	11.1	12.1	8.69	15.6
1953	8.86	6.30	5.95	4.96	5.09	5.85	4.90	10.3	8.60	18.0	11.5	6.92	8.14
1954	6.68	5.67	4.75	3.84	4.30	4.19	5.09	6.41	5.34	10.6	8.55	6.44	6.00
1955	5.26	3.61	3.85	3.93	4.78	3.25	3.28	9.50	6.95	9.50	35.8	8.76	8.26
1956	4.64	3.91	3.39	3.17	4.48	4.72	4.94	9.09	4.71	15.5	44.1	4.83	9.04
1957	5.41	5.50	4.90	4.62	5.11	4.98	11.2	42.8	11.2	18.2	13.6	10.1	11.5
1958	13.4	7.19	5.65	5.62	5.25	5.55	6.28	27.3	10.8	13.7	9.44	9.58	10.0
1959	9.66	5.15	4.15	5.08	6.27	7.96	7.04	16.3	11.3	7.81	6.08	10.9	8.15
1960	11.3	5.39	5.24	5.76	5.73	86.7	17.2	35.0	9.79	9.59	7.83	8.28	17.5

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	435	299	308	311	265	314	695	824	1,120	546	934	480	6,530
1952	637	364	363	347	240	534	697	2,930	3,270	684	743	517	11,330
1953	545	375	368	305	283	360	291	631	512	1,110	707	412	5,900
1954	411	338	292	236	239	257	303	394	318	650	526	383	4,350
1955	324	215	237	242	266	200	195	584	414	584	2,200	521	5,980
1956	285	232	209	195	258	290	294	559	280	955	2,710	288	6,560
1957	332	327	301	284	284	305	667	2,630	667	1,120	839	600	8,360
1958	823	428	348	345	292	341	373	1,680	645	843	580	570	7,270
1959	594	307	255	312	348	490	419	999	673	480	374	650	5,900
1960	695	321	322	354	330	5,330	1,020	2,160	583	590	481	493	12,680

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	11.3	8,200
1951	1210	al,060	Aug. 3, 1951	3.0	9.03	6,530	9.47	6,850
1952	1240	461	June 27, 1952	3.8	15.6	11,330	15.5	11,250
1953	1280	2,050	July 9, 1953	3.5	8.14	5,900	7.80	5,650
1954	1340	1,670	July 14, 1954	3.2	6.00	4,350	5.64	4,080
1955	1390	1,720	Aug. 5, 1955	1.7	8.26	5,980	8.19	5,930
1956	1440	2,040	Aug. 1, 1956	2.5	9.04	6,560	9.36	6,790
1957	1510	1,040	July 9, 1957	3.0	11.5	8,360	12.4	9,000
1958	1560	618	June 7, 1958	2.8	10.0	7,270	9.42	6,820
1959	1630	648	May 21, 1959	3.0	8.15	5,900	8.40	6,080
1960	1710	542	June 9, 1960	3.2	17.5	12,680	-	-

a Maximum observed.

7140. South Platte River at Denver, Colo.

Location.--Lat 39°45'35", long 105°00'10", in SE $\frac{1}{4}$  sec.28, T.3 S., R.68 W., on right bank 20 ft upstream from Nineteenth Street Bridge in Denver, 0.4 mile downstream from Cherry Creek.

Drainage area.--3,804 sq mi (revised).

Records available.--May to October 1889, June to October 1890, July 1895 to September 1960. 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.--65 years (1895-1960), 347 cfs (251,200 acre-ft per year).

Extremes.--1889-90, 1895-1960: 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.--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.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	56.1	101	85.3	80.9	93.4	45.7	104	239	260	313	328	126	153
1952	134	109	84.3	64.7	50.9	96.0	206	679	592	330	315	124	233
1953	78.3	96.4	81.1	59.0	55.8	46.8	60.4	256	325	415	388	55.2	161
1954	63.3	94.1	76.8	61.7	51.4	53.3	39.3	223	83.6	155	116	49.7	89.4
1955	48.8	81.3	56.9	40.5	42.1	41.8	95.7	374	176	77.1	485	267	150
1956	66.5	73.9	47.6	38.0	43.9	42.5	63.0	343	229	164	198	28.7	112
1957	25.9	59.6	35.3	34.6	43.2	48.3	162	1,427	1,358	1,040	987	244	457
1958	209	249	132	91.0	87.5	154	481	1,414	816	238	118	88.4	341
1959	102	56.9	69.7	63.9	73.8	94.2	325	418	384	206	231	76.6	176
1960	200	126	82.8	67.9	93.2	505	537	785	439	338	123	53.8	280

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	3,450	6,010	5,120	4,970	5,190	2,810	6,170	14,680	15,490	19,250	20,020	7,480	110,600
1952	8,280	6,460	5,180	3,980	2,930	5,900	12,280	41,730	35,230	20,310	19,360	7,390	169,000
1953	4,810	5,750	4,990	3,630	3,100	2,680	3,590	15,720	19,320	25,520	23,760	3,280	116,300
1954	3,890	5,600	4,720	3,800	2,860	3,280	2,340	13,700	4,980	9,510	7,130	2,960	64,770
1955	3,000	4,840	3,500	2,490	2,890	2,570	5,580	23,000	10,500	4,740	29,820	15,900	108,800
1956	4,090	4,400	2,930	2,330	2,530	2,610	3,750	21,110	13,600	10,100	12,150	1,710	81,310
1957	1,590	3,540	2,170	2,130	2,400	2,970	9,630	87,740	79,600	63,930	60,720	14,540	331,000
1958	12,860	14,840	8,100	5,600	4,860	9,470	28,620	86,940	48,570	14,650	7,270	5,260	247,000
1959	6,290	3,390	4,280	3,930	4,100	5,790	19,320	25,690	22,860	12,650	14,200	4,570	127,100
1960	12,320	7,510	5,090	4,170	5,360	31,070	31,950	48,240	26,110	20,770	7,560	3,200	203,400

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	134	-	97,090
1951	1210	5,470	Aug. 3, 1951	8.8	153	110,600	160	-	116,000
1952	1240	1,850	May 24, 1952	34	233	169,000	227	-	164,600
1953	1280	4,290	July 9, 1953	19	161	116,300	169	-	115,000
1954	1340	2,010	July 21, 1954	10	89.4	64,770	85.5	-	61,900
1955	1390	3,800	Aug. 28, 1955	22	150	108,800	150	-	108,900
1956	1440	5,920	Aug. 1, 1956	11	112	81,310	108	-	77,190
1957	1510	*4,920	May 15, 1957	11	457	331,000	497	-	359,500
1958	1560	3,080	May 6, 1958	26	341	247,000	311	-	225,200
1959	1630	1,930	May 21, 1959	32	176	127,100	191	-	138,000
1960	1710	2,820	July 3, 1960	34	280	203,400	-	-	-

\* Revised.

## PLATTE RIVER BASIN

9-350. Jones Pass tunnel at east portal, near Jones Pass, Colo.  
(Transmountain diversion)

Location--Lat 39°46'15", long 105°50'55", in sec.24, T.3 S., R.76 W., 2 miles east of Jones Pass.

Records available--October 1939 to September 1958.

Gage--Water-stage recorder and 10-foot Parshall flume since May 10, 1940. Datum of gage is 10,312.5 ft above mean sea level (levels by city of Denver).

Remarks--Diversion is from tributaries of Williams Fork in Colorado River basin, between headgate 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., to West Fork Clear Creek in sec.24, T.3 S., R.76 W., in Platte River basin. Since July 1959, water has been diverted through Vasquez tunnel to Vasquez Creek in Fraser River basin in sec.1, T.3 S., R.76 W., thence via collection ditch to west portal of Moffat water tunnel where it is diverted to South Boulder Creek in Platte River basin. See table of diversions since July 1959 published with records for Williams Fork near Leal in WSP 1733.

Cooperation--Records furnished by State engineer of Colorado.

## Monthly and yearly diversion, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	0	0	0	0	0	0	0	1,120	2,840	5,350	1,570	256	11,140
1952	0	0	0	0	0	0	0	738	3,680	1,630	782	0	6,810
1953	97	0	0	0	0	0	0	0	2,550	2,930	1,450	388	7,420
1954	0	0	0	0	0	0	0	2,380	2,420	248	436	0	5,480
1955	0	0	0	0	0	0	0	1,480	4,700	1,920	1,580	618	10,300
1956	319	0	0	0	0	0	0	2,890	3,680	1,330	659	0	8,880
1957	0	0	0	0	0	0	0	38	0	4,470	32	0	4,540
1958	0	0	0	0	0	0	0	0	0	0	0	0	0
1959													
1960													

9-215. Berthoud Pass ditch at Berthoud Pass, Colo.  
(Transmountain diversion)

Location--Lat 39°47'55", long 105°46'35", in sec.10, T.3 S., R.75 W., at Berthoud Pass.

Records available--October 1909 to September 1960. Diversion for 1926-44 published in WSP 1310 (yearly diversion only for water years 1910-25).

Gage--Water-stage recorder and 3-foot Parshall flume since June 5, 1948. Altitude of gage is 11,310 ft (from topographic map). Prior to June 19, 1932, type of gage and exact location not known. June 19, 1932, to Sept. 8, 1940, water-stage recorder at grouted-rock ditch section and May 1, 1941, to Aug. 8, 1947, water-stage recorder and 22-foot Parshall flume, both at about present site.

Remarks--Diversion is from tributaries of Fraser River in Colorado River basin, between headgate in sec.33, T.2 S., R.75 W., and Berthoud Pass, to Hoop Creek (tributary of West Fork Clear Creek) in sec.10, T.3 S., R.75 W., in Platte River basin. Ditch was built about 1909.

Cooperation--Records furnished by State engineer of Colorado.

## Monthly and yearly diversion, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	0	0	0	0	0	0	0	0	154	435	127	0	716
1952	0	0	0	0	0	0	0	0	316	361	55	0	730
1953	0	0	0	0	0	0	0	0	329	233	32	0	594
1954	0	0	0	0	0	0	0	20	178	19	0	0	217
1955	0	0	0	0	0	0	0	2.6	249	206	0	0	458
1956	0	0	0	0	0	0	0	0	193	203	0	0	396
1957	0	0	0	0	0	0	0	0	0	365	0	0	365
1958	0	0	0	0	0	0	0	0	233	199	7	0	429
1959	0	0	0	0	0	0	0	0	481	369	146	0	996
1960	0	0	0	0	0	0	0	0	526	372	75	0	973



7165. Clear Creek near Lawson, Colo.

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

Drainage area.--145 sq mi (revised).

Records available.--March 1946 to September 1960. 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.--14 years (1946-60), 142 cfs (102,800 acre-ft per year), adjusted for inflow from Jones Pass tunnel prior to 1959.

Extremes.--1946-60: 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.--Natural flow of stream affected by transmountain diversions from Colorado River basin through Jones Pass tunnel (prior to 1959) and Berthoud Pass ditch (see elsewhere in this report). No diversion above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	39.5	31.1	28.9	22.2	18.5	17.6	34.5	226	758	692	219	77.6	181
1952	61.8	40.7	31.9	27.5	26.3	23.4	52	250	1,000	450	202	98.5	188
1953	53.4	41.7	30.6	26.7	26.7	25.8	32.9	134	796	377	158	62.2	147
1954	42.3	37.5	29.8	27.6	23.3	20.6	38.1	179	223	125	72.5	45.6	72.3
1955	47.3	35.7	24.5	18.2	16.8	19.3	31.5	168	409	261	210	98.8	112
1956	56.2	43.9	34.1	28.7	23.6	24.9	41.3	371	733	237	125	56.4	148
1957	35.6	30.6	28.3	28.9	24.3	21.4	31.7	125	837	943	315	126	213
1958	72.0	47.9	35	25	24.8	26.1	35.8	431	588	167	76.9	54.1	132
1959	36.3	31.1	29.3	27.3	25.5	22.8	31.5	137	639	263	123	55.2	118
1960	61.2	47.1	34.4	26.5	21.3	24.1	54.9	178	645	333	107	54.0	132

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	2,430	1,850	1,780	1,370	1,030	1,080	2,050	13,920	45,080	42,560	13,470	4,820	131,200
1952	3,800	2,420	1,960	1,690	1,520	1,440	3,090	15,360	59,510	27,700	12,410	5,860	136,800
1953	3,280	2,480	1,880	1,640	1,490	1,590	1,960	8,260	47,360	23,180	9,730	3,700	108,500
1954	2,600	2,230	1,830	1,700	1,290	1,270	2,270	11,010	13,290	7,700	4,460	2,710	52,360
1955	2,910	2,120	1,510	1,120	954	1,190	1,870	10,340	24,330	16,030	12,940	5,880	81,170
1956	3,460	2,610	2,100	1,760	1,360	1,530	2,460	22,830	43,610	14,550	7,710	3,360	107,300
1957	2,190	1,820	1,740	1,760	1,350	1,320	1,890	7,710	49,790	58,010	19,370	7,490	154,500
1958	4,430	2,850	2,150	1,540	1,380	1,600	2,130	26,510	35,000	10,260	4,730	3,220	95,790
1959	2,230	1,850	1,800	1,680	1,420	1,400	1,880	8,440	38,000	16,200	7,560	3,280	85,740
1960	3,760	2,800	2,110	1,630	1,220	1,480	3,270	10,940	38,360	20,500	6,600	3,220	95,890

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	135	98,050
1951	1210	1,390	June 21, 1951	16	181	131,200	184	133,400
1952	1240	2,230	June 9, 1952	20	188	136,800	188	136,200
1953	1280	1,480	June 13, 1953	20	147	106,500	148	105,600
1954	1340	400	May 21, 1954	17	72.3	52,360	72.1	52,240
1955	1390	686	June 22, 1955	13	112	81,170	114	82,800
1956	1440	6,130	June 4, 1956	20	148	107,300	145	104,900
1957	1510	1,910	June 29, 1957	19	213	154,500	218	158,100
1958	1560	1,310	May 28, 1958	-	132	95,790	127	92,250
1959	1630	1,070	June 15, 1959	19	118	85,740	122	88,530
1960	1710	1,060	June 19, 1960	18	132	95,890	-	-

## PLATTE RIVER BASIN

7180. Clear Creek below Idaho Springs, Colo.

Location.--Lat 39°44'35", long 105°29'50", in sec.31, T.3 S., R.72 W., on left bank 20 ft downstream from bridge on county road at east edge of Idaho Springs and three-quarters of a mile downstream from Soda Creek.

Drainage area.--259 sq mi (revised).

Records available.--October 1951 to September 1955.

Gage.--Water-stage recorder. Altitude of gage is 7,450 ft (from topographic map).

Extremes.--1951-55: Maximum discharge, 2,980 cfs June 10, 1952 (gage height, 7.62 ft), from rating curve extended above 1,800 cfs, caused by failure of White Reservoir about 12 miles upstream; minimum daily, 22 cfs Mar. 12, 1954.

Remarks.--Natural flow of stream affected by transmountain diversions from Colorado River basin (see elsewhere in this report). Records of water temperatures and suspended sediment loads are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1952	85.2	52.2	43.2	40.6	29.0	27.6	84.8	471	1,321	604	270	149	265
1953	77.0	56.4	42.0	39.5	40.3	38.4	47.8	199	1,016	465	215	91.0	194
1954	62.5	54.0	44.1	39.9	35.1	30.2	52.4	233	273	164	98.0	70.5	96.7
1955	69.0	50.9	41.8	32.5	28.0	30.3	48.9	213	499	328	312	146	151

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1952	5,240	3,100	2,650	2,500	1,670	1,700	5,040	28,970	78,650	37,160	16,580	8,840	192,100
1953	4,730	3,360	2,580	2,430	2,240	2,360	2,840	12,240	60,460	28,610	13,190	5,410	140,500
1954	3,840	3,220	2,710	2,460	1,950	1,860	3,120	14,350	16,230	10,050	6,020	4,190	70,000
1955	4,240	3,030	2,570	2,000	1,560	1,860	2,910	13,100	29,700	20,140	19,200	8,690	109,000

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1952	1240	2,980	June 10, 1952	25	265	192,100	264	191,800	
1953	1280	1,850	June 13, 1953	28	194	140,500	193	139,600	
1954	1340	615	May 20, 1954	22	96.7	70,000	96.8	70,070	
1955	1390	908	June 23, 1955	23	151	109,000	-	-	

7185. North Clear Creek near Blackhawk, Colo.

Location.--Lat 39°45'49", long 105°25'35", in NE $\frac{1}{4}$  sec.27, T.3 S., R.72 W., on left bank 2.3 miles upstream from mouth and 4 $\frac{1}{4}$  miles southeast of Blackhawk.

Drainage area.--52.2 sq mi (revised).

Records available.--October 1951 to September 1955.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 7,220 ft (from topographic map).

Extremes.--1951-55: Maximum discharge, 289 cfs Aug. 7, 1955 (gage height, 4.05 ft), from rating curve extended above 150 cfs; minimum daily, 0.2 cfs Feb. 20, 1955.

Remarks.--Small diversions above station. Records of suspended sediment loads and water temperatures are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1952	4.52	2.98	1.83	2.05	1.47	1.59	18.5	94.9	89.2	13.8	4.37	2.40	19.8
1953	1.88	1.89	2.14	2.21	2.09	3.38	5.84	32.9	59.0	12.3	5.22	1.94	10.9
1954	1.87	2.04	1.81	1.55	1.95	1.75	4.09	8.66	5.42	3.05	1.49	1.20	2.91
1955	1.17	1.27	1.11	.43	.66	1.60	5.50	14.8	18.0	6.46	11.0	6.11	5.69

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1952	278	177	112	126	84	98	1,100	5,840	5,310	850	269	143	14,390
1953	116	112	131	136	116	208	348	2,020	3,510	755	321	116	7,890
1954	115	122	111	95	108	107	243	553	323	187	91	71	2,110
1955	72	76	68	26	36	98	327	912	1,070	397	676	363	4,120

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1952	1240	232	June 3, 1952	1.0	19.8	14,390	19.5	14,180	
1953	1280	132	May 27, 1953	1.5	10.9	7,890	10.9	7,880	
1954	1340	16	Sept. 1, 1954	.8	2.91	2,110	2.73	1,970	
1955	1390	289	Aug. 7, 1955	.2	5.69	4,120	-	-	

† Corrected.

7195. Clear Creek near Golden, Colo.

Location.--Lat 39°45'05", long 105°14'55", in NE $\frac{1}{4}$  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 (revised).

Records available.--October 1908 to December 1909, June 1911 to September 1960. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 5,735.27 ft above mean sea level (State Highway Department 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.--50 years (1908-9, 1911-60), 233 cfs (168,700 acre-ft per year), adjusted for inflow from Jones Pass tunnel and Berthoud Pass ditch 1940-58.

Extremes.--1908-9, 1911-60: Maximum discharge, 5,890 cfs Sept. 9, 1933 (gage height, 11.57 ft, present datum, from floodmarks), from rating curve extended above 2,200 cfs on basis of slope-area measurement of peak flow; minimum daily recorded, 11 cfs Mar. 13, 1954.

Maximum discharge known, 8,700 cfs Aug. 1, 1888, from reports of State engineer of Colorado for station 5 $\frac{1}{2}$  miles upstream.

Remarks.--Natural flow affected by minor transmountain diversion from Colorado River basin through Berthoud Pass ditch (see elsewhere in this report), small diversions for irrigation of about 3,000 acres above station, and several small reservoirs above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	50.6	55.8	38.5	31.7	28.5	33.8	59.1	374	1,025	734	270	113	235
1952	77.2	59.3	45.5	41.3	34.5	41.2	108	549	1,342	559	254	128	270
1953	60.2	38.4	41.4	38.5	42.2	40.4	45.4	222	1,031	482	210	76.6	194
1954	53.1	36.4	30.3	36.1	34.5	33.6	61.8	235	269	162	91.7	57.5	92.0
1955	63.6	41.3	40.5	35.8	32.6	43.6	59.0	241	484	318	305	154	152
1956	69.0	56.0	45.8	35.4	39.9	45.0	68.0	488	888	317	192	67.8	193
1957	50.0	45.4	45.3	39.1	42.4	36.1	81.5	582	1,635	1,337	475	185	381
1958	116	76.0	58	62.5	57.0	45.6	87.6	751	819	234	124	105	212
1959	63.4	48.7	48.7	56.2	51.6	42.2	80.8	268	896	357	208	95.7	186
1960	105	87.5	61.7	40.1	37.7	75.7	142	439	1,052	483	197	110	236

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	3,110	3,320	2,360	1,950	1,580	2,080	3,520	23,030	61,020	45,130	16,620	6,710	170,400
1952	4,750	3,530	2,800	2,540	1,980	2,530	6,450	33,730	79,840	34,380	15,650	7,620	195,800
1953	3,700	2,290	2,540	2,370	2,340	2,480	2,700	13,660	61,360	29,650	12,880	4,560	140,500
1954	3,280	2,170	1,860	2,220	1,920	2,070	3,680	14,440	16,020	9,920	5,640	3,420	66,630
1955	3,910	2,460	2,490	2,200	1,810	2,680	3,510	14,840	28,790	19,560	18,720	9,190	110,200
1956	4,240	3,330	2,810	2,170	2,290	2,770	4,050	30,010	52,850	19,470	11,830	4,040	139,900
1957	3,070	2,700	2,780	2,400	2,350	2,220	4,850	35,780	97,270	82,200	29,280	10,980	275,900
1958	7,160	4,520	3,570	3,850	3,170	2,800	5,210	46,190	48,720	14,380	7,600	6,250	153,400
1959	3,900	2,900	2,990	3,460	2,870	2,600	4,810	17,710	53,300	21,940	12,780	5,690	135,000
1960	6,470	5,210	3,800	2,460	2,170	4,650	8,460	26,960	62,620	29,700	12,100	6,570	171,200

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean		Acre-feet
		Discharge	Date						
1950	-	-	-	-	-	-	164	-	119,100
1951	1210	2,020	June 21, 1951	22	235	170,400	239	-	172,700
1952	1240	3,140	June 10, 1952	32	270	195,800	266	-	193,200
1953	1280	1,900	June 14, 1953	14	194	140,500	192	-	139,300
1954	1340	526	May 21, 1954	11	92.0	66,630	94.2	-	68,200
1955	1390	1,280	Aug. 10, 1955	13	152	110,200	154	-	111,700
1956	1440	5,250	June 4, 1956	21	193	139,900	190	-	138,000
1957	1510	2,840	June 30, 1957	18	381	275,900	390	-	282,600
1958	1560	2,040	May 28, 1958	29	212	153,400	204	-	148,000
1959	1630	1,410	June 16, 1959	22	186	135,000	194	-	140,600
1960	1710	1,580	June 17, 1960	31	236	171,200	-	-	-

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

Location (revised).--Lat 39°49'42", long 104°57'30", in SW¼ sec.36, T.2 S., R.68 W., 160 ft downstream from bridge on highway to Welby, 0.6 mile upstream from mouth, and 2½ miles west of Derby.

Drainage area.--575 sq mi (revised).

Records available.--April to November 1914, March 1927 to September 1960. 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.--33 years (1927-60), 88.8 cfs (64,290 acre-ft per year).

Extremes.--1914, 1927-60: 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.--Natural flow of stream affected by transmountain diversions (see elsewhere in this report), storage reservoirs, diversions for irrigation of about 77,000 acres above station, and return flow from irrigated areas.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	6.24	15.7	10.3	11.0	21.4	13.1	11.7	167	567	308	146	18.9	108
1952	13.6	21.2	20	20	17	16.6	49.0	305	1,003	237	113	22.1	153
1953	12.5	14.1	22.1	16.6	14.3	12.2	8.72	78.4	619	149	35.3	12.6	82.6
1954	8.08	16.5	16.5	23.7	14.4	11.2	6.30	40.6	37.6	16.3	6.65	2.14	16.7
1955	8.39	8.33	5.30	8.80	12.5	11.7	8.81	45.6	201	60.5	53.0	23.9	37.3
1956	15.2	25.6	16.2	13.9	16.6	15.1	14.2	243	457	95.5	31.7	5.15	78.9
1957	6.37	14.2	20.8	14.9	11.9	12.2	19.5	335	1,200	989	167	30.9	236
1958	57.8	106	65.7	32.6	20.9	58.2	43.8	729	447	61.1	10.0	7.55	137
1959	8.52	19.6	24.3	26.5	26.6	26.5	35.4	125	478	141	51.3	41.0	81.6
1960	52.9	35.9	27	15	35	106	108	164	456	160	15.7	11.8	98.6

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	383	937	622	676	1,190	803	698	10,280	33,730	18,940	8,980	1,130	78,380
1952	836	1,260	1,230	1,230	978	1,020	2,910	18,760	59,660	14,590	6,940	1,310	110,700
1953	768	841	1,360	1,020	792	747	519	4,820	36,810	9,140	2,230	750	59,800
1954	497	983	1,020	1,460	799	687	375	2,500	2,240	1,000	409	127	12,100
1955	516	495	326	541	694	717	524	2,800	11,960	3,720	3,260	1,420	26,970
1956	933	1,520	998	857	956	928	843	14,930	27,210	5,870	1,950	306	57,300
1957	392	845	1,280	914	561	749	1,160	20,590	71,390	60,800	10,270	1,840	170,900
1958	3,560	6,290	4,040	2,010	1,160	3,590	2,610	44,850	25,570	3,760	617	449	99,500
1959	524	1,170	1,500	1,630	1,480	1,830	2,110	7,660	25,410	8,640	1,920	2,440	59,110
1960	3,250	2,140	1,660	922	2,010	6,510	6,410	10,090	27,120	9,830	968	704	71,610

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	54.0	39,070
1951	1210	1,970	June 18, 1951	1.8	108	78,380	110	79,750
1952	1240	2,860	June 10, 1952	-	153	110,700	152	110,400
1953	1280	1,940	June 14, 1953	3.0	82.6	59,800	819	59,330
1954	1340	209	May 21, 1954	.8	16.7	12,100	15.1	10,930
1955	1390	579	June 23, 1955	3.0	37.3	26,970	40.2	29,080
1956	1440	2,880	June 4, 1956	1.6	78.9	57,300	77.6	56,370
1957	1510	1,680	June 8, 1957	1.0	236	170,900	252	182,300
1958	1560	1,730	May 25, 1958	1.2	137	99,500	123	88,900
1959	1630	1,080	May 22, 1959	3.0	81.6	59,110	87.0	62,970
1960	1710	1,010	June 20, 1960	8	98.6	71,610	-	-

## 7205. South Platte River at Henderson, Colo.

Location.--Lat 39°55'12", long 104°52'18", in NW 1/4 sec. 14, 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 (revised).

Records available.--May 1926 to September 1960. 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.--34 years (1926-60), 326 cfs (236,000 acre-ft per year).

Extremes.--1926-60: 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.--Natural flow of stream affected by transmountain diversions, storage reservoirs, ground-water withdrawals, diversions for irrigation of about 253,000 acres, and return flow from irrigated areas. Records of chemical analyses and water temperatures for the period July 1955 to September 1957 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	53.5	71.1	58.5	166	131	43.3	40.0	346	682	556	355	105	218
1952	93.4	86.6	66.1	56.1	44.4	63.0	138	722	1,102	464	346	87.8	273
1953	59.8	65.0	63.1	47.6	44.8	47.3	25.4	355	783	488	455	87.2	211
1954	90.7	56.9	88.9	86.5	49.5	57.1	83.2	213	106	184	151	96.1	104
1955	37.3	56.7	37.0	41.6	59.7	62.9	114	396	326	146	492	275	169
1956	75.5	69.7	48.6	45.7	45.9	47.8	55.1	481	598	266	223	85.0	170
1957	65.9	34.1	56.9	78.2	143	142	134	1,978	2,092	1,442	923	243	615
1958	214	194	179	105	91.0	166	434	2,128	925	308	120	90.8	416
1959	79.5	75.8	59.2	62.2	89.3	80.6	230	426	672	351	237	87.5	204
1960	94.9	77.4	64.5	62.9	215	599	518	772	686	493	152	83.7	318

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	3,290	4,230	3,600	10,190	7,290	2,660	2,380	21,250	40,560	34,190	21,830	6,230	157,700
1952	5,740	5,160	4,070	3,450	2,560	3,870	8,210	44,380	65,560	28,510	21,250	5,230	198,000
1953	3,690	3,870	3,880	2,930	2,490	2,910	1,510	21,840	46,570	29,990	27,960	5,190	152,800
1954	5,580	3,390	5,470	5,320	2,750	3,510	4,950	13,100	6,290	11,320	8,060	5,720	75,460
1955	2,290	3,370	2,280	2,560	2,200	3,870	6,800	24,360	19,380	8,980	30,230	16,340	122,700
1956	4,640	4,150	2,990	2,810	2,640	2,940	3,280	29,550	35,610	16,360	13,700	5,060	123,600
1957	4,050	2,030	3,500	4,810	7,920	8,740	7,950	121,600	124,500	88,660	56,720	14,450	444,900
1958	13,160	11,570	11,010	6,440	5,060	10,210	25,810	130,800	55,040	18,930	7,380	5,400	300,800
1959	4,890	4,510	3,640	3,820	4,960	4,960	13,680	26,170	39,970	21,560	14,570	5,210	147,900
1960	5,840	4,600	3,960	3,870	12,360	36,850	30,850	47,460	40,810	30,290	9,320	4,980	231,200

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	158	114,700	
1951	1210	3,890	Aug. 3, 1951	5.0	218	157,700	223	161,600	
1952	1240	2,500	June 10, 1952	9.2	273	198,000	268	194,400	
1953	1280	2,840	July 9, 1953	10	211	152,800	215	155,800	
1954	1340	1,660	July 14, 1954	8.4	104	75,460	95.2	68,960	
1955	1390	3,280	Aug. 28, 1955	13	169	122,700	175	126,500	
1956	1440	3,970	Aug. 1, 1956	12	170	123,600	167	121,500	
1957	1510	14,800	May 9, 1957	9.0	615	444,900	651	471,100	
1958	1560	4,560	May 25, 1958	54	416	300,800	384	278,100	
1959	1630	3,200	May 21, 1959	52	204	147,900	206	149,300	
1960	1710	2,240	July 4, 1960	24	318	231,200	-	-	

7210. South Platte River at Fort Lupton, Colo.

Location.--Lat 40°04'50", long 104°49'18" in NW¼ sec.6, T.1 N., R.66 W., on left bank 50 ft downstream from bridge on State Highway 52 at Fort Lupton and 1 mile downstream from Big Dry Creek.

Drainage area.--5,010 sq mi (revised).

Records available.--May to September 1906, April 1929 to September 1957. Prior to October 1933 monthly discharge only, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 4,888.66 ft above mean sea level, datum of 1929. May to September 1906, staff gage at site 1 mile downstream at different datum. Apr. 29, 1929, to Jan. 17, 1935, water-stage recorder and Jan. 18 to June 20, 1935, staff gage, at site 250 ft downstream from present site at different datum. June 21, 1935, to Oct. 2, 1947, water-stage recorder at site 650 ft upstream from present site at present datum.

Average discharge.--28 years (1929-57), 345 cfs (249,800 acre-ft per year).

Extremes.--1906, 1929-57: Maximum discharge, 9,000 cfs Apr. 26, 1942, from rating curve extended above 6,700 cfs; maximum gage height, 7.57 ft May 9, 1957; minimum daily discharge, 4.4 cfs Oct. 29, 1956.

Remarks.--Natural flow of stream affected by transmountain diversions, storage reservoirs, ground-water withdrawals and diversions for irrigation of about 288,000 acres, and return flow from irrigated areas. Records of chemical analyses for the periods January 1950 to September 1951 and August 1954 to September 1955 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	74.5	141	99.7	201	143	71.2	75.4	301	577	525	367	107	224
1952	138	147	98.0	89.5	87.8	96.1	167	732	936	413	322	97.9	277
1953	75.8	126	120	101	92.4	90.4	51.5	282	637	442	322	55.0	200
1954	80.5	127	134	132	90.0	92.0	63.5	159	63.1	131	81.2	59.0	101
1955	25.1	47.9	70.2	75.7	76.8	74.8	115	323	287	91.2	493	233	160
1956	98.2	104	76.4	96.3	68.1	71.8	50.1	460	485	184	215	48.2	163
1957	36.0	84.4	91.6	109	175	180	170	1,867	1,996	1,421	852	501	610

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	4,580	8,380	6,130	12,390	7,950	4,380	4,490	18,510	34,320	32,250	22,590	6,390	162,400
1952	8,490	8,750	5,900	5,500	5,050	5,910	9,940	45,020	55,720	25,400	19,770	5,820	201,300
1953	4,680	7,500	7,400	6,220	5,130	5,560	3,060	17,330	37,900	27,170	19,810	3,270	145,000
1954	4,950	7,580	8,210	8,120	5,000	5,660	3,780	9,770	3,750	8,030	4,990	3,510	73,350
1955	1,540	2,850	4,320	4,660	4,260	4,600	6,850	19,890	17,080	5,610	30,300	13,840	115,800
1956	6,040	6,160	4,690	5,920	3,920	4,420	2,980	28,290	28,840	11,290	13,210	2,870	118,600
1957	2,210	5,020	5,630	6,710	9,700	11,090	10,140	114,800	118,800	87,400	52,370	17,920	441,800

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	167	120,900
1951	1210	4,060	Aug. 3, 1951	20	224	162,400	230	166,400
1952	1240	2,570	May 24, 1952	36	277	201,300	272	107,700
1953	1280	2,760	July 10, 1953	11	200	145,000	202	146,200
1954	1340	1,550	July 21, 1954	24	101	73,350	84.7	61,320
1955	1390	3,820	Aug. 28, 1955	16	160	115,800	171	124,000
1956	1440	4,130	Aug. 1, 1956	26	163	118,600	158	114,600
1957	1510	8,480	May 9, 1957	4.4	610	441,800	-	-
1958								
1959								
1960								

7220. North St. Vrain Creek at Longmont Dam, near Lyons, Colo.

Location.--Lat 40°13'30", long 105°21'00", in sec.16, T.3 N., R.71 W., on right bank three-quarters of a mile upstream from Longmont Dam and 4 miles west of Lyons.

Drainage area.--106 sq mi (revised).

Records available.--October 1925 to September 1953. Prior to October 1933 monthly discharge only, published in WSP 1310.

Gage.--Water-stage recorder. Altitude of gage is 6,050 ft (from topographic map). Prior to Oct. 8, 1936, at site 30 ft downstream at datum 1.00 ft higher. Prior to 1945, water-stage recorder and 1945-46 staff gage and Cippoletti weir a quarter of a mile downstream used for winter records.

Average discharge.--28 years (1925-33), 89.6 cfs (64,870 acre-ft per year).

Extremes.--1925-53: Maximum discharge, 1,630 cfs June 22, 1941 (gage height, 6.09 ft), from rating curve extended above 610 cfs; minimum daily, 3.3 cfs Dec. 19, 1939.

Remarks.--Diversions above station for irrigation of about 300 acres. Flow partly regulated by small reservoirs above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	30.4	24.6	13.7	10	9.0	12	35	255	484	285	147	60.0	114
1952	36.6	20.3	14	13	14	23	118	276	478	215	121	54.3	115
1953	24.3	18.6	11.2	9.56	13.0	14.9	30.5	113	343	152	83.2	39.3	71.0

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1,870	1,470	840	615	500	738	2,080	15,680	28,630	17,550	9,020	3,570	82,760
1952	2,250	1,210	861	799	805	1,410	7,000	16,990	28,430	13,190	7,410	3,230	83,580
1953	1,500	1,100	689	588	720	914	1,810	6,920	20,410	9,330	5,120	2,340	51,440

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	70.2	50,830
1951	1210	800	June 18, 1951	-	114	82,760	115	82,900
1952	1240	705	June 7, 1952	-	115	83,580	114	82,550
1953	1290	662	June 13, 1953	8.0	71.0	51,440	-	-

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

Location.--Lat 40°05'27", long 105°30'50", in NE $\frac{1}{4}$ SW $\frac{1}{4}$  sec.36, T.2 N., R.73 W., on left bank at downstream side of bridge, 1.3 miles north of Ward and  $\frac{3}{8}$  miles downstream from Brainard Lake.

Drainage area.--14.4 sq mi (revised).

Records available.--October 1925 to September 1927, October 1928 to September 1931, September 1934 to September 1960. 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.--11 years (1925-27, 1928-31, 1954-60), 30.0 cfs (21,720 acre-ft per year).

Extremes.--1925-27, 1928-31, 1954-60: 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.--No diversion above station. Slight regulation by several small lakes above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952													
1953													
1954												13.6	
1955	9.40	3.90	2.00	1.41	1.46	1.91	6.36	28.6	87.6	66.5	31.6	19.8	21.8
1956	4.06	3.35	2.85	2.23	2.09	2.00	4.19	66.4	130	46.3	27.2	13.2	25.3
1957	7.70	2.51	2.29	2.59	2.63	2.23	3.54	16.9	147	172	65.9	19.9	37.2
1958	11.3	6.02	4	3.3	3	2.8	3.6	86.4	126	45.9	26.5	9.51	27.5
1959	11.0	4.47	1.8	1.6	1.1	1.44	2.65	19.3	150	70.9	35.5	12.3	26.1
1960	10.8	4.76	2.5	1.5	1.5	3.58	7.07	30.3	133	61.8	29.3	21.6	25.7

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952													
1953													
1954												808	
1955	578	232	123	87	81	117	378	1,760	5,220	4,090	1,950	1,180	15,800
1956	250	200	175	137	120	123	249	4,080	7,750	2,840	1,670	785	18,380
1957	473	149	141	147	146	137	199	1,040	8,740	10,570	4,050	1,180	26,970
1958	696	358	246	203	167	172	214	5,310	7,490	2,820	1,650	566	19,870
1959	676	266	111	98	61	89	158	1,190	8,950	4,360	2,180	733	18,870
1960	664	283	154	92	86	221	421	1,900	7,900	3,600	1,820	1,280	18,620

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950								
1951								
1952								
1953								
1954	1390	-	-	-	-	-	-	-
1955	1390	148	June 23, 1955	1.1	21.8	15,800	21.4	15,490
1956	1440	220	June 2, 1956	1.6	25.3	18,380	25.5	18,520
1957	1510,1560	462	June 29, 1957	1.9	37.2	26,970	38.0	27,510
1958	1560	278	June 7, 1958	-	27.5	19,870	27.1	19,620
1959	1630	252	June 14, 1959	-	26.1	18,870	26.1	18,920
1960	1710	221	June 15, 1960	-	25.7	18,620	-	-



7229. Middle St. Vrain Creek near Raymond, Colo.

Location.--Lat 40°07'50", long 105°31'10", in SW $\frac{1}{4}$  sec.13, T.2 N., R.73 W., on left bank 40 ft upstream from bridge at Middle St. Vrain campground, 0.9 mile upstream from bridge on State Highway 160, 1 mile west of Peaceful Valley,  $3\frac{1}{2}$  miles upstream from Cave Creek, 4 miles southwest of Raymond, and 4 miles north of Ward.

Drainage area.--16.8 sq mi.

Records available.--September 1956 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 8,680 ft (from topographic map).

Extremes.--1956-58: Maximum discharge, 408 cfs June 29, 1957 (gage height, 5.26 ft); minimum daily, 1.8 cfs Jan. 26-31, 1957.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1957	5.77	3.62	2.66	2.17	2.26	2.29	4.43	43.4	232	191	77.0	22.7	49.4
1958	14.2	8.7	4.63	3.3	3	3	3.94	119	152	54.7	34.0	12.6	34.6

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1957	355	215	163	133	126	141	264	2,670	13,820	11,770	4,730	1,350	35,740
1958	873	518	285	203	167	184	235	7,350	9,040	3,360	2,090	750	25,060

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1956	1510	-	-	-	-	-	-	-
1957	1510	408	June 29, 1957	1.8	48.4	35,740	50.7	36,680
1958	1560	298	June 6, 1958	-	34.6	25,060	-	-

## 7240. St. Vrain Creek at Lyons, Colo.

Location (revised).--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 (revised).

Records available.--August 1887 to September 1891, June 1895 to September 1960. Monthly discharge only for some periods, published in WSP 1810. 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.--69 years (1887-91, 1895-1960), 132 cfs (95,560 acre-ft per year).

Extremes.--1887-91, 1895-1960: 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.

Remarks.--Diversions above station for irrigation of about 20,000 acres. Flow partly regulated by small reservoirs above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	26.4	19.4	11.5	9.73	14.6	16.4	70.9	351	638	392	244	81.9	157
1952	34.0	22.4	10.9	16.6	12.0	14.8	193	468	793	305	168	70.2	175
1953	24.3	16.2	13.2	13.8	12.3	8.49	41.9	166	443	207	108	44.6	91.7
1954	11.3	11.7	10.5	9.12	4.37	7.84	17.9	129	148	130	45.8	25.4	46.3
1955	21.1	6.57	7.84	7.43	6.32	8.10	18.9	120	276	206	100	28.6	67.6
1956	5.74	9.94	9.62	7.28	6.72	13.5	28.0	258	423	158	106	27.8	87.7
1957	3.64	9.36	6.57	4.81	5.48	4.21	161	644	853	233	59.8	220	
1958	37.5	20.8	11.4	6.75	8.02	8.45	73.4	604	456	139	74.6	26.8	123
1959	7.01	9.75	7.72	3.52	7.69	13.3	105	235	528	202	91.2	32.4	104
1960	50.5	34.2	13.3	6.48	10.2	34.7	67.9	250	439	213	82.9	32.1	103

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1,620	1,160	709	596	813	1,010	4,220	21,590	37,940	24,090	14,980	4,870	113,600
1952	2,090	1,330	668	1,020	690	908	11,470	28,760	47,190	18,770	10,300	4,180	127,400
1953	1,490	964	811	847	683	522	2,500	10,190	26,340	12,720	6,640	2,650	66,360
1954	694	698	647	561	243	482	1,070	7,950	8,800	8,020	2,810	1,510	33,480
1955	1,300	391	482	457	351	498	1,130	7,350	16,450	12,660	6,160	1,700	48,930
1956	353	591	592	448	386	830	1,660	15,860	25,150	9,800	6,550	1,650	63,670
1957	224	557	404	296	304	259	9,560	39,630	50,760	39,120	14,350	3,560	159,000
1958	2,300	1,240	699	415	445	519	4,370	37,110	27,120	8,530	4,590	1,590	88,930
1959	431	580	475	217	427	816	6,260	14,450	31,440	12,400	5,610	1,930	75,040
1960	3,110	2,030	818	398	589	2,130	4,040	15,350	26,150	13,110	5,100	1,910	74,740

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	88.7	64,240	
1951	1210	3,920	Aug. 3, 1951	2.3	157	113,600	158	114,200	
1952	1240	1,610	June 8, 1952	4.8	175	127,400	174	126,600	
1953	1280	970	June 13, 1953	5.0	91.7	66,360	90.0	65,130	
1954	1340	285	May 21, 1954	1.0	46.3	33,480	46.4	33,620	
1955	1390	680	July 24, 1955	1.0	67.6	48,930	66.7	48,290	
1956	1440	749	June 3, 1956	.5	87.7	63,670	87.2	63,320	
1957	1510	3,060	May 9, 1957	.2	220	159,000	224	162,100	
1958	1560	1,290	May 8, 1958	2.7	123	88,930	119	86,180	
1959	1650	857	June 15, 1959	.7	104	75,040	110	79,510	
1960	1710	717	June 18, 1960	2.6	103	74,740	-	-	

## 7245. Lefthand Creek near Boulder, Colo.

Location.--Lat 40°07'30", long 105°18'15", in NE¼ sec.23, T.2 N., R.71 W., on right bank 0.1 mile upstream from diversion dam of Lefthand ditch, 0.1 mile downstream from Spruce Gulch, and 7½ miles north of Boulder.

Drainage area.--52.0 sq mi; at site prior to Mar. 12, 1957, 49.0 sq mi (revised).

Records available.--October 1949 to December 1953, October 1955 to September 1957. Records for May 1929 to September 1931 and April 1947 to September 1949 not equivalent (records do not include flow of small power ditch, capacity, 7.5 cfs, which diverted above station; discharge measurements of the ditch are published for October 1947 to September 1949).

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 5,710 ft (from topographic map). Prior to Mar. 12, 1957, at site 0.9 mile upstream at different datum.

Average discharge.--6 years (1949-53, 1955-57), 40.7 cfs (29,470 acre-ft per year).

Extremes.--1949-53, 1955-57: Maximum discharge, 785 cfs Aug. 3, 1951 (gage height, 5.39 ft, site and datum then in use); minimum daily, 1.0 cfs Jan. 4, 1950.

Flood of June 4, 1949, reached a discharge of 1,140 cfs at site half a mile upstream. Remarks.--A large part of flow is water diverted from South St. Vrain Creek for irrigation of lands along Lefthand Creek below station.

Monthly and yearly mean discharge, in cubic feet per second, of Lefthand Creek near Boulder, Colo.

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	7.01	5.39	3.65	3.42	3.91	3.26	29.5	82.5	135	134	78.0	27.8	43.0
1952	14.7	7.98	6.12	6.26	5.80	5.78	51.3	108	173	111	64.2	25.1	48.4
1953	6.72	4.87	4.27	3.35	3.20	4.85	13.8	58.2	156	75.0	47.4	17.4	33.0
1954	7.09	4.79	3.81	-	-	-	-	-	-	-	-	-	-
1956	5.25	4.36	4.75	4.17	2.53	4.97	11.9	91.7	144	52.1	33.3	20.6	31.6
1957	5.38	4.16	3.99	†3.64	5.46	4.33	51.9	236	134	165	76.0	24.6	59.8

† Corrected.

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	431	321	224	210	217	201	1,750	5,070	8,020	8,230	4,800	1,650	31,120
1952	906	475	376	385	334	356	3,050	6,630	10,310	6,850	3,950	1,490	35,110
1953	413	290	262	206	178	298	820	3,580	9,270	4,610	2,920	1,040	23,890
1954	436	285	234	-	-	-	-	-	-	-	-	-	-
1956	323	259	292	256	145	305	707	5,640	8,570	3,200	2,040	1,230	22,970
1957	331	247	245	224	303	266	3,090	14,480	7,960	10,000	4,680	1,460	43,290

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet		
		Discharge	Date							
1950	-	-	-	-	-	-	28.5	-	20,610	-
1951	1210	785	Aug. 3, 1951	2.2	43.0	31,120	44.1	-	31,920	-
1952	1240	252	June 15, 1952	3.3	48.4	35,110	47.3	-	34,320	-
1953	1280	245	June 13, 1953	2.1	33.0	23,890	33.0	-	23,880	-
1954	1280	-	-	-	-	-	-	-	-	-
1956	1440	230	May 22, 1956	2.2	31.6	22,970	41.6	-	22,920	-
1957	1510	707	May 9, 1957	2.7	59.8	43,290	-	-	-	-

7250. Lefthand Creek at mouth, at Longmont, Colo.

Location.--Lat 40°08'50", long 105°06'05", in SW¼ Sec. 10, T. 2 N., R. 69 W., on left bank 40 ft downstream from bridge on U. S. Highways 87 and 287, 1.0 mile upstream from mouth, and 1.3 miles south of city hall in Longmont.

Drainage area.--72.0 sq mi (revised).

Records available.--March 1927 to September 1942, August 1953 to December 1955. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 4,940.29 ft above mean sea level (State Highway Department bench mark). Mar. 1, 1927, to Sept. 30, 1942, at different datums.

Datum lowered 1.00 ft Aug. 25, 1942.

Average discharge.--17 years (1927-42, 1953-55), 12.9 cfs (9,340 acre-ft per year).

Extremes.--1927-42, 1953-55: Maximum discharge, 812 cfs Sept. 2, 1938 (gage height, 6.10 ft, datum then in use), from rating curve extended above 330 cfs on basis of slope-area measurement of peak flow; minimum daily, 0.4 cfs Sept. 20, 1939.

Remarks.--Diversion above station for irrigation of about 12,000 acres. Flow regulated by storage for irrigation. Flow is mostly return waste water from ditches that divert water from other streams.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1953	-	-	-	-	-	-	-	-	-	-	-	10.5	-
1954	9.49	7.82	4.62	4.03	3.95	3.79	2.13	3.78	5.30	6.40	4.44	2.99	4.91
1955	4.35	4.40	3.09	2.62	2.37	2.55	3.01	2.99	8.07	13.5	10.9	9.15	5.60
1956	8.10	4.77	3.60	-	-	-	-	-	-	-	-	-	-

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1953	-	-	-	-	-	-	-	-	-	-	-	622	-
1954	584	466	284	248	219	233	127	233	315	393	273	178	3,550
1955	268	262	190	161	132	156	179	184	480	829	669	545	4,060
1956	498	284	221	-	-	-	-	-	-	-	-	-	-

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet		
		Discharge	Date							
1953	1390	a14	Aug. 20, 1953	-	-	-	-	-	-	-
1954	1390	15	July 14, 1954	1.7	4.91	3,550	4.06	-	2,940	-
1955	1390	150	Aug. 19, 1955	1.8	5.60	4,060	5.99	-	4,340	-
1956	1390	b14	Oct. 23, 1955	-	-	-	-	-	-	-

a Maximum during period August to September.

b Maximum during period October to December.

## PLATTE RIVER BASIN

7255. Middle Boulder Creek at Nederland, Colo.

Location.--Lat 39°57'42", long 105°30'14", in NE $\frac{1}{4}$ SE $\frac{1}{4}$  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 (revised).

Records available.--June 1907 to September 1960. 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.--53 years (1907-60), 54.0 cfs (39,090 acre-ft per year).

Extremes.--1907-60: 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.--No diversion above station. Flow regulated at times by Jasper Lake (capacity, 325 acre-ft). North Beaver Creek entered Middle Boulder Creek downstream from station June 1 to Dec. 31, 1907, March 1911 to Dec. 31, 1916.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	11.8	7.27	5.79	4.79	4.04	5.37	18.7	151	291	182	67.2	22.2	64.5
1952	16.4	11.9	7.82	6.15	5.18	4.48	26.2	183	394	153	61.3	19.8	72.3
1953	13.8	5.43	4.55	4.84	4.02	5.64	13.6	84.4	296	116	46.4	13.0	50.7
1954	8.95	5.71	3.97	3.50	3.23	3.95	18.6	82.9	92.5	53.4	17.9	18.0	26.2
1955	20.9	13.3	7.43	5.11	3.00	5.13	19.7	90.3	168	93.2	40.5	13.7	40.2
1956	12.4	6.97	5.85	4.94	4.44	6.08	21.3	185	244	83.3	40.4	12.9	52.3
1957	8.12	12.1	5.83	4.62	5.51	5.53	15.6	103	370	316	110	38.0	85.2
1958	25.0	16.1	7.24	5.70	7.40	7.77	18.2	251	256	83.0	32.4	16.8	60.8
1959	9.88	7.76	7.17	6.33	5.86	6.54	18.5	110	321	125	59.0	22.0	58.3
1960	35.4	20.9	10.4	8.77	5.93	9.82	45.7	140	292	136	50.3	27.1	65.2

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	728	433	356	294	224	330	1,110	9,300	17,290	11,170	4,130	1,320	46,680
1952	1,010	709	481	378	298	276	1,560	10,040	23,420	9,390	3,770	1,180	52,510
1953	850	323	280	298	224	347	809	5,190	17,580	7,160	2,850	774	36,680
1954	550	340	244	215	180	243	1,110	5,100	5,500	3,280	1,100	1,070	18,930
1955	1,280	793	457	314	167	315	1,170	5,550	9,990	5,730	2,490	814	29,070
1956	760	415	360	303	255	374	1,270	11,390	14,500	5,120	2,490	769	38,010
1957	499	717	358	284	306	340	929	6,310	22,030	19,440	6,770	2,260	60,240
1958	1,540	960	445	351	411	478	1,080	15,450	15,240	5,100	1,990	1,000	44,040
1959	607	462	441	389	326	402	1,100	6,740	19,130	7,680	3,630	1,310	42,220
1960	2,170	1,240	640	540	341	604	2,720	8,590	17,400	8,370	3,090	1,610	47,320

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	40.1	-	29,030
1951	1210	800	June 18, 1951	3.5	64.5	46,680	65.4	47,370	
1952	1240	648	June 10, 1952	4.1	72.3	52,510	71.3	51,760	
1953	1280	730	June 13, 1953	3.4	50.7	36,680	50.2	36,370	
1954	1340	208	May 20, 1954	2.2	26.2	18,930	28.1	20,330	
1955	1390	270	June 13, 1955	2.4	40.2	29,070	38.8	28,080	
1956	1440	528	May 23, 1956	3.9	52.3	38,010	52.4	38,040	
1957	1510	745	June 29, 1957	3.1	83.2	60,240	85.1	61,810	
1958	1560	622	May 23, 1958	4.9	60.8	44,040	58.9	42,610	
1959	1630	480	June 14, 1959	5.0	58.3	42,220	61.8	44,760	
1960	1710	460	June 17, 1960	4.7	65.2	47,320	-	-	

## 7270. Boulder Creek near Orodell, Colo.

Location.--Lat 40°00'23", long 105°19'49", in NE $\frac{1}{4}$ SW $\frac{1}{4}$  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 Four-mile Creek, and 3 miles southwest of courthouse in Boulder.

Drainage area.--102 sq mi (revised).

Records available.--August to October 1887, April to October 1888, October 1906 to November 1914, March 1916 to September 1960. 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.--52 years (1906-14, 1916-60), 92.7 cfs (67,110 acre-ft per year).

Extremes.--1887-88, 1906-13, 1916-60: 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, 1935.

Revisions.--The maximum discharge for water year 1914, as published in WSP 1310, is not the maximum discharge for the year and should not be used; maximum for water year not determined.

Remarks.--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.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	15.0	10.9	11.0	23.7	21.9	19.7	60.2	155	420	340	125	58.3	105
1952	34.6	42.3	38.0	20.6	46.1	57.3	99.0	189	538	229	119	62.0	123
1953	25.9	15.1	32.6	31.2	39.4	40.4	37.3	116	375	200	96.7	41.8	87.7
1954	13.8	13.5	38.1	21.5	24.1	19.7	31.1	118	132	95.4	40.0	23.6	47.8
1955	23.7	18.4	12.0	9.39	10.8	11.8	26.1	86.3	209	174	76.3	32.0	57.7
1956	11.5	8.18	7.70	5.65	6.04	22.8	49.7	229	353	110	58.8	36.2	74.7
1957	31.5	10.2	5.91	6.91	9.20	13.0	56.7	245	522	566	208	66.1	146
1958	35.8	43.2	37.1	44.5	51.2	55.5	68.4	209	386	127	66.1	39.3	96.7
1959	26.5	25.0	42.3	22.6	46.8	53.9	51.9	132	321	192	30.0	55.5	86.4
1960	43.6	54.6	50.9	15.6	30.2	62.3	80.7	126	401	201	84.9	58.0	101

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	923	650	678	1,460	1,220	1,210	3,580	9,550	24,980	20,930	7,670	3,470	76,320
1952	2,130	2,520	2,340	1,280	2,650	3,520	5,890	11,600	32,020	14,090	7,290	3,690	89,020
1953	1,590	899	2,010	1,920	2,190	2,490	2,220	7,150	22,300	12,290	5,950	2,490	63,500
1954	848	805	2,340	1,320	1,340	1,210	1,850	7,270	7,870	5,870	2,460	1,400	34,580
1955	1,460	1,100	736	577	599	723	1,550	5,310	12,440	10,710	4,690	1,900	41,800
1956	708	487	473	347	347	1,400	2,960	14,050	20,980	6,740	3,620	2,160	54,270
1957	1,930	610	364	425	511	799	3,370	15,070	31,080	34,630	12,800	3,930	105,700
1958	2,200	2,570	2,280	2,740	2,840	3,290	4,070	12,860	22,950	7,800	4,070	2,340	70,010
1959	1,630	1,490	2,600	1,390	2,600	3,320	3,090	8,100	19,120	11,800	5,530	3,300	63,970
1960	2,680	3,250	3,130	959	1,740	3,830	4,800	7,750	23,870	12,330	5,220	3,450	73,010

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	67.4	48,790
1951	1210	1,220	June 21, 1951	2.4	105	76,320	112	81,060
1952	1240	1,180	June 7, 1952	4.5	123	89,020	119	86,530
1953	1280	786	June 11, 1953	3.4	87.7	63,500	87.0	62,990
1954	1340	374	May 20, 1954	3.8	47.8	34,580	46.8	33,890
1955	1390	436	June 26, 1955	4.0	57.7	41,800	55.5	40,170
1956	1440	588	May 23, 1956	1.2	74.7	54,270	76.5	55,510
1957	1510	1,010	June 29, 1957	2.0	146	109,700	152	109,900
1958	1560	855	June 6, 1958	14	96.7	70,010	94.9	68,680
1959	1630	602	June 21, 1959	5.3	88.4	63,970	93.0	67,310
1960	1710	776	June 16, 1960	8.9	101	73,010	-	-

7275. Fourmile Creek at Orodell, Colo.

Location--Lat 40°01'10", long 105°19'30", in SE $\frac{1}{4}$  sec.27, T.1 N., R.71 W., on left bank at old Orodell, a quarter of a mile upstream from mouth and 2 miles west of courthouse in Boulder.

Drainage area--24.1 sq mi (revised).

Records available--April 1947 to September 1953.

Gage--Water-stage recorder. Altitude of gage is 5,750 ft (from topographic map).

Average discharge--6 years (1947-53), 6.55 cfs (4,740 acre-ft per year).

Extremes--1947-53: Maximum discharge, 256 cfs June 6, 1949 (gage height, 3.66 ft), from rating curve extended above 110 cfs; no flow Sept. 1-7, 15-18, 1948.

Remarks--Diversions for irrigation above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1.19	1.15	0.67	0.52	0.95	0.83	10.5	34.8	27.2	7.56	3.74	1.31	7.56
1952	1.85	1.85	1.45	1.47	1.41	1.57	20.1	46.5	28.1	5.13	1.40	1.44	9.27
1953	.61	.84	.98	1.02	1.04	1.62	4.03	15.0	18.8	2.96	1.25	3.41	4.29

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	73	68	41	32	53	51	624	2,140	1,620	456	230	78	5,480
1952	114	110	89	91	81	96	1,200	2,860	1,670	315	86	26	6,740
1953	37	50	60	63	56	100	240	923	1,120	182	77	203	3,110

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	3.22	-	2,330
1951	1210	64	May 23, 1951	0.3	7.56	5,480	7.74	-	5,610
1952	1240	142	Aug. 23, 1952	.3	9.27	6,740	9.05	-	6,570
1953	1280	34	May 29, 1953	.4	4.29	3,110	-	-	-

9-225. Moffat water tunnel at East Portal, Colo.  
(Transmountain diversion)

Location--Lat 39°54'10", long 105°38'50", in sec.2, T.2 S., R.74 W., at East Portal.

Records available--October 1935 to September 1960.

Gage--Water-stage recorder and 15-foot Parshall flume. Altitude of gage is 9,200 ft (from topographic map).

Remarks--Diversion is 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 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 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 redirected 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 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.

Cooperation--Records furnished by State engineer of Colorado.

Monthly and yearly diversion, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	930	179	0	0	0	0	0	5,980	9,210	11,660	3,990	1,850	33,800
1952	1,490	48	0	0	0	0	0	3,090	11,480	8,960	4,040	2,120	31,230
1953	1,320	290	0	0	0	0	0	4,080	18,090	6,650	3,180	1,460	35,070
1954	1,190	338	0	0	0	0	582	5,780	5,550	3,140	1,680	1,280	19,540
1955	1,440	1,020	228	0	0	0	254	6,720	13,940	6,800	4,670	1,950	37,020
1956	1,280	77	0	0	0	0	0	17,590	25,030	4,880	2,940	1,630	53,430
1957	1,260	0	0	0	0	0	215	3,810	6,660	19,700	11,100	5,430	48,180
1958	87	0	0	0	0	0	0	0	3,050	6,000	2,660	1,850	13,650
1959	1,380	583	0	0	0	0	225	7,100	29,380	11,220	5,870	3,050	58,810
1960	3,360	1,230	795	706	547	556	1,360	11,030	19,700	9,960	4,370	2,680	56,290

7295. South Boulder Creek near Eldorado Springs, Colo.

Location.--Lat 39°55'52", long 105°17'43", in SE $\frac{1}{4}$  sec.26, T.1 S., R.71 W., on left bank 0.2 mile downstream from South Draw, 1 mile west of Eldorado Springs, and 5 miles south of Boulder.

Drainage area.--109 sq mi.

Records available.--April 1888 to October 1892, May 1895 to September 1901, August 1904 to September 1960. 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" and January 1911 to December 1913 as "at Eldorado Springs." Records for periods June 1900 to September 1901, August 1904 to September 1908, and October 1909 to September 1911 are not adjusted for diversions above station.

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.--54 years (1895-99, 1908-9, 1911-60), 77.8 cfs (56,320 acre-ft per year), adjusted for storage and diversion.

Extremes.--1888-92, 1895-1901, 1904-60: 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.--Many small diversions above station for irrigation. Most of water imported from Colorado River basin through Moffat water tunnel is diverted  $\frac{1}{2}$  miles above station. Flow partly regulated, since May 1, 1955, by Gross Reservoir (capacity, 43,060 acre-ft), about 6 miles above station. In some years water from South Boulder Creek was also stored and then diverted to Denver water system.

Monthly and yearly mean discharge, in cubic feet per second (adjusted)

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	10.7	11.3	9.75	6.69	9.90	12.5	45.9	259	508	189	57.1	16.5	94.8
1952	13.2	11.9	8.35	8.98	8.20	13.6	89.0	252	511	137	55.4	18.3	93.6
1953	7.40	7.78	7.07	10.1	7.72	12.6	25.3	133	351	90.5	34.0	7.98	57.8
1954	5.27	8.88	9.09	6.15	5.90	6.93	19.5	82.9	64.6	38.7	12.9	17.5	23.3
1955	13.3	8.49	7.96	5.33	4.42	5.37	25.2	125	207	77.3	58.3	25.1	47.0
1956	10.6	6.98	6.71	5.2	4.2	7.53	12.7	191	262	78.5	44.3	11.8	53.6
1957	8.73	7.13	9.86	6.24	6.08	12.9	67.8	154	355	388	103	32.2	96.4
1958	36.1	27.6	23.3	5.39	5.15	7.27	24.5	89.6	231	85.2	34.6	13.2	48.7
1959	8.73	6.75	5.01	4	5	22.3	50.9	142	416	113	32.6	10.6	68.0
1960	38.3	30.5	7.7	8	23	26.0	97.6	166	340	119	44.3	17.1	76.3

Monthly and yearly discharge, in acre-feet (adjusted)

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	660	672	600	412	550	768	2,730	15,910	30,210	11,630	3,510	979	68,630
1952	810	708	513	546	472	837	5,290	15,480	30,390	8,400	3,410	1,090	67,950
1953	455	463	435	620	429	775	1,510	8,170	20,860	5,570	2,090	475	41,850
1954	324	528	559	378	327	426	1,160	5,100	3,840	2,380	791	1,040	16,850
1955	819	505	489	327	246	330	1,500	7,670	12,300	4,750	3,580	1,490	34,010
1956	651	415	413	320	242	463	758	11,770	15,610	4,830	2,730	700	38,900
1957	537	424	606	384	337	791	4,030	24,450	33,740	23,840	6,340	1,920	97,400
1958	2,220	1,640	698	475	581	833	2,780	20,630	17,020	5,410	1,760	786	54,830
1959	*297	*413	*526	*510	*465	*1,060	*3,550	*12,120	*25,370	*6,690	*1,900	*1,100	*54,000
1960	*2,000	*1,400	*1,060	*663	*822	*2,310	*5,600	*17,030	*19,640	*7,450	*2,120	*1,330	*61,420

\* Revised.

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30										Calendar year			
		Observed					Adjusted					Observed		Adjusted	
		Momentary maximum		Minimum day	Mean	Runoff in acre-feet	Mean	Runoff in acre-feet	Mean	Runoff in acre-feet	Mean	Runoff in acre-feet	Mean	Runoff in acre-feet	
		Discharge	Date												
1950	-	-	-	-	-	-	-	-	-	-	54.5	39,490	-	-	-
1951	1210	2,370	June 18, 1951	4.0	94.8	68,630	-	-	-	-	94.9	68,730	-	-	-
1952	1240	1,080	June 4, 1952	3.0	93.6	67,950	-	-	-	-	92.9	67,270	-	-	-
1953	1280	968	June 15, 1953	2	57.8	41,850	-	-	-	-	57.9	41,910	-	-	-
1954	1340	247	May 21, 1954	4	23.3	16,850	-	-	-	-	23.8	17,260	-	-	-
1955	1390	478	June 9, 1955	4	47.0	34,010	-	-	-	-	46.5	33,670	-	-	-
1956	1440	852	May 29, 1956	-	53.6	38,900	-	-	-	-	53.7	38,990	53.7	38,990	
1957	1510	905	July 21, 1957	2.0	96.4	69,790	135	97,400	102	73,510	139	73,510	139	100,400	
1958	1560	345	June 6, 1958	-	48.0	35,250	75.7	54,830	43.1	31,210	*71.1	*51,510	*71.1	*51,510	
1959	1630	680	June 17, 1959	2.2	68.0	49,240	*74.6	*54,000	72.7	52,650	*79.0	*57,230	*79.0	*57,230	
1960	1730	556	June 6, 1960	-	76.3	55,380	*64.6	*61,420	-	-	-	-	-	-	-

\* Revised.

## 7303. Coal Creek near Plainview, Colo.

Location.--Lat 39°52'40", long 105°16'36", in SE¼ sec.13, T.2 S., R.71 W., on left bank 40 ft upstream from culvert on State Highway 72, 1½ miles south of Plainview, 5 miles downstream from Beaver Creek, and 9 miles north of Golden.

Drainage area.--15.1 sq mi.

Records available.--August 1959 to September 1960.

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

Extremes.--1959-60: Maximum discharge, 164 cfs May 7, 1960 (gage height, 1.92 ft), from rating curve extended above 81 cfs; no flow Aug. 4-8, Aug. 11 to Sept. 30, 1960.

Remarks.--No diversion above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1959	-	-	-	-	-	-	-	-	-	-	0.13	0.03	-
1960	2.51	3.44	0.70	0.57	0.64	7.61	15.4	39.1	4.55	1.11	.02	0	6.34

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1959	-	-	-	-	-	-	-	-	-	-	7.9	2.0	-
1960	155	205	43	35	37	468	916	2,410	271	68	1.0	0	4,610

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1959	1710	a2.3	Aug. 2, 1959	-	-	-	-	-
1960	1710	164	May 7, 1960	0	6.34	4,610	-	-

a Maximum during period August to September.

## 7305. Boulder Creek at mouth, near Longmont, Colo.

Location.--Lat 40°08'05", long 105°01'00", in SW¼ sec.16, T.2 N., R.68 W., on right bank 200 ft downstream from Burlington Railway bridge, 1,800 ft upstream from State Highway 254, 2½ miles upstream from mouth, and 5 miles southeast of city hall in Longmont.

Drainage area.--439 sq mi (revised).

Records available.--March 1927 to September 1949, May 1951 to September 1955. Prior to October 1933 monthly discharge only, published in WSP 1310. Published as "near mouth, near Longmont" 1934.

Gage.--Water-stage recorder. Altitude of gage is 4,880 ft (from topographic map). Prior to June 10, 1939, at site half a mile downstream at different datum. June 10, 1939, to Sept. 30, 1949, at site 2,000 ft downstream at different datum. Datum raised 2.0 ft June 10, 1939.

Average discharge.--26 years (1927-49, 1951-55), 55.9 cfs (40,470 acre-ft per year).

Extremes.--1927-49, 1951-55: Maximum discharge, 4,410 cfs Sept. 3, 1938 (gage height, 6.94 ft, site and datum then in use), from rating curve extended above 340 cfs on basis of slope-area measurement of peak flow; no flow at times in 1934-36, 1942, 1946, 1954.

Remarks.--Diversion above station for irrigation of about 90,000 acres.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	-	-	-	64.4	227	30.5	140	2.29	-
1952	19.8	61.4	60.0	80	70	87.5	205	479	427	7.52	1.36	.75	125
1953	.88	2.20	14.8	38.9	30.8	32.1	30.1	27.7	34.5	5.35	1.64	2.08	18.3
1954	1.03	.62	3.58	20	6.27	8.37	1.15	2.57	1.22	1.09	.55	.54	3.93
1955	.70	.48	1.76	14.9	12.6	15.0	3.00	1.06	18.2	1.33	5.49	1.35	6.28

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	-	-	-	3,960	13,530	1,880	8,640	136	-
1952	1,220	3,660	3,690	4,920	4,030	5,380	12,170	29,420	25,400	462	84	45	90,480
1953	54	131	908	2,390	1,710	1,980	1,790	1,710	2,050	329	101	124	13,280
1954	63	37	220	1,230	348	515	69	158	73	67	34	32	2,850
1955	43	29	108	916	700	920	179	65	1,090	82	338	80	4,550

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950								
1951	1210	1,540	Aug. 3, 1951	-	-	-	-	-
1952	1240	1,990	May 24, 1952	0.7	125	90,480	114	63,000
1953	1280	247	May 29, 1953	.2	18.3	13,280	17.3	12,500
1954	1340	a26	Jan. 14, 1954	0	3.93	2,850	3.74	2,710
1955	1390	336	Aug. 19, 1955	.2	6.28	4,550	-	-

a Maximum observed.



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

Location.--Lat 40°15'29", long 104°52'45", in SE $\frac{1}{4}$  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 (revised).

Records available.--July 1904 to December 1906, April to December 1915, March 1927 to September 1960. Prior to October 1933 monthly discharge only, published in WSP 1310.

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

Average discharge.--35 years (1904-6, 1927-60), 192 cfs (139,000 acre-ft per year).

Extremes.--1904-6, 1915, 1927-60: Maximum discharge, 11,300 cfs Sept. 3, 1938 (gage height, 8.93 ft), from rating curve extended above 4,700 cfs; minimum daily, 12 cfs Apr. 23, 1935.

Remarks.--Diversion above station for irrigation of about 177,000 acres. Flow partly regulated by many small reservoirs above station. Records of chemical analyses for the period February 1955 to August 1956 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	57.7	67.0	63.4	49.4	68.0	50.2	103	172	565	269	600	130	183
1952	169	183	123	130	136	134	406	1,201	1,205	230	165	113	349
1953	87.4	83.8	78.7	81.5	81.4	76.5	88.8	93.6	183	195	113	97.6	105
1954	57.3	66.3	66.0	62.0	48.5	48.5	27.9	45.8	58.7	85.1	54.4	44.7	55.4
1955	43.9	43.1	46.7	46.3	49.5	59.0	39.6	43.8	94.3	61.3	80.4	67.6	56.3
1956	67.5	62.2	55.9	45.6	41.3	48.7	40.7	66.0	128	118	110	70.1	73.0
1957	55.1	69.8	61.6	49.5	60.4	59.6	209	2,009	1,626	802	320	166	460
1958	234	228	153	134	152	158	208	1,579	651	177	151	*110	330
1959	116	101	104	88.1	112	119	238	476	438	206	209	159	198
1960	175	181	184	81.1	110	187	114	546	374	183	166	103	199

† Corrected.

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	3,550	3,990	3,900	3,030	3,780	3,090	6,100	10,580	33,590	16,540	36,900	7,740	132,800
1952	10,410	10,870	7,540	8,020	7,800	8,210	24,160	73,850	71,710	14,150	10,160	6,700	253,600
1953	5,370	4,990	4,840	5,010	4,520	4,700	5,290	5,750	10,910	11,980	6,930	5,810	76,100
1954	3,520	3,950	4,060	3,810	2,690	2,990	1,660	2,810	3,370	5,230	3,350	2,660	40,100
1955	2,700	2,570	2,870	2,850	2,750	3,630	2,370	2,690	5,610	3,770	4,940	4,020	40,770
1956	4,150	3,700	3,440	2,800	2,380	3,000	2,420	5,290	7,620	7,240	6,780	4,170	52,990
1957	3,390	4,160	3,790	3,040	3,350	3,670	12,410	23,500	96,740	49,290	19,680	9,900	332,900
1958	14,420	13,570	9,430	8,240	8,470	9,740	12,380	97,090	38,750	10,910	9,300	6,530	238,800
1959	7,140	6,030	6,410	5,420	6,240	7,300	14,190	29,270	26,060	12,690	12,880	9,440	143,100
1960	10,750	10,770	10,080	4,980	6,330	11,520	6,760	33,600	22,230	11,250	10,220	6,130	144,800

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	83.7	60,610
1951	1210	5,390	Aug. 4, 1951	25	183	132,800	207	150,200
1952	1240	3,480	May 24, 1952	78	349	253,600	331	240,000
1953	1280	593	June 14, 1953	34	105	76,100	100	72,430
1954	1340	178	July 15, 1954	18	55.4	40,100	50.7	36,710
1955	1390	360	June 15, 1955	16	56.3	40,770	60.7	43,920
1956	1440	589	July 28, 1956	24	73.0	52,990	73.1	53,040
1957	1510	9,450	May 9, 1957	34	460	332,900	496	359,000
1958	1560	4,420	May 9, 1958	90	330	238,800	305	221,000
1959	1630	1,890	May 23, 1959	64	198	143,100	214	155,100
1960	1710	1,210	May 6, 1960	25	199	144,800	-	-

## PLATTE RIVER BASIN

9-120. Eureka ditch near Flattop Mountain, Colo.  
(Transmountain diversion)

Location.--Lat 40°20'00", long 105°43'40", in sec.6, T.4 N., R.74 W., near Flattop Mountain.

Records available.--October 1939 to September 1960. Diversion prior to 1948 published in WSP 1310.

Gage.--Water-stage recorder and 4-foot Cippoletti weir. Altitude of gage is 11,850 ft (from topographic map).

Remarks.--Diversion is 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 of Big Thompson River) in sec.16, T.4 N., R.74 W., in Platte River basin.

Cooperation.--Records furnished by State engineer of Colorado.

Monthly and yearly diversion, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	0	0	0	0	0	0	0	0	21	60	43	0	124
1952	0	0	0	0	0	0	0	0	28	54	21	0	103
1953	0	0	0	0	0	0	0	0	3.8	20	2.2	0	26
1954	0	0	0	0	0	0	0	18	9	0	0	0	27
1955	0	0	0	0	0	0	0	0	35	61	29	0	125
1956	0	0	0	0	0	0	0	0	18	22	12	0	52
1957	0	0	0	0	0	0	0	0	.4	80	38	6	124
1958	0	0	0	0	0	0	0	0	0	28	36	0	64
1959	0	0	0	0	0	0	0	0	0	0	0	0	0
1960	0	0	0	0	0	0	0	0	21	48	0	0	69

## 7320. Glacier Creek near Estes Park, Colo.

Location.--Lat 40°20'50", long 105°34'50", in sec.4, T.4 N., R.73 W., on right bank 30 ft downstream from trail bridge, half a mile downstream from Mill Creek, three-quarters of a mile upstream from mouth, and 4 miles southwest of Estes Park.

Drainage area.--24.4 sq mi (revised).

Records available.--October 1941 to September 1957. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Altitude of gage is 7,980 ft (from topographic map).

Average discharge.--16 years (1941-57), 29.9 cfs (21,650 acre-ft per year).

Extremes.--1941-57: Maximum discharge, 352 cfs June 29, 1957 (gage height, 3.48 ft); minimum daily determined, 1.5 cfs Mar. 2-6, 1948.

Remarks.--City of Estes Park pipeline diverts water above station.

## Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	10.3	7.15	4.56	3.97	4.61	3.54	8.27	78.1	141	106	54.3	21.7	37.1
1952	14.1	7.80	4.62	4.16	3.67	3.30	15.7	78.0	162	81.6	53.7	19.6	39.0
1953	8.72	5.31	3.56	3.44	2.92	3.37	6.80	43.1	117	62.5	45.2	15.8	26.5
1954	7.95	5.82	4.21	3.50	3.18	3.61	11.9	44.4	48.6	39.1	18.8	16.0	17.3
1955	14.7	5.45	3.54	2.74	2.47	3.51	11.6	43.6	84.0	74.2	40.1	14.0	25.1
1956	7.79	5.58	4.34	3.79	3.66	4.25	9.96	90.2	114	51.8	33.5	10.9	28.3
1957	7.30	5.67	4.04	3.19	3.02	3.29	7.17	49.6	168	179	72.3	23.9	45.8

## Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	632	426	281	244	256	218	492	4,800	8,360	6,490	3,340	1,290	26,830
1952	867	464	284	256	211	203	935	4,800	10,810	5,020	3,300	1,170	28,320
1953	536	316	219	211	162	207	405	2,850	6,940	3,850	2,780	940	19,220
1954	489	347	259	215	177	222	710	2,730	2,890	2,400	1,180	954	12,550
1955	901	324	218	168	137	216	689	2,680	5,000	4,560	2,460	833	18,190
1956	479	331	267	233	210	261	593	5,540	6,760	3,180	2,060	650	20,560
1957	449	337	246	196	168	202	427	3,050	11,200	11,030	4,450	1,420	33,180

## Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year				
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet			
		Discharge	Date								
1950	-	-	-	-	-	-	25.0	-	-	-	18,070
1951	1210	311	June 20, 1951	2.6	37.1	26,830	37.4	27,100	-	-	27,100
1952	1240	318	June 6, 1952	2.8	39.0	28,320	38.3	27,780	-	-	27,780
1953	1280	252	June 13, 1953	2.6	26.5	19,220	26.6	19,240	-	-	19,240
1954	1340	95	May 21, 1954	2.7	17.3	12,550	17.8	12,900	-	-	12,900
1955	1390	332	July 24, 1955	2.0	25.1	18,190	24.6	17,820	-	-	17,820
1956	1440	300	May 22, 1956	3.3	28.3	20,560	28.3	20,520	-	-	20,520
1957	1510	352	June 29, 1957	2.8	45.8	33,180	-	-	-	-	-

## 7325. Fall River at Estes Park, Colo.

Location.--Lat 40°22'40", long 105°31'40", in sec.25, T.5 N., R.73 W., on right bank 150 ft upstream from Main Street Bridge (U. S. Highway 34) in Estes Park and half a mile upstream from mouth.

Drainage area.--39.8 sq mi (revised).

Records available.--June 1945 to September 1946 (no winter records), March 1947 to September 1953. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Altitude of gage is 7,550 ft (from topographic map).

Average discharge.--6 years (1947-53), 38.1 cfs (27,580 acre-ft per year).

Extremes.--1945-53: Maximum discharge, 476 cfs June 14, 1953; maximum gage height, 2.91 ft June 20, 1951; minimum daily discharge determined, 0.9 cfs Mar. 3, 1948.

Remarks.--Small power development above station. Flow partly regulated by Lawn Lake Reservoir (capacity, 817 acre-ft).

## Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	10.1	6.61	5.75	5.02	4.64	4.43	8.91	75.8	178	151	78.5	24.3	46.4
1952	14.9	9.00	5.15	4.56	4.87	5.45	18.9	80.7	218	83.7	42.5	24.8	42.6
1953	5.85	6.79	6.31	5.13	4.69	5.27	9.85	39.2	193	78.2	49.9	16.6	35.1

## Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	622	393	354	308	258	273	530	4,660	10,590	9,300	4,830	1,450	33,570
1952	914	536	317	280	280	335	1,120	4,960	12,990	5,150	2,600	1,470	30,950
1953	360	404	388	315	260	324	586	2,410	11,480	4,810	3,070	988	25,400

## Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year				
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet			
		Discharge	Date								
1950	-	-	-	-	-	-	25.5	-	-	-	18,500
1951	1210	434	June 20, 1951	3.7	46.4	33,570	46.9	33,970	-	-	33,970
1952	1240	448	June 7, 1952	3.5	42.6	30,950	41.8	30,340	-	-	30,340
1953	1280	476	June 14, 1953	4.0	35.1	25,400	-	-	-	-	-

## 7330. Big Thompson River at Estes Park, Colo.

Location.--Lat 40°22'42", long 105°30'48" in NW1/4 sec.30, T.5 N., R.72 W., on right bank in Estes Park, 600 ft downstream from bridge on State Highways 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 1960. 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.--14 years (1946-60), 128 cfs (92,670 acre-ft per year), adjusted for inflow from Alva B. Adams tunnel Aug. 10, 1947, to Aug. 2, 1950.

Extremes.--1946-60: 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.--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. Diversions above station from Wind River to Lake Estes (bypassing this station), occurring at times during summer months, began in 1957.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	31.7	23.2	18.8	13.0	14.1	14.7	43.5	305	644	492	234	77.7	160
1952	56.2	32.7	22.2	19.8	16.4	16.8	72.2	348	820	307	168	73.6	162
1953	27.2	19.6	12.9	13.6	13.5	15.5	28.6	156	606	273	172	54.0	116
1954	25.5	19.6	14.1	11.8	12.6	11.8	36.9	173	191	148	66.7	48.2	63.3
1955	50.9	23.0	14.4	10.3	8.70	9.05	26.8	156	336	220	138	57.1	87.9
1956	31.6	24.5	16.9	13.3	12.7	17.3	39.8	375	515	190	126	41.8	117
1957	23.6	17.8	11.1	8.67	10.0	12.0	38.7	229	824	735	244	78.6	187
1958	49.4	30.9	18.2	11.8	12.7	13.3	29.7	479	508	173	98.5	61.0	124
1959	22.5	18.8	15.0	11.7	10.1	13.1	31.3	176	587	242	136	59.4	110
1960	71.7	41.7	18.9	12.1	12.0	20.1	64.2	217	571	270	103	56.0	121

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1,950	1,380	1,160	797	783	906	2,590	18,770	38,350	30,250	14,410	4,620	116,000
1952	3,450	1,950	1,360	1,220	944	1,040	4,300	21,260	48,820	18,900	10,330	4,380	118,000
1953	1,670	1,170	793	839	748	954	1,700	9,610	38,050	16,760	10,550	3,210	84,050
1954	1,570	1,160	865	724	700	728	2,200	10,610	11,350	8,950	4,100	2,870	45,830
1955	3,130	1,370	883	634	483	556	1,570	9,620	19,970	13,530	6,510	3,400	63,660
1956	1,950	1,460	1,040	816	732	1,060	2,310	23,040	30,640	11,690	7,720	2,490	84,950
1957	1,450	1,060	683	533	557	736	2,300	14,070	49,010	45,420	15,020	4,680	135,500
1958	3,040	1,840	1,120	726	706	819	1,770	29,440	30,250	10,610	6,060	3,630	90,010
1959	1,360	1,120	924	722	561	805	1,860	10,830	34,950	14,870	8,370	3,540	79,930
1960	4,410	2,480	1,160	744	688	1,230	3,820	13,330	34,000	16,600	6,350	3,330	88,140

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	132	95,710
1951	1210	1,490	June 21, 1951	10	160	116,000	163	118,200
1952	1240	1,600	June 8, 1952	12	162	118,000	158	114,800
1953	1280	1,530	June 13, 1953	10	116	84,050	116	84,020
1954	1340	406	May 21, 1954	9.9	63.3	45,830	65.8	47,620
1955	1390	543	June 24, 1955	6.5	87.9	63,660	86.6	62,720
1956	1440	1,020	June 3, 1956	9.4	117	84,950	115	83,690
1957	1510	1,630	June 30, 1957	8.0	187	135,500	191	136,300
1958	1560	1,190	May 27, 1958	9	124	90,010	121	87,440
1959	1630	1,020	June 21, 1959	9	110	79,930	117	84,560
1960	1710	917	June 18, 1960	10	121	88,140	-	-

9-130. Alva B. Adams tunnel at east portal, near Estes Park, Colo.  
(Transmountain diversion)

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 4½ miles southwest of Estes Park.

Records available.--October 1946 to September 1960 (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 Cippolletti weir at different datum.

Average discharge.--14 years (1946-60), 201 cfs (145,500 acre-ft per year).

Extremes.--1946-60: Maximum discharge, 614 cfs July 8, 1953 (gage height, 4.38 ft); no flow at times in most years.

Remarks.--This is a transmountain diversion from Grand Lake and Shadow Mountain Reservoir for power and irrigation development in 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.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1.29	6.78	21.3	19.7	11.7	27.5	211	264	117	156	43.8	50.0	77.8
1952	86.7	99.5	80.4	154	128	18.5	16.5	14.0	27.09	52.0	237	51.6	77.2
1953	54.4	139	355	342	284	134	62.0	96.1	281	496	410	329	249
1954	259	324	370	242	319	444	447	511	552	539	553	440	417
1955	401	434	415	454	465	412	303	270	110	363	345	281	354
1956	311	297	322	297	435	452	390	185	92.0	219	196	295	290
1957	338	368	369	441	506	463	381	108	2.8	7.66	85.8	163	270
1958	362	328	295	410	252	427	227	31.5	42.3	182	398	494	288
1959	497	515	537	458	381	379	378	260	0	290	464	356	377
1960	390	419	448	491	399	314	202	226	40.6	223	425	455	336

Monthly and yearly diversion, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	79	403	1,310	1,210	649	1,690	12,550	16,230	6,940	9,590	2,690	2,970	56,310
1952	4,100	5,920	4,940	9,470	7,370	1,130	981	858	422	3,200	14,560	3,070	56,020
1953	3,340	8,250	21,830	21,040	15,750	8,220	3,690	5,910	16,710	30,530	25,190	19,580	180,000
1954	15,920	19,280	22,760	14,870	17,700	27,310	26,620	31,420	32,830	33,170	34,000	26,190	302,100
1955	24,650	25,850	25,530	27,910	25,830	25,310	18,010	16,630	6,560	22,310	21,220	16,740	256,600
1956	19,100	17,680	19,800	18,230	25,050	27,760	23,210	11,370	5,470	13,470	12,030	17,550	210,700
1957	20,770	23,110	22,700	27,100	28,080	28,460	22,690	6,650	169	471	5,280	9,720	195,200
1958	22,280	19,490	18,150	25,190	14,000	26,230	13,510	1,940	2,520	11,200	24,460	29,410	208,400
1959	30,580	30,670	33,000	28,170	21,140	23,330	22,520	15,960	0	17,840	28,560	21,200	273,000
1960	24,010	24,900	27,540	30,170	22,350	19,300	12,040	13,920	2,410	13,720	26,160	27,100	243,600

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	38.8	28,060
1951	1213	596	May 18, 1951	0	77.8	56,310	96.0	69,480
1952	1243	577	Sept. 10, 1952	0	77.2	56,020	103	74,480
1953	1263	614	July 8, 1953	0	249	180,000	283	204,600
1954	1343	592	June 9, 1954	2.3	417	302,100	442	320,100
1955	1393	594	July 26, 1955	0	354	256,600	328	237,100
1956	1443	612	Feb. 20, 1956	0	290	210,700	304	220,700
1957	1513	599	Jan. 29, 1957	0	270	195,200	260	188,500
1958	1563	596	Aug. 29, 1958	0	288	208,400	335	242,700
1959	1633	587	Dec. 16, 1958	0	377	273,000	352	256,200
1960	1713	601	Jan. 22, 1960	0	336	243,600	-	-

a Maximum observed (discharge measurement).

## 7340. Marys Lake near Estes Park, Colo.

Location--Lat 40°20'30", long 105°32'00", in sec. 2, T. 4 N., R. 73 W., on downstream side of Marys Lake powerplant and 2½ miles south of Estes Park.

Records available--October 1950 to September 1955.

Gage--Water-stage recorder. Datum of gage is 8,007.50 ft above mean sea level (levels by Bureau of Reclamation). Gage readings have been reduced to elevations above mean sea level.

Extremes--1950-55: Maximum contents, 1,050 acre-ft Dec. 10, 1950 (elevation, 8,043.81 ft); no contents Jan. 22, 23, Mar. 31, 1951 (elevation, 8,007.50 ft).

Remarks--Reservoir is formed by two earth- and rock-fill dikes which enlarge the natural basin of Marys Lake. Dikes completed Oct. 20, 1948; storage began Aug. 5, 1950. Usable capacity of reservoir, 1,110 acre-ft, between elevations 8,007.50 (invert of entrance to Prospect Mountain conduit) and 8,045.00 ft (maximum emergency water surface). Dead storage, 42 acre-ft. Reservoir is used for power, utilizing water diverted from Colorado River basin through Alva B. Adams tunnel, and is part of the Colorado-Big Thompson project. Figures given herein represent usable contents.

Cooperation--Records furnished by Bureau of Reclamation.

Contents, in acre-feet on last day of month

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951	627	389	644	940	957	0	491	338	607	376	831	803
1952	717	870	685	871	817	851	718	661	134	834	723	778
1953	964	448	596	527	742	833	491	835	794	812	734	697
1954	702	820	783	412	677	788	781	622	553	603	630	692
1955	781	626	641	709	704	613	866	885	535	806	797	840

## 7345. Fish Creek near Estes Park, Colo.

Location--Lat 40°22'10", long 105°29'40", in SW¼ sec. 29, T. 5 N., R. 72 W., on right bank 100 ft upstream from high-water line of Lake Estes, 0.4 mile upstream from bridge on State Highway 66, and 2 miles southeast of Estes Park.

Drainage area--16.0 sq mi (revised).

Records available--May 1947 to September 1955.

Gage--Water-stage recorder and Parshall flume. Datum of gage is 7,475.80 ft above mean sea level (levels by Bureau of Reclamation). Prior to Apr. 9, 1951, at site 50 ft downstream at different datum.

Average discharge--8 years (1947-55), 1.83 cfs (1,320 acre-ft per year).

Extremes--1947-55: Maximum discharge, 1,480 cfs May 25, 1951 (gage height, 7.32 ft, from floodmark), from rating curve extended above 40 cfs on basis of slope-area measurement of peak flow; no flow at times in most years.

Remarks--Small diversions above station for irrigation.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	0.21	0.28	0.2	0.1	0.2	0.3	2.6	19.6	11.2	1.65	1.65	0.25	3.20
1952	.70	.4	.1	0	.2	.7	8.01	24.3	9.51	2.86	.64	.14	3.98
1953	.17	.26	.16	.19	.19	.78	1.21	5.27	2.21	.79	.76	.21	.85
1954	.20	.22	.19	.14	.34	.33	.27	.24	.09	.03	0	.17	.17
1955	0	0	0	0	0	.22	.83	.86	1.10	.25	.22	.03	.29

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	13	17	12	6.1	11	18	155	1,210	684	101	101	15	2,320
1952	43	24	6.1	0	12	43	477	1,490	566	176	39	8.3	2,880
1953	11	15	9.9	12	11	48	72	201	131	49	47	12	619
1954	12	13	12	8.7	19	20	16	15	5.2	1.6	0	0	122
1955	0	0	0	0	0	14	49	54	65	15	14	2.0	213

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean
		Discharge	Date				
1950	-	-	-	-	-	-	0.56
1951	1210	1,480	May 25, 1951	-	3.20	2,320	3.25
1952	1240	53	June 3, 1952	0	3.98	2,880	3.93
1953	1280	8.4	May 18, 1953	.1	.85	619	.86
1954	1340	6.9	Oct. 23, 1953	0	.17	122	.12
1955	1390	4.7	July 23, 1955	0	.29	213	-

## 7350. Lake Estes near Estes Park, Colo.

Location.--Lat 40°22'35", long 105°29'15", in NW¼ sec.29, T.5 N., R.72 W., at left side of spillway of Olympus Dam on Big Thompson River, 1½ miles east of Estes Park.

Records available.--October 1950 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 7,450.20 ft above mean sea level (levels by Bureau of Reclamation). Gage readings have been reduced to elevations above mean sea level.

Extremes.--1950-55: Maximum contents, 2,670 acre-ft Nov. 17, 1953 (elevation, 7,475.05 ft); minimum, 622 acre-ft Oct. 6, 1950 (elevation, 7,459.73 ft).

Remarks.--Reservoir is formed by concrete gravity dam. Storage began Nov. 30, 1948; dam completed Sept. 23, 1949. Capacity, 2,660 acre-ft, between elevations 7,450.25 (invert of outlet works) and 7,475 ft (top of spillway gates). Dead storage, 409 acre-ft. Reservoir, which is part of the Colorado-Big Thompson project, is used for power development, recreation, and to distribute water diverted from Colorado River basin through Alva B. Adams tunnel. Figures given herein represent usable contents.

Cooperation.--Records furnished by Bureau of Reclamation.

Contents, in acre-feet on last day of month

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951	897	1,530	2,400	1,380	2,040	2,120	2,400	2,400	2,320	2,450	2,320	2,260
1952	2,300	2,570	1,300	1,060	1,440	1,360	839	2,170	2,410	2,280	2,550	902
1953	1,790	2,280	2,450	1,980	1,440	1,050	1,510	1,930	2,420	2,360	2,460	2,410
1954	2,400	2,250	2,250	1,930	2,240	1,690	2,280	2,230	2,510	2,560	2,290	2,600
1955	2,220	2,360	2,220	2,200	2,010	2,420	2,100	2,540	2,430	2,260	2,420	2,110

## 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 (revised).

Records available.--July 1930 to September 1960. 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.--1930-60: 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.--Low flow regulated by Lake Estes since Nov. 30, 1948 (see preceding page). Diversion from Colorado River to Big Thompson River basin above station through Alva B. Adams tunnel (see elsewhere in this report) began Aug. 10, 1947; since Apr. 15, 1953, this imported water has been diverted from Lake Estes through Olympus tunnel bypassing this station. Since May 17, 1955, part of the natural flow of Big Thompson River has also been diverted through Olympus tunnel and returned to river below station at mouth of canyon, near Drake. Small power developments and small diversions for irrigation and municipal use above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	35.1	29.1	22.2	41.7	17.1	54.5	257	596	775	635	283	132	241
1952	119	122	127	178	143	35.0	118	377	810	348	375	148	242
1953	68.2	154	358	362	301	159	89.7	239	816	645	475	336	334
1954	268	329	350	75.2	13.2	14.7	37.5	177	191	149	68.8	46.9	144
1955	51.5	25.5	15.8	9.54	10.2	11.3	28.2	124	139	126	104	55.2	58.7
1956	32.7	24.7	17.1	17.0	16.1	16.0	40.8	126	158	118	97.9	44.9	59.5
1957	25.5	19.4	13.3	11.2	11.0	13.1	31.3	114	301	274	112	62.5	82.7
1958	54.0	31.5	19.9	13.9	14.6	13.8	30.9	199	160	116	103	52.4	67.8
1959	24.7	21.4	18.0	13.9	12.3	14.1	34.9	119	184	116	106	55.5	59.9
1960	58.3	34.8	20.9	12.1	13.3	20.0	54.3	112	159	125	90.8	60.9	63.6

## PLATTE RIVER BASIN

Monthly and yearly discharge, in acre-feet of Big Thompson River near Estes Park, Colo.

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	2,160	1,730	1,360	2,560	948	3,350	15,280	38,640	46,130	39,020	17,400	7,840	174,400
1952	7,300	7,260	7,830	10,970	8,200	2,150	7,030	23,210	48,180	21,290	29,090	8,800	175,300
1953	4,200	9,190	22,040	22,270	16,710	9,770	5,340	14,720	48,560	39,690	29,230	20,000	241,700
1954	16,450	19,600	21,490	4,500	734	906	2,230	10,880	11,360	9,170	4,230	2,910	104,500
1955	3,170	1,520	972	587	568	695	1,680	7,600	8,280	7,750	6,400	3,280	42,500
1956	2,010	1,470	1,050	1,050	926	1,110	2,430	7,760	9,420	7,260	6,020	2,670	43,180
1957	1,560	1,150	819	691	611	805	1,860	7,050	17,940	18,620	6,870	3,720	59,660
1958	3,320	1,670	1,220	857	803	947	1,640	12,230	9,510	7,130	6,320	3,120	49,070
1959	1,520	1,270	1,110	855	684	867	2,080	7,080	10,930	7,150	6,500	3,300	43,350
1960	3,580	2,070	1,290	745	768	1,230	3,230	6,900	9,440	7,700	5,580	3,620	46,150

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	144	-	103,900
1951	1210	1,360	June 21, 1951	11	241	174,400	259	191,000	
1952	1240	1,330	June 8, 1952	12	242	175,300	259	188,400	
1953	1280	1,400	June 14, 1953	21	334	241,700	364	263,800	
1954	1340	530	Dec. 21, 1953	10	144	104,500	72.7	52,600	
1955	1390	410	July 24, 1955	7.0	58.7	42,500	57.2	41,370	
1956	1440	495	June 3, 1956	11	59.5	43,180	58.1	42,180	
1957	1510	939	June 30, 1957	8.4	62.7	59,660	66.7	62,760	
1958	1560	632	May 22, 1958	11	67.8	49,070	64.3	46,560	
1959	1630	601	June 21, 1959	10	59.9	43,350	64.1	46,390	
1960	1710	439	June 16, 1960	9.9	63.6	46,150	-	-	

7360. North Fork Big Thompson River at Drake, Colo.

Location.--Lat 40°26'00", long 105°20'20", in NW $\frac{1}{4}$  sec.3, T.5 N., R.71 W., on right bank at Drake, 400 ft upstream from mouth.

Drainage area.--82.8 sq mi (revised).

Records available.--May 1947 to September 1955. Prior to October 1947, published as North Fork Thompson River at Drake.

Gage.--Water-stage recorder. Altitude of gage is 6,170 ft (from topographic map).

Average discharge.--8 years (1947-55), 28.6 cfs (20,710 acre-ft per year).

Extremes.--1947-55: Maximum discharge, 820 cfs June 4, 1949 (gage height, 5.00 ft), from rating curve extended above 600 cfs; minimum daily, 2.0 cfs Jan. 4, 1950.

Remarks.--Divisions above station for irrigation.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	11.3	8.75	4.98	4.97	6.85	6.95	11.9	96.9	161	84.4	60.3	24.0	40.4
1952	17.3	11.8	9.82	8.08	5.97	5.89	34.2	122	162	54.0	32.4	16.3	40.0
1953	10.9	7.48	6.21	5.65	5.94	5.64	9.70	33.4	116	57.1	40.6	18.9	26.5
1954	11.6	8.50	6.69	5.25	4.25	4.38	6.44	16.1	21.2	18.7	13.5	9.91	10.6
1955	8.37	6.39	5.49	4.23	4.39	4.16	5.57	17.3	37.0	28.2	45.2	24.3	15.9

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	695	520	306	305	380	428	706	5,960	9,600	5,190	3,710	1,430	29,230
1952	1,080	699	604	496	343	362	2,040	7,500	9,660	3,320	1,990	968	29,060
1953	669	445	382	348	330	347	577	2,050	6,890	5,510	2,500	1,130	19,180
1954	714	506	412	323	236	289	383	990	1,260	1,150	831	590	7,660
1955	515	380	338	260	244	256	331	1,060	2,200	1,730	2,780	1,440	11,530

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	20.4	-	14,760
1951	1210	232	June 19, 1951	3.0	40.4	29,230	41.6	30,090	
1952	1240	263	June 5, 1952	4.7	40.0	29,060	38.8	28,180	
1953	1280	223	June 13, 1953	3.2	26.5	19,180	26.7	19,310	
1954	1340	47	June 27, 1954	2.8	10.6	7,660	10.0	7,260	
1955	1390	114	Aug. 14, 1955	2.9	15.9	11,530	-	-	



7365. Big Thompson River below powerhouse, near Drake, Colo.

Location.--Lat. 40°25'10", long 105°16'05", in NW¼ sec. 8, T. 5 N., R. 70 W., on right bank 500 ft north of U. S. Highway 34, 700 ft upstream from Cedar Creek, a quarter of a mile downstream from hydroelectric plant of city of Loveland, and 4 miles east of Drake.

Drainage area.--280 sq mi (revised).

Records available.--September 1917 to September 1955. Monthly discharge only for some periods, published in WSP 1310. Published as Big Thompson Creek near Drake 1917-20, as Thompson River near Drake 1921-26, as Thompson River at mouth of canyon, near Drake October to December 1926, and as Thompson River below powerhouse, near Drake 1929-47.

Gage.--Water-stage recorder. Altitude of gage is 5,600 ft (from topographic map). Prior to June 16, 1921, at site 3 miles upstream at different datum. June 16, 1921, to Dec. 31, 1926, staff gage at site 3½ miles upstream at different datum.

Extremes.--1917-55: Maximum discharge, 8,000 cfs July 31, 1919 (gage height, 9.5 ft, from floodmarks, site and datum then in use), from rating curve extended above 2,000 cfs on basis of velocity-area study; minimum daily, 2.3 cfs Feb. 12, 1933.

Remarks.--Diurnal regulation by reservoir of Loveland powerplant (capacity, 30 acre-ft). Diversion from Colorado River to Big Thompson River above station through Alva B. Adams tunnel (see elsewhere in this report) started Aug. 10, 1947; since Apr. 15, 1953, this imported water has been diverted from Lake Estes through Olympus tunnel bypassing this station. Since May 17, 1955, part of the natural flow of Big Thompson River has also been diverted through Olympus tunnel and returned to river below station at mouth of canyon, near Drake.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	44.1	35.5	29.9	45.7	23.2	56.3	258	679	967	749	347	149	283
1952	127	121	120	180	143	39.0	158	472	911	411	430	158	272
1953	79.8	158	359	350	298	158	102	254	851	642	489	340	340
1954	251	313	333	79.1	18.2	22.6	40.8	171	188	154	78.2	56.8	143
1955	56.9	30.9	21.7	14.9	14.8	15.7	31.1	128	169	146	149	74.6	71.5

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	2,710	2,110	1,840	2,810	1,290	3,460	15,240	41,740	57,540	46,030	21,330	8,860	205,000
1952	7,800	7,190	7,390	11,070	8,240	2,400	9,380	29,020	54,190	25,290	26,430	9,400	197,800
1953	4,910	9,420	22,070	21,550	16,550	9,690	6,100	15,640	50,650	39,460	30,070	20,250	246,500
1954	15,450	18,610	20,460	4,870	1,010	1,390	2,430	10,510	11,190	9,480	4,810	3,560	103,600
1955	3,500	1,840	1,330	918	823	965	1,850	7,890	10,040	8,990	9,170	4,440	51,750

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean
		Discharge	Date				
1950	-	-	-	-	-	-	158
1951	1210	1,470	June 21, 1951	11	283	205,000	305
1952	1240	1,390	June 7, 1952	11	272	197,800	292
1953	1280	1,340	June 14, 1953	51	340	246,300	365
1954	1340	458	Dec. 20, 1953	11	143	103,600	77.0
1955	1390	525	July 24, 1955	7.0	71.5	51,750	-

## 7375. Horsetooth Reservoir near Fort Collins, Colo.

Location.--Lat 40°36'00", long 105°10'10", in SW $\frac{1}{4}$  sec.6, T.7 N., R.69 W., on right bank near abutment of Horsetooth Dam on tributaries of Cache la Poudre River, 5 miles west of Fort Collins.

Records available.--April 1951 to September 1960.

Gage.--Staff gage. 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.

Extremes.--1951-60: Maximum contents observed, 138,400 acre-ft May 23-29, 1958 (elevation, 5,427.30 ft); minimum observed, 3,040 acre-ft Sept. 23, 1954 (elevation, 5,302.20 ft); no storage prior to Apr. 18, 1951.

Remarks.--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 (invert of channel from Spring Canyon Dam), 5,310 (invert of channel from Dixon Canyon Dam), 5,270 ft (trashback 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.

Cooperation.--Records furnished by Bureau of Reclamation.

Contents, in acre-feet, on last day of month

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951	-	-	-	-	-	0	7,200	23,830	28,910	35,380	39,010	40,810
1952	44,090	49,400	50,770	56,560	63,220	63,800	66,840	73,050	73,320	70,800	61,650	51,580
1953	51,270	57,630	76,720	96,200	110,700	118,000	119,800	117,400	106,300	75,780	55,160	39,050
1954	47,320	64,050	83,240	96,370	110,500	115,800	113,900	82,270	54,210	28,160	8,400	7,490
1955	22,860	26,830	42,070	58,390	75,640	84,680	100,600	79,680	77,020	56,110	30,550	12,740
1956	11,200	22,450	31,460	39,820	53,080	71,030	87,160	91,100	89,010	65,710	40,910	22,490
1957	25,040	37,530	48,370	61,330	75,310	93,030	110,600	118,900	127,300	120,800	95,930	76,530
1958	69,180	77,160	86,140	98,690	105,000	120,400	133,300	138,300	130,700	95,740	48,440	22,250
1959	21,220	37,130	56,830	77,710	84,820	97,130	117,500	130,200	123,500	96,920	54,380	43,230
1960	48,050	56,730	69,700	84,680	97,990	109,400	119,100	132,000	131,100	113,700	66,820	50,480

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

Location.--Lat 40°25'20", long 105°13'35", in NW $\frac{1}{4}$  sec.10, T.5 N., R.70 W., on right bank at mouth of canyon, 500 ft upstream from Handy Ditch diversion dam and 6 miles east of Drake.

Drainage area.--304 sq mi (revised).

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 1960. 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, and as 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, 1893, 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  $1\frac{1}{2}$  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  $6\frac{1}{2}$  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.--1887-92, 1895-1903, 1926-33, 1938-49, 1951-60: 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, that of Nov. 12, 1959.

Remarks.--Diversions above station for irrigation. Diversion from Colorado River to Big Thompson River basin above station through Alva B. Adams tunnel (see elsewhere in this report) began Aug. 10, 1947; since Apr. 15, 1953, this imported water has been diverted through Olympus tunnel bypassing this station. Part of the natural flow of Big Thompson River has also been diverted through Olympus tunnel since May 17, 1955, and Dille tunnel since Apr. 20, 1959, and returned to river just below this station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	-	-	50.5	407	864	616	339	129	-
1952	72.8	35.8	86.2	76.1	29.5	27.5	124	381	909	381	408	140	223
1953	65.0	36.3	39.6	31.0	30.5	33.4	51.0	224	760	608	399	236	210
1954	130	46.5	49.7	23.6	18.3	23.3	42.6	179	206	164	77.4	52.9	85.0
1955	55.9	30.2	21.4	15.0	15.9	16.9	29.9	134	173	147	145	73.7	71.9
1956	41.4	32.1	25.0	22.5	21.1	25.2	50.3	196	246	153	141	60.0	84.7
1957	35.2	28.6	21.6	18.2	18.5	18.9	96.1	398	477	399	174	83.9	148
1958	65.8	44.1	29.9	21.7	26.1	29.3	61.1	449	299	160	129	64.4	116
1959	30.9	25.7	22.4	18.9	16.8	19.2	56.4	62.3	268	143	129	67.9	71.8
1960	66.2	33.3	30.0	15.3	19.8	28.9	63.3	96.9	212	111	102	70.9	70.8

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	-	-	3,000	25,020	51,390	37,870	20,850	7,840	-
1952	4,480	2,130	5,300	4,680	1,700	1,690	7,380	23,420	54,090	23,420	25,080	8,350	181,700
1953	3,990	2,160	2,430	1,910	1,690	2,050	3,030	13,780	45,230	37,360	24,510	14,050	152,200
1954	8,010	2,770	3,060	1,450	1,020	1,430	2,540	10,980	12,270	10,090	4,760	3,150	81,530
1955	3,440	1,800	1,320	922	885	1,040	1,780	8,250	10,290	9,060	8,930	4,380	52,100
1956	2,550	1,910	1,540	1,380	1,210	1,550	3,000	12,060	14,630	9,440	8,690	3,570	61,530
1957	2,160	1,700	1,330	1,120	1,030	1,160	5,720	24,490	28,400	24,560	10,730	4,990	107,400
1958	4,050	2,630	1,840	1,330	1,450	1,800	3,640	27,640	17,770	9,840	7,940	3,830	83,760
1959	1,900	1,530	1,370	1,160	930	1,180	3,360	3,830	15,950	8,770	7,950	4,040	51,970
1960	4,070	1,980	1,840	942	1,140	1,780	3,770	5,960	12,610	6,810	6,290	4,220	51,410

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950								
1951	1210	a3,530	Aug. 3, 1951	-	-	-	-	-
1952	1240	1,500	June 7, 1952	6.5	223	161,700	218	158,400
1953	1280	1,500	June 14, 1953	20	210	152,200	217	157,400
1954	1340	390	May 21, 1954	11	85.0	61,530	74.9	54,250
1955	1390	495	July 24, 1955	8.0	71.9	52,100	71.2	51,540
1956	1440	608	June 3, 1956	10	84.7	61,530	83.6	60,720
1957	1510	2,040	M.y 9, 1957	13	148	107,400	153	110,700
1958	1560	900	May 27, 1958	17	116	83,760	111	80,040
1959	1630	680	June 21, 1959	10	71.8	51,970	76.1	55,060
1960	1710	504	June 18, 1960	3.2	70.8	51,410	-	-

a Maximum during period March to September.

## PLATTE RIVER BASIN

7395. Buckhorn Creek near Masonville, Colo.

Location--Lat 40°27'15", long 105°11'50", in SE $\frac{1}{4}$  sec.26, T.6 N., R.70 W., on right bank  $\frac{1}{2}$  miles upstream from Buckhorn Reservoir Dam and  $2\frac{1}{2}$  miles south of Masonville.

Drainage area--131 sq mi (revised).

Records available--April 1947 to September 1955.

Gage--Water-stage recorder. Altitude of gage is 5,200 ft (from topographic map).

Average discharge--8 years (1947-55), 14.7 cfs (10,640 acre-ft per year).

Extremes--1947-55: Maximum discharge, 14,000 cfs Aug. 3, 1951 (gage height, 13.40 ft); from rating curve extended above 1,800 cfs on basis of slope-area measurement of peak flow; minimum daily, 0.1 cfs Sept. 22, 1948.

Flood of June 15, 1923, discharge, 10,500 cfs, by slope-area measurement,  $\frac{1}{2}$  miles above station. Flood of Sept. 1, 1938, discharge, 10,200 cfs, by slope-area measurement, half a mile below station.

Remarks--Divisions above station for irrigation of about 500 acres.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	0.95	1.41	1.59	0.71	0.71	1.27	9.36	42.9	57.8	5.18	122	7.69	21.2
1952	9.60	7.62	4.58	3.85	3.63	3.88	79.4	158	57.6	4.53	2.87	1.82	28.2
1953	1.92	1.80	2.16	1.97	2.61	3.31	7.64	14.5	5.65	3.93	4.14	1.73	4.29
1954	1.75	1.16	.75	.91	.76	.54	.47	1.82	.89	5.65	4.83	.93	1.38
1955	1.42	1.31	1.04	.75	.51	.44	.42	2.15	3.15	3.88	16.0	4.74	3.01

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	58	84	98	43	39	78	557	2,640	3,440	319	7,500	458	15,310
1952	590	453	281	237	209	238	4,730	9,710	3,430	278	177	108	20,440
1953	118	107	133	121	145	203	455	891	336	242	255	103	3,110
1954	108	69	46	56	42	33	28	112	53	346	51	56	1,000
1955	87	78	64	46	29	27	25	132	187	239	983	282	2,180

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	3.75	-	2,710
1951	1210	14,000	Aug. 3, 1951	0.6	21.2	15,310	22.7	-	16,400
1952	1240	355	May 23, 1952	1.5	28.2	20,440	26.8	-	19,480
1953	1280	49	May 20, 1953	1.1	4.29	3,110	4.11	-	2,970
1954	1340	1,520	July 20, 1954	.2	1.38	1,000	1.39	-	1,010
1955	1390	544	Aug. 26, 1955	.3	3.01	2,180	-	-	-

7400. Dry Creek near Pinewood, Colo.

(Formerly published as Chimney Hollow Dry Creek near Pinewood)

Location--Lat 40°22'20", long 105°13'35", in NW $\frac{1}{4}$  sec.27, T.5 N., R.70 W., on left bank just downstream from Flatiron damsite, a quarter of a mile upstream from Cottonwood Creek and  $2\frac{3}{4}$  miles northeast of Pinewood.

Drainage area--7.43 sq mi (revised).

Records available--April 1950 to October 1952.

Gage--Water-stage recorder and V-notch sharp-crested weir. Altitude of gage is 5,420 ft (from topographic map).

Extremes--1950-52: Maximum gage height, 3.90 ft Aug. 3, 1951 (discharge not determined); no flow at times.

Cooperation--Records furnished by Bureau of Reclamation and reviewed by Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	0.189	0.150	0.108	0.083	0.118	0.137	0.224	2.90	1.87	0.565	5.70	0.623	1.07
1952	.758	.658	.306	.477	.384	.392	3.56	4.35	1.74	.458	.401	.075	1.13
1953	.035	-	-	-	-	-	-	-	-	-	-	-	-

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	12	8.9	6.6	5.1	6.5	8.4	13	178	111	35	350	37	772
1952	47	39	19	29	22	24	212	268	103	28	25	4.4	820
1953	2.2	-	-	-	-	-	-	-	-	-	-	-	-

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	-	-	-
1951	1210	-	Aug. 3, 1951	0.08	1.07	772	1.17	-	849
1952	1240	11	Apr. 24, 1952	0	1.13	820	-	-	-
1953	1240	-	-	-	-	-	-	-	-

## 7405. Rattlesnake Creek near Pinewood, Colo.

Location.--Lat 40°22'10", long 105°17'15", in NW¼SW¼ sec.30, T.5 N., R.70 W., on left bank just downstream from Rattlesnake Dam, 0.4 mile upstream from mouth and 1½ miles northwest of Pinewood.

Drainage area.--3.42 sq mi (revised).

Records available.--March 1950 to September 1952.

Gage.--Water-stage recorder and V-notch sharp-crested weir. Altitude of gage is 6,500 ft (from topographic map).

Extremes.--1950-52: Maximum gage height, 3.40 ft Aug. 3, 1951 (discharge not determined); no flow for many days.

Remarks.--Flow regulated by pumping for construction of Rattlesnake Dam.

Cooperation.--Records furnished by Bureau of Reclamation and reviewed by Geological Survey.

## Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	0.015	0.014	0.016	0.001	0.054	0.036	0.073	0.147	0.172	0.099	1.20	0.061	0.159
1952	.126	.096	.024	.006	.086	.134	.226	.659	.613	.046	0	0	.168

## Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	0.91	0.81	1.0	0.04	3.0	2.2	4.4	9.0	10	6.1	74	3.6	115
1952	7.7	5.7	1.5	.36	5.0	8.2	13	41	36	2.8	0	0	121

† Corrected.

## Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	-	-	-
1951	1210	-	Aug. 3, 1951	0	0.159	115	0.176	127	-
1952	1240	4.4	Oct. 5, 1951	0	.168	121	-	-	-

## 7410. Cottonwood Creek near Pinewood, Colo.

Location.--Lat 40°23'00", long 105°14'30", in SW¼ sec.21, T.5 N., R.70 W., on right bank 1½ miles upstream from mouth, 2½ miles northeast of Pinewood, and 9 miles west of Loveland.

Drainage area.--15.1 sq mi.

Records available.--April 1947 to September 1953.

Gage.--Water-stage recorder. Altitude of gage is 5,650 ft (from topographic map).

Average discharge.--6 years (1947-53), 1.16 cfs (840 acre-ft per year), adjusted for inflow from Colorado-Big Thompson project.

Extremes.--1947-53: Maximum discharge, 2,260 cfs Aug. 3, 1951 (gage height, 5.91 ft, from floodmark), from rating curve extended above 80 cfs on basis of slope-area measurement of peak flow; no flow at times in each year.

Remarks.--Diversion of Colorado-Big Thompson project water from Rattlesnake Reservoir to Cottonwood Creek above station started July 31, 1953. Small diversions above station.

## Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	0.02	0.17	0.07	0.10	0.47	0.16	0.71	1.96	1.66	0.25	10.5	0.36	1.39
1952	1.13	.89	.33	.35	.49	1.02	5.05	8.17	2.67	.26	.16	.02	1.71
1953	.04	.10	.10	.22	.18	.25	.45	.55	.54	1.42	2.74	.54	.60

## Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	0.99	10	4.4	6.1	26	9.9	42	121	99	15	648	22	1,000
1952	70	53	20	21	28	63	300	502	159	16	9.7	1.0	1,240
1953	2.4	5.8	6.1	13	9.7	16	27	32	32	87	169	32	432

## Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	0.27	196	-
1951	1210	-	Aug. 3, 1951	0	1.39	1,000	1.56	1,130	-
1952	1240	31	June 26, 1952	0	1.71	1,240	1.53	1,110	-
1953	1280	1,020	July 9, 1953	0	.60	-	-	-	-

7415. Big Thompson River near Loveland, Colo.

Location.--Lat 40°23'55", long 105°06'10", in SE $\frac{1}{4}$  sec.15, T.5 N., R.69 W., on left bank 100 ft downstream from diversion dam for Loveland and Greeley Canal, 1,000 ft downstream from unnamed tributary, and 1 mile west of Loveland.

Drainage area.--509 sq mi (revised).

Records available.--June 1947 to September 1955 (no winter records in 1948).

Gage.--Water-stage recorder. Altitude of gage is 4,970 ft (from topographic map). Prior to Oct. 1, 1947, at datum 1.00 ft higher.

Average discharge.--7 years (1948-55), 62.4 cfs (45,180 acre-ft per year).

Extremes.--1947-55: Maximum gage height, 9.45 ft (from floodmarks) Aug. 3, 1951 (discharge not determined); no flow for many days in most years.

Remarks.--Natural flow of stream affected by transmountain diversions, storage reservoirs, power developments, diversions for irrigation, and return flow from irrigated areas.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	14.8	3.26	0.65	0.39	0.67	0.95	1.84	47.3	119	109	300	30.5	52.9
1952	5.05	9.82	8.60	34.5	3.16	19.0	71.4	337	415	91.6	113	57.6	97.2
1953	16.5	4.61	1.79	.88	.32	.21	.10	36.4	126	145	110	55.3	41.7
1954	18.1	2.10	.2	.1	.1	.11	58.1	120	167	95.3	48.7	43.7	43.7
1955	23.2	2.94	0	.13	0	.81	5.94	120	106	174	145	64.3	54.0

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	908	194	40	24	37	59	109	2,910	7,060	6,680	18,460	1,810	38,290
1952	310	584	529	2,120	182	1,170	4,250	20,690	24,690	5,630	6,970	3,430	70,580
1953	1,010	274	110	54	18	13	610	2,240	7,470	8,930	6,750	3,290	30,160
1954	1,110	125	12	6.1	5.6	6.1	687	3,570	7,110	10,270	5,860	2,900	31,660
1955	1,420	175	0	7.7	0	.50	353	7,360	6,300	10,690	8,900	3,830	39,090

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	25.2	18,280	
1951	1210	-	Aug. 3, 1951	0	52.9	38,290	53.3	38,570	
1952	1240	1,110	June 8, 1952	0	97.2	70,560	97.2	70,530	
1953	1280	382	June 14, 1953	0	41.7	30,160	41.5	30,020	
1954	1340	540	July 20, 1954	-	43.7	31,660	44.2	32,010	
1955	1390	1,050	July 23, 1955	0	54.0	39,090	-	-	

7420. Little Thompson River near Berthoud, Colo.

Location.--Lat 40°15'30", long 105°12'15", in NW $\frac{1}{4}$  sec.2, T.3 N., R.70 W., on left bank at mouth of canyon,  $\frac{7}{8}$  miles southwest of Berthoud.

Drainage area.--101 sq mi (revised).

Records available.--May 1929 to September 1930, April 1947 to September 1960.

Gage.--Water-stage recorder. Altitude of gage is 5,220 ft (from topographic map). Prior to Apr. 22, 1947, at site a quarter of a mile upstream at different datum.

Extremes.--1929-30, 1947-60: Maximum discharge, 4,000 cfs May 9, 1957; maximum gage height, 9.3 ft June 6, 1949, from floodmark; no flow at times in 1948-49, 1951, 1953-55.

Remarks.--One small diversion above station. Inflow from Colorado-Big Thompson project above station May 16, 1953, to Apr. 25, 1957.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	0.58	0.53	0.20	0.40	1.09	13.8	12.7	66.8	53.5	4.04	21.1	1.48	13.7
1952	4.93	4.87	2.16	2.23	2.21	4.71	88.1	112	31.6	5.40	.63	1.43	21.4
1953	.33	.34	.26	.4	1.12	2.36	9.73	22.0	85.3	122	90.7	27.1	30.3
1954	35.4	1.22	1.07	.71	1.39	.68	1.00	55.3	49.3	17.5	4.22		14.1
1955	.18	.06	.11	.20	.16	.15	.10	9.91	35.7	49.9	37.9	26.8	13.5
1956	.54	.13	.19	.19	.30	1.06	1.22	15.8	42.5	59.5	43.2	24.9	15.9
1957	2.86	.47	.37	.43	1.26	1.96	107	350	66.6	9.65	4.14	1.83	45.9
1958	1.62	1.97	1.50	.92	1.42	10.5	49.3	221	26.5	5.48	1.44	1.57	27.3
1959	1.05	1.45	1.38	1.42	1.84	3.14	51.8	71.2	26.5	2.68	1.06	.44	13.7
1960	8.69	8.01	2.35	1.52	1.64	7.68	9.84	60.4	9.84	1.39	2.23	.92	9.62

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	36	32	12	24	60	85	758	4,110	3,180	249	1,300	88	9,930
1952	303	290	133	137	127	290	5,240	6,870	1,880	209	38	26	15,540
1953	20	20	16	25	62	145	579	1,350	5,070	7,490	5,580	1,610	21,970
1954	2,180	73	66	43	22	42	60	61	3,290	3,030	1,080	251	10,200
1955	11	3.6	6.5	12	9.1	9.1	6.0	610	2,120	3,070	2,330	1,600	9,790
1956	33	7.9	12	12	17	65	72	972	2,530	3,660	2,650	1,480	11,510
1957	176	28	23	26	70	120	8,360	21,500	3,960	594	255	109	35,220
1958	112	117	92	57	79	647	2,940	13,610	1,580	337	88	94	19,750
1959	64	85	85	87	102	193	3,080	4,380	1,580	165	65	26	9,910
1960	534	477	145	94	95	473	586	3,720	586	85	137	55	6,990

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	4.11	2,970
1951	1210	2,380	Aug. 3, 1951	0	13.7	9,930	14.6	10,580
1952	1240	279	Apr. 25, 1952	.2	21.4	15,540	20.5	14,870
1953	1280	202	July 9, 1953	0	30.3	21,970	33.5	24,230
1954	1340	232	Oct. 29, 1953	0	14.1	10,200	10.9	7,900
1955	1390	151	Sept. 19, 1955	0	13.5	9,790	13.6	9,820
1956	1440	302	June 18, 1956	0	15.9	11,510	16.1	11,680
1957	1510	4,000	May 9, 1957	.2	45.9	35,220	46.0	35,320
1958	1560	1,470	May 8, 1958	.8	27.3	19,750	27.2	19,870
1959	1630	261	May 22, 1959	.2	13.7	9,910	15.0	10,830
1960	1710	203	May 5, 1960	-	9.62	6,990	-	-

## PLATTE RIVER BASIN

7425. Carter Lake near Berthoud, Colo.

Location.--Lat 40°19'30", long 105°12'45", in SE $\frac{1}{4}$  sec.10, T.4 N., R.70 W., in hoist house 293 ft from right abutment of Carter Lake Dam on Dry Creek, 7 miles west of Berthoud, and 8 miles upstream from mouth.

Records available.--March 1954 to September 1960.

Gage.--Electric tape gage. 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.

Extremes.--1954-60: Maximum contents observed, 100,700 acre-ft May 20, 1958 (elevation, 5,751.70 ft); minimum observed since appreciable storage was attained, 960 acre-ft Oct. 25, 1954 (elevation, 5,621.40 ft).

Remarks.--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, 113,550 acre-ft between elevations 5,618.00 (trashrack sill at Carter Lake Dam outlet, and 7,763.00 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.

Cooperation.--Records furnished by Bureau of Reclamation.

Cooperation.--Records furnished by Bureau of Reclamation.

Contents, in acre-feet, on last day of month

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951												
1952												
1953												
1954	-	-	-	-	-	17,690	38,540	53,220	38,700	29,110	10,920	2,070
1955	3,470	23,690	32,310	42,570	50,680	64,890	62,470	49,280	44,110	27,800	21,230	7,180
1956	11,050	16,630	25,620	34,300	44,660	53,020	57,960	53,710	48,350	26,860	19,140	13,190
1957	18,320	27,010	37,510	50,250	62,670	71,580	76,770	80,430	30,490	26,180	77,400	30,540
1958	56,900	66,700	73,640	84,260	90,330	100,500	100,200	100,500	93,410	66,450	25,650	17,360
1959	25,970	40,440	52,280	59,180	72,370	81,450	82,970	85,750	82,880	67,520	41,790	25,380
1960	23,800	36,730	52,180	66,250	73,600	80,180	81,340	76,860	71,780	57,320	30,640	17,060

7430. Dry Creek below Carter Lake, Colo.

Location.--Lat 40°19'30", long 105°12'45", in SE $\frac{1}{4}$  sec.10, T.4 N., R.70 W., on right bank 300 ft downstream from Carter Lake Dam and 7 miles west of Berthoud.

Records available.--April 1949 to December 1952. Monthly discharge only prior to October 1949, published in WSP 1310.

Gage--Water-stage recorder and V-notch sharp-crested weir. Altitude of gage is 5,580 ft (from topographic map).

Extremes.--1949-52: Maximum discharge, 72 cfs June 4, 1949 (gage height, 1.85 ft), from rating curve extended above 0.23 cfs on basis of slope-area measurement of peak flow; no flow Sept. 28-30, Oct. 6-9, 1950. Jan. 2, 4-8, 20-22, 31, 1951.

Remarks.--Natural flow of stream affected by enlargement of Carter Lake (see preceding station) since Mar. 1, 1951.

Cooperation.--Records furnished by Bureau of Reclamation and reviewed by Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

[illegible]

Monthly and yearly discharge, in acre-feet

[illegible]

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	0.026	19
1951	1210	5.00	Aug. 3, 1951	0	0.025	18	.027	20
1952	1240	1.30	May 23, 1952	.01	.029	21	-	-
1953	1240	-	-	-	-	-	-	-



7435. Little Thompson River at Milliken, Colo.

Location.--Lat 40°20'07", long 104°51'53", in SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec.2, T.4 N., R.67 W., on right bank 600 ft downstream from bridge on State Highway 257, 0.4 mile northwest of Milliken, and 0.9 mile upstream from mouth.

Drainage area.--198 sq mi (revised).

Records available.--October 1951 to December 1955.

Gage.--Water-stage recorder. Altitude of gage is 4,735 ft (from topographic map).

Extremes.--1951-55: Maximum discharge, 398 cfs Aug. 7, 1955 (gage height, 7.82 ft), from rating curve extended above 200 cfs on basis of slope-area measurement of peak flow; minimum daily, 1.4 cfs June 29, 1955.

Remarks.--Practically all flow is diverted for irrigation above station and considerable water for irrigation above station is imported to the basin. Flow is mainly return water from irrigated areas.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1952	39.9	41.3	35.0	29.7	25.0	38.2	62.3	130	50.0	40.4	32.9	21.6	45.6
1953	31.4	30.8	27.6	28.0	25.8	21.7	23.6	19.4	25.9	31.6	28.2	28.7	26.9
1954	14.9	24.8	25.2	22.7	22.5	20.3	16.0	16.8	21.4	30.4	28.3	25.2	22.4
1955	30.0	14.4	21.2	21.9	22.4	25.7	20.5	15.0	15.1	20.3	31.2	22.5	21.7
1956	14.8	19.6	20.0	-	-	-	-	-	-	-	-	-	-

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1952	2,460	2,460	2,150	1,830	1,440	2,350	3,710	7,960	2,970	2,490	2,020	1,290	33,130
1953	1,930	1,830	1,700	1,720	1,430	1,330	1,410	1,190	1,540	1,950	1,740	1,710	19,480
1954	919	1,470	1,550	1,390	1,250	1,250	949	1,030	1,280	1,870	1,740	1,500	16,200
1955	1,840	859	1,310	1,350	1,250	1,560	1,220	924	899	1,250	1,920	1,340	15,740
1956	913	1,160	1,230	-	-	-	-	-	-	-	-	-	-

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1952	1240	246	May 24, 1952	3.5	45.6	33,130	43.4	31,520
1953	1280	93	May 27, 1953	2.0	26.9	19,480	24.8	17,960
1954	1340	275	June 30, 1954	7.6	22.4	16,200	22.5	16,270
1955	1390	398	Aug. 7, 1955	1.4	21.7	15,740	20.8	15,040
1956	1390	-	-	-	-	-	-	-

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 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 (revised).

Records available--April 1914 to October 1915, March 1927 to September 1960. 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 datum.

Extremes--1914-15, 1927-60: 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, 8.22 ft May 9, 1957; no flow at times in 1934-35, 1948.

Remarks--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. Records of chemical analyses for the period August 1954 to July 1956 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	28.4	50.9	51.7	37.6	36.6	31.1	14.6	23.8	44.4	61.5	304	41.0	60.9
1952	57.6	71.0	72.7	85.8	48.0	58.6	139	436	337	66.5	97.8	35.5	125
1953	52.4	63.7	68.0	52.9	45.6	42.6	48.8	35.1	51.2	127	60.6	31.9	56.6
1954	42.8	64.7	61.3	44.5	40.0	33.9	22.2	6.78	56.2	127	57.8	13.4	47.7
1955	37.9	38.2	47.7	35.3	35.9	41.4	28.2	31.6	35.2	57.0	104	17.8	42.7
1956	33.5	54.7	48.6	36.0	32.2	31.3	28.7	48.0	47.3	52.0	29.2	16.3	38.2
1957	31.0	56.9	55.1	42.6	39.9	32.8	62.7	511	235	128	133	84.6	118
1958	120	146	110	91.0	59.6	64.7	75.9	1082	278	86.6	226	51.6	201
1959	77.0	79.0	74.6	64.7	57.9	63.8	71.1	206	101	88.3	170	56.2	92.8
1960	99.8	92.8	82.4	66.5	56.0	64.4	17.6	39.6	52.0	54.8	76.5	50.6	62.9

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1,740	3,030	3,180	2,310	2,030	1,910	868	1,470	2,640	3,780	18,680	2,440	44,080
1952	3,540	4,220	4,470	5,160	2,760	3,610	8,270	26,790	20,050	4,090	6,010	2,110	91,080
1953	3,220	3,790	4,060	3,250	2,530	2,620	2,900	2,160	3,050	7,800	3,720	1,900	41,000
1954	2,630	3,850	3,770	2,740	2,220	2,090	1,320	417	3,340	7,820	3,550	795	34,540
1955	2,330	2,280	2,940	2,170	2,000	2,550	1,680	1,940	2,100	3,510	6,410	1,060	30,970
1956	2,060	3,250	2,990	2,210	1,850	1,920	1,710	2,950	2,810	3,190	1,790	970	27,700
1957	1,910	3,380	3,390	2,620	2,220	2,020	3,730	31,430	13,990	7,880	8,150	5,030	85,750
1958	7,390	8,670	6,730	5,600	3,310	3,980	4,520	66,540	16,540	5,330	13,880	3,070	145,600
1959	4,730	4,700	4,590	3,980	3,210	3,920	4,230	12,640	5,990	5,430	10,430	3,350	67,200
1960	6,140	5,520	5,070	4,090	3,220	3,960	1,050	2,430	3,090	3,370	4,700	3,010	45,550

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	29.6	21,440
1951	1210	6,100	Aug. 4, 1951	3.6	60.9	44,080	66.8	48,360
1952	1240	960	June 5, 1952	23	125	91,080	124	89,920
1953	1280	253	June 14, 1953	5.2	56.6	41,000	55.5	40,180
1954	1340	452	July 1, 1954	.7	47.7	34,540	44.0	31,840
1955	1390	861	Aug. 7, 1955	2.2	42.7	30,970	43.8	31,720
1956	1440	396	May 27, 1956	1.2	38.2	27,700	38.7	28,080
1957	1510	2,460	May 9, 1957	14	118	85,750	135	99,860
1958	1560	1,760	May 16, 1958	16	201	145,600	189	136,800
1959	1630	781	May 25, 1959	7.0	92.8	67,200	96.6	69,910
1960	1710	332	July 4, 1960	2.4	62.9	45,650	-	-

9-100. Grand River ditch at La Poudre Pass, Colo.  
(Transmountain diversion)

Location.--Lat 40°28'40", long 105°49'10", in sec.20, T.6 N., R.75 W., at La Poudre Pass.

Records available.--October 1895 to September 1960. Diversion for 1896-1903, 1928-42 published in WSP 1310 (yearly diversion only for water years 1904-9).

Gage.--Water-stage recorder and 10-foot Parshall flume since May 1937. Altitude of gage is 10,190 ft (from topographic map). May 1910 to September 1936 water-stage recorder and 12-foot rectangular flume at same site.

Remarks.--Diversion is from tributaries of Colorado River to La Poudre Pass Creek (tributary of Cache la Poudre River) in NW¼ 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. Water was first diverted in 1892, but no records are available prior to 1896.

Cooperation.--Records furnished by State engineer of Colorado.

Monthly and yearly diversion, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	0	0	0	0	0	0	0	192	9,200	11,630	3,630	315	24,970
1952	0	0	0	0	0	0	0	532	11,980	6,300	2,570	0	21,380
1953	0	0	0	0	0	0	0	707	11,970	5,360	1,710	0	19,750
1954	0	0	0	0	0	0	0	3,570	5,690	2,690	781	8	12,740
1955	0	0	0	0	0	0	0	1,940	7,500	5,260	1,380	72	16,150
1956	0	0	0	0	0	0	0	3,340	12,510	3,330	1,280	11	20,470
1957	0	0	0	0	0	0	0	0	0	11,590	4,120	352	16,060
1958	0	0	0	0	0	0	0	0	9,430	3,260	996	88	13,770
1959	0	0	0	0	0	0	0	0	11,790	5,230	1,550	0	18,570
1960	0	0	0	0	0	0	0	1,430	13,440	6,520	1,560	57	23,010

## PLATTE RIVER BASIN

7455. Cameron Pass ditch at Cameron Pass, Colo.  
(Transbasin diversion)

Location.--Lat 40°31'20", long 105°53'30", in sec.2, T.6 N., R.76 W., at Cameron Pass.

Records available.--October 1912 to September 1960. Prior to October 1947, published in WSP 1310.

Gage.--Water-stage recorder and 2-foot Parshall flume. Altitude of gage is 10,300 ft (from topographic map). Prior to May 25, 1931, staff gage or water-stage recorder near present site at various datums.

Remarks.--Diversion is from tributaries of Michigan River in sec.10, T.6 N., R.76 W., in North Platte River basin to Joe Wright Creek in sec.2, T.6 N., R.76 W., in Cache la Poudre River basin.

Cooperation.--Records furnished by State engineer of Colorado.

Monthly and yearly diversion, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	0	0	0	0	0	0	0	0	131	180	0	0	311
1952	0	0	0	0	0	0	0	0	68	48	0	0	116
1953	0	0	0	0	0	0	0	0	125	0	0	0	125
1954	0	0	0	0	0	0	0	10	119	4	0	0	133
1955	0	0	0	0	0	0	0	0	145	41	0	0	186
1956	0	0	0	0	0	0	0	3.4	261	0	0	0	264
1957	0	0	0	0	0	0	0	0	0	63	0	0	63
1958	0	0	0	0	0	0	0	0	0	0	0	0	0
1959	0	0	0	0	0	0	0	0	119	7.1	0	0	126
1960	0	0	0	0	0	0	0	0	152	4.2	0	0	156

7460. Michigan ditch at Cameron Pass, Colo.  
(Transbasin diversion)

Location.--Lat 40°31'20", long 105°53'30", in sec.2, T.6 N., R.76 W., at Cameron Pass.

Records available.--1905-12 (calendar year figures only), October 1912 to September 1960. October 1912 to September 1947 published in WSP 1310.

Gage.--Water-stage recorder and 8-foot Parshall flume. Altitude of gage is 10,300 ft (from topographic map). Prior to May 28, 1933, staff gage or water-stage recorder near present site at various datums.

Remarks.--Diversion is from Michigan River and many small tributaries in sec.12, T.6 N., R.76 W., in North Platte River basin to Joe Wright Creek in sec.2, T.6 N., R.76 W., in Cache la Poudre River basin.

Cooperation.--Records furnished by State engineer of Colorado.

Monthly and yearly diversion, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	0	0	0	0	0	0	0	127	1,800	2,080	301	0	4,310
1952	0	0	0	0	0	0	0	0	1,080	918	82	0	2,080
1953	0	0	0	0	0	0	0	0	1,450	0	0	0	1,450
1954	0	0	0	0	0	0	0	0	0	0	0	0	0
1955	0	0	0	0	0	0	0	0	0	0	0	0	0
1956	0	0	0	0	0	0	0	249	1,610	0	0	0	1,860
1957	0	0	0	0	0	0	0	0	0	1,010	165	0	1,170
1958	0	0	0	0	0	0	0	0	0	0	0	0	0
1959	0	0	0	0	0	0	0	0	1,080	462	0	0	1,540
1960	0	0	0	0	0	0	0	0	1,440	26	0	0	1,470

7465. Skyline ditch at Chambers Lake, Colo.  
(Transbasin diversion)

Location.--Lat 40°39'50", long 105°53'10", in sec.31, T.8 N., R.75 W., near north end of Chambers Lake.

Records available.--October 1894 to September 1960. Prior to October 1947, published in WSP 1310.

Gage.--Water-stage recorder and 10-foot Parshall flume. Altitude of gage is 9,100 ft (from topographic map). Prior to May 4, 1937, staff gage or water-stage recorder near present site at various datums.

Remarks.--Diversion is from West Branch Laramie River in sec.14, T.8 N., R.76 W., in Laramie River basin to Chambers Lake in sec.31, T.8 N., R.75 W., in Cache la Poudre River basin.

Cooperation.--Records furnished by State engineer of Colorado.

Monthly and yearly diversion, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	0	0	0	0	0	0	0	0	3,640	0	0	0	3,640
1952	0	0	0	0	0	0	0	0	0	1,770	0	0	1,770
1953	0	0	0	0	0	0	0	0	4,180	611	0	0	4,790
1954	0	0	0	0	0	0	0	1,090	3,640	194	0	0	4,920
1955	0	0	0	0	0	0	0	0	3,430	250	0	0	3,680
1956	0	0	0	0	0	0	0	0	2,270	0	0	0	2,270
1957	0	0	0	0	0	0	0	0	0	3,130	367	0	3,500
1958	0	0	0	0	0	0	0	0	0	587	0	0	587
1959	0	0	0	0	0	0	0	0	1,210	210	0	0	1,420
1960	0	0	0	0	0	0	0	0	2,260	301	0	0	2,560

7470. Laramie-Poudre tunnel near Chambers Lake, Colo.  
(Transbasin diversion)

Location.--Lat 40°40'40", long 105°51'10", in sec.7, T.8 N., R.75 W., at west portal of Laramie-Poudre tunnel, 4 miles north of Chambers Lake.

Records available.--October 1913 to September 1960. Prior to October 1947, published in WSP 1310.

Gage.--Water-stage recorder and 10-foot Parshall flume. Altitude of gage is 8,570 ft (from topographic map). Prior to Apr. 30, 1922, staff gage or water-stage recorder near present site at various datums. Apr. 30, 1922, to Apr. 30, 1937, water-stage recorder and 6-foot Parshall flume at east portal and May 1, 1937, to Apr. 30, 1938, water-stage recorder and 12-foot Parshall flume, at same site at different datums.

Remarks.--Diversion is 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.

Cooperation.--Records furnished by State engineer of Colorado.

Monthly and yearly diversion, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	0	0	0	0	0	0	0	1,060	2,510	9,470	1,540	0	14,580
1952	0	0	0	0	0	0	0	2,400	3,490	4,290	4,040	845	15,060
1953	0	0	0	0	0	0	0	1,330	9,090	3,680	0	350	14,450
1954	0	0	0	0	0	0	0	4,130	4,150	4,130	1,310	292	14,010
1955	0	0	0	0	0	0	0	3,850	7,990	2,980	0	0	14,820
1956	0	0	0	0	0	0	0	5,450	6,670	2,880	0	0	15,000
1957	0	0	0	0	0	0	0	0	0	8,180	6,000	875	15,060
1958	0	0	0	0	0	0	0	0	6,890	4,480	1,960	391	13,720
1959	0	0	0	0	0	0	0	0	8,160	7,490	2,270	0	17,920
1960	0	0	0	0	0	0	98	4,710	7,000	4,170	0	0	15,980

7472. Bob Creek ditch near Glendevey, Colo.  
(Transbasin diversion)

Location.--Lat 40°45'50", long 105°46'40", in sec.11, T.9 N., R.75 W., 3 miles south of Deadman Hill and 9 miles southeast of Glendevey.

Records available.--October 1919 to September 1960. Prior to October 1948, published in WSP 1310.

Gage.--Water-stage recorder and 2-foot Parshall flume. Altitude of gage is 9,900 ft (from topographic map). Prior to May 1, 1940, staff gage or water-stage recorder near present site at various datums.

Remarks.--Diversion is from Nunn Creek in sec.9, T.9 N., R.75 W., in Laramie River basin to Roaring Creek in sec.11, T.9 N., R.75 W., in Cache la Poudre River basin.

Cooperation.--Records furnished by State engineer of Colorado.

Monthly and yearly diversion, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	0	0	0	0	0	0	0	0	363	21	0	0	384
1952	0	0	0	0	0	0	0	0	0	0	0	0	0
1953	0	0	0	0	0	0	0	0	0	0	0	0	0
1954	0	0	0	0	0	0	0	169	55	0	0	0	224
1955	0	0	0	0	0	0	0	307	230	22	0	0	559
1956	0	0	0	0	0	0	0	475	230	0	0	0	705
1957	0	0	0	0	0	0	0	0	0	0	0	0	0
1958	0	0	0	0	0	0	0	0	0	0	0	0	0
1959	0	0	0	0	0	0	0	0	0	0	0	0	0
1960	0	0	0	0	0	0	0	0	0	0	0	0	0

7475. Cache la Poudre River near Rustic, Colo.

Location.--Lat 40°41'45", long 105°41'10", in SE $\frac{1}{4}$  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,  $\frac{5}{8}$  miles west of Rustic,  $\frac{8}{10}$  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 1960.

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

Extremes.--1956-60: Maximum discharge, 3,610 cfs June 29, 1957 (gage height, 7.12 ft); minimum daily, 11 cfs Feb. 2, 1959.

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

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1956	-	-	-	-	-	-	-	-	-	-	-	94.8	-
1957	28.4	18.9	17.3	17.2	15.6	13.4	20.8	227	1,685	1,542	444	322	364
1958	37.6	25.3	18.5	15.9	17.2	17.1	25.9	731	1,315	375	219	141	245
1959	56.1	17.4	15.4	14.1	12.8	14.4	21.5	305	1,477	527	282	175	243
1960	47.1	35.0	25.4	19.1	17.2	20.6	91.2	563	1,461	551	227	161	270

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1956	-	-	-	-	-	-	-	-	-	-	-	5,640	-
1957	1,620	1,120	1,080	1,060	869	823	1,240	13,940	100,300	94,840	27,320	19,170	263,400
1958	2,310	1,510	1,140	976	952	1,050	1,540	44,970	78,230	23,040	13,440	8,390	177,600
1959	5,450	1,040	944	865	712	987	1,230	18,750	87,870	32,410	17,540	10,430	176,000
1960	2,900	2,080	1,560	1,170	998	1,270	5,430	34,980	88,100	33,870	13,970	9,550	195,900

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1956	1510	-	-	-	-	-	-	-	-
1957	1510	3,610	June 29, 1957	12	364	263,400	365	264,500	
1958	1560	2,380	May 29, 1958	14	245	177,600	246	178,000	
1959	1650	2,330	June 12, 1959	11	243	176,000	245	177,100	
1960	1710	2,120	June 4, 1960	14	270	195,900	-	-	

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

Location.--Lat 40°38'30", long 105°29'30", in SW<sup>1</sup> sec.20, T.8 N., R.72 W., on left bank 5.7 miles upstream from mouth, 6 miles southeast of Rustic, and 22 miles west of Fort Collins.

Drainage area.--90.3 sq mi.

Records available.--August 1956 to September 1960.

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

Extremes.--1956-60: Maximum discharge, 1,120 cfs June 29, 1957 (gage height, 4.70 ft); minimum not determined.

Remarks.--No diversion above station. Slight regulation by small reservoirs and lakes.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1956	-	-	-	-	-	-	-	-	-	-	58.5	29.6	-
1957	18.3	14.7	10.6	9.84	11.0	12.3	17.8	102	464	341	111	55.7	97.6
1958	27.5	17.7	13.0	11.1	12.2	12.5	18.9	242	317	94.5	73.4	26.6	72.5
1959	15.1	14.4	9	7	7	8.7	15.7	65.2	296	104	68.2	21.2	52.6
1960	19.6	15.5	8	6	5	7.7	15.8	81.3	268	120	57.4	22.5	52.1

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1956	-	-	-	-	-	-	-	-	-	-	3,590	1,760	-
1957	1,120	875	651	605	613	756	1,060	6,240	27,630	20,990	6,830	3,510	70,680
1958	1,690	1,060	801	680	680	766	1,120	14,910	18,940	5,810	4,510	1,580	52,450
1959	928	859	553	430	389	536	934	4,010	17,630	6,380	4,190	1,260	38,100
1960	1,210	920	492	369	288	476	938	5,000	15,920	7,360	3,530	1,340	37,840

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1956	1510	-	-	-	-	-	-	-	-
1957	1510	1,120	June 29, 1957	8.5	97.6	70,680	98.9	71,580	-
1958	1560	732	May 27, 1958	10	72.5	52,450	70.8	51,240	-
1959	1630	470	June 14, 1959	-	52.8	38,100	53.0	38,380	-
1960	1710	458	June 17, 1960	-	52.1	37,840	-	-	-

7490. Cache la Poudre River below Elkhorn Creek, Colo.

Location.--Lat 40°41'30", long 105°26'00", in NW<sup>1</sup> sec.2, T.8 N., R.72 W., on left bank 500 ft southwest of State Highway 14, 0.6 mile downstream from Elkhed Creek, and 20 miles northwest of Fort Collins.

Drainage area.--404 sq mi (revised).

Records available.--April 1946 to September 1959.

Gage.--Water-stage recorder. Datum of gage is 6,447.53 ft above mean sea level, datum of 1929.

Average discharge.--13 years (1946-59), 350 cfs (253,400 acre-ft per year).

Extremes.--1946-59: Maximum discharge, 4,900 cfs June 30, 1957 (gage height, 5.98 ft); minimum daily, 13 cfs Dec. 13, 1949, Jan. 3, 4, 1950.

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

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	48.5	40.7	32.0	24.5	31.0	27.3	56.1	834	1,926	1,459	491	281	439
1952	73.7	41.2	42.6	40.2	33.6	30.0	101	864	2,384	699	419	258	415
1953	52.1	31.4	24.2	31.5	28.7	29.8	37.7	381	1,766	566	362	212	293
1954	58.9	39.0	28.5	25.8	28.5	26.4	70.7	695	783	324	139	125	196
1955	90.1	39.8	22.2	22.8	19.4	25.1	49.9	562	1,117	560	318	117	246
1956	57.4	50.4	37.1	31.0	30.3	36.5	61.8	1,233	1,711	514	231	134	344
1957	41.9	29.0	22.3	23.5	29.6	26.8	53.5	453	2,372	2,007	575	364	501
1958	77.0	48.4	39.4	31.6	32.6	32.0	59.6	1,178	1,773	473	285	164	350
1959	75.8	34.0	27.0	23.1	20.4	26.0	60.7	402	1,950	632	366	208	310
1960													

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	2,990	2,420	1,970	1,510	1,720	1,680	3,340	51,290	14,600	89,740	30,170	16,690	318,100
1952	4,530	2,450	2,620	2,470	1,930	1,850	6,030	53,150	41,800	42,970	25,790	15,370	301,000
1953	3,210	1,870	1,490	1,930	1,590	1,830	2,240	23,430	105,100	34,820	22,290	12,600	212,400
1954	3,620	2,320	1,750	1,580	1,580	1,620	4,210	42,720	46,570	19,930	8,530	7,420	141,800
1955	5,540	2,370	1,370	1,400	1,080	1,540	2,970	34,570	66,480	34,440	19,560	6,980	178,300
1956	3,530	3,020	2,290	1,900	1,750	2,240	3,680	75,860	101,800	31,600	14,180	7,970	249,800
1957	2,570	1,730	1,370	1,440	1,640	1,650	3,190	27,880	141,100	23,400	35,330	21,630	362,900
1958	4,730	2,880	2,420	1,940	1,810	1,970	3,550	72,420	105,500	29,080	17,530	9,770	253,600
1959	4,660	2,020	1,660	1,420	1,130	1,600	3,610	24,700	110,100	38,880	22,510	12,400	224,700
1960													

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	296	214,700
1951	1210	3,860	June 20, 1951	16	439	318,100	443	320,300
1952	1240	4,340	June 11, 1952	24	415	301,000	410	297,900
1953	1280	3,340	June 14, 1953	19	293	212,400	295	213,500
1954	1340	1,630	May 21, 1954	22	196	141,800	198	143,400
1955	1390	1,890	June 23, 1955	15	246	178,300	246	177,800
1956	1440	3,440	June 3, 1956	24	344	249,800	340	246,600
1957	1510	4,900	June 30, 1957	18	501	362,900	507	367,300
1958	1560	3,800	May 29, 1958	27	350	253,600	348	251,900
1959	1630	2,840	June 21, 1959	18	310	224,700	-	-
1960								



7500. Columbine ditch at Deadman Hill, Colo.  
(Transbasin diversion)

Location.--Lat 40°48'00", long 105°46'00", in sec.26, T.10 N., R.75 W., at Deadman Hill, 9 miles east of Glendevey.

Records available.--October 1920 to September 1960. Prior to October 1948, published in WSP 1310.

Gage.--Water-stage recorder and 1-foot Parshall flume. Altitude of gage is 10,300 ft (from topographic map). Prior to May 18, 1940, staff gage or water-stage recorder near present site at various datums.

Remarks.--Diversion is from Nunn Creek in sec.3, T.9 N., R.75 W., in Laramie River basin to North Fork Cache la Poudre River in sec.25, T.10 N., R.75 W., in Cache la Poudre River basin.

Cooperation.--Records furnished by State engineer of Colorado.

Monthly and yearly diversion, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	0	0	0	0	0	0	0	0	105	30	0	0	135
1952	0	0	0	0	0	0	0	0	0	0	0	0	0
1953	0	0	0	0	0	0	0	0	0	0	0	0	0
1954	0	0	0	0	0	0	0	46	26	0	0	0	72
1955	0	0	0	0	0	0	0	51	99	15	0	0	165
1956	0	0	0	0	0	0	0	86	169	0	0	0	255
1957	0	0	0	0	0	0	0	0	0	0	0	0	0
1958	0	0	0	0	0	0	0	0	0	0	0	0	0
1959	0	0	0	0	0	0	0	0	0	0	0	0	0
1960	0	0	0	0	0	0	0	0	0	0	0	0	0

7505. Wilson supply ditch near Eaton Reservoir, Colo.  
(Transbasin diversion)

Location.--Lat 40°54'30", long 105°46'50", in sec.23, T.11 N., R.75 W., 3 miles southwest of Eaton Reservoir and 11 miles northeast of Glendevey.

Records available.--1902-12 (yearly figures only), October 1912 to September 1960. October 1912 to September 1947 published in WSP 1310.

Gage.--Water-stage recorder and 10-foot Parshall flume. Altitude of gage is 8,600 ft (from topographic map). Prior to May 19, 1923, staff gage or water-stage recorder near present site at various datums.

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

Cooperation.--Records furnished by State engineer of Colorado.

Monthly and yearly diversion, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	0	0	0	0	0	0	0	2,380	2,760	116	0	0	5,260
1952	0	0	0	0	0	0	0	2,000	825	127	0	0	2,750
1953	0	0	0	0	0	0	0	738	1,250	38	0	0	2,030
1954	0	0	0	0	0	0	0	721	317	0	0	0	1,040
1955	0	0	0	0	0	0	0	881	581	136	0	0	1,600
1956	0	0	0	0	0	0	0	2,370	1,010	15	0	0	3,400
1957	0	0	0	0	0	0	0	642	256	384	0	0	1,280
1958	0	0	0	0	0	0	0	1,480	377	0	0	0	1,860
1959	0	0	0	0	0	0	0	877	1,180	50	0	0	2,110
1960	0	0	0	0	0	0	22	1,790	1,310	69	0	0	3,190

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, May 1947 to September 1960. Published as "at Livermore" 1929-31.

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.--15 years (1929-31, 1947-60), 40.8 cfs (29,540 acre-ft per year).

Extremes.--1929-31, 1947-60: 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; minimum daily, 0.1 cfs May 14-23, 1955  
Maximum flood known, 20,000 cfs (estimated) May 20, 1904.

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

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	13.0	5.67	6.15	4.82	6.89	14.4	69.9	228	152	11.5	74.5	14.0	50.3
1952	12.6	11.2	10.9	9.53	8.50	7.68	65.3	201	121	8.33	6.17	5.95	39.1
1953	12.8	12.7	6.41	7.02	7.15	8.19	12.0	23.3	19.1	9.08	6.67	3.52	10.7
1954	15.7	16.4	10.4	10.7	10.2	9.56	8.29	2.79	1.21	.72	4.88	22.4	9.41
1955	8.24	4.59	3.04	2.43	3.52	5.33	4.12	.55	3.32	1.32	3.57	.28	3.36
1956	1.79	7.02	5.13	3.89	4.15	5.98	7.71	88.5	30.5	6.77	5.79	4.30	14.4
1957	7.22	6.31	4.41	3.19	3.73	4.41	61.8	437	439	39.1	12.8	7.83	85.8
1958	25.9	9.56	7.65	4.55	5.27	8.95	132	523	85.8	13.6	7.11	6.30	69.8
1959	16.5	11.6	9.27	7.92	23.2	31.8	164	417	126	10.1	6.30	6.03	69.4
1960	13.9	20.4	11.7	6.89	9.72	24.3	43.3	179	79.6	6.69	2.71	8.01	33.9

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	797	337	378	296	383	887	4,160	14,000	9,070	708	4,580	830	36,430
1952	775	669	673	586	489	472	3,890	12,390	7,220	512	380	354	28,410
1953	787	757	394	432	397	503	717	1,430	1,130	559	410	209	7,720
1954	964	976	639	661	569	589	493	172	72	44	300	1,330	6,810
1955	507	273	187	150	196	328	245	34	197	81	220	17	2,440
1956	110	419	316	239	239	368	459	5,440	1,810	416	358	256	10,430
1957	444	376	271	196	207	271	3,680	26,890	26,120	2,400	785	466	62,110
1958	1,590	569	471	280	293	550	7,880	32,130	5,100	637	437	375	50,510
1959	1,020	690	570	487	1,290	1,960	9,730	25,660	7,480	619	388	359	50,250
1960	854	1,220	718	423	559	1,500	2,580	10,990	4,740	424	166	477	24,650

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	29.1	21,080
1951	1210	3,460	Aug. 3, 1951	3.8	50.3	36,430	51.1	37,030
1952	1240	535	June 5, 1952	3.8	39.1	28,410	38.9	28,230
1953	1280	60	May 16, 1953	2.7	10.7	7,720	11.6	6,370
1954	1340	87	Sept. 13, 1954	0.3	9.41	6,810	7.18	5,200
1955	1390	51	Sept. 18, 1955	0.1	3.56	2,440	3.19	2,310
1956	1440	432	May 25, 1956	0.2	14.4	10,430	14.7	10,670
1957	1510	866	June 18, 1957	2.4	85.8	62,110	87.9	63,640
1958	1560	1,170	May 24, 1958	3.8	69.8	50,510	69.3	50,160
1959	1630	1,380	May 25, 1959	3.0	69.4	50,250	70.1	50,760
1960	1710	406	June 13, 1960	1.8	33.9	24,650	-	-

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

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

Drainage area.--1,055 sq mi (revised).

Records available.--June to August 1881, May to July 1883, October 1883 to September 1960. Monthly discharge only for some periods, published in WSP 1310. Records for Mar. 23 to Apr. 30 and July 4 to Aug. 20, 1883, published in WSP 9, have been found to be unreliable and should not be used. Prior to 1902, published as Cache la Poudre Creek or River at or near Fort Collins.

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

Average discharge.--77 years (1883-1960), 399 cfs (288,900 acre-ft per year).

Extremes.--1881, 1883-1960: Maximum discharge not determined, occurred May 20, 1904; minimum daily, 1.6 cfs Nov. 20, 28, 1948, caused by diversion of Poudre Valley Canal half a mile upstream.

Flood of June 9, 1891, caused by failure of Chambers Lake Dam, given in State report as 21,000 cfs.

Remarks.--Natural flow of stream affected by transbasin and transmountain diversions (see elsewhere in this report), diversions above station for irrigation of about 50,000 acres, and diversions for municipal use.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	55.5	41.8	31.8	28.1	32.0	38.8	117	1,016	1,694	1,129	438	282	410
1952	87.9	52.0	42.6	43.0	28.6	35.1	100	788	2,059	636	400	258	377
1953	59.9	36.1	27.2	35.4	40.6	33.3	48.5	333	1,217	440	295	131	225
1954	55.6	33.0	33.0	31.9	28.2	25.4	49.6	417	579	245	61.2	96.6	138
1955	81.7	27.7	17.3	19.8	16.6	20.1	33.2	359	1,024	459	254	73.3	199
1956	50.1	38.8	39.9	27.9	24.6	31.5	58.7	1,184	1,468	399	190	54.3	298
1957	33.1	20.6	26.0	21.0	24.4	23.5	119	578	2,291	1,700	321	183	445
1958	82.1	45.7	42.9	34.4	37.4	45.7	184	1,509	1,618	264	66.1	54.9	333
1959	51.8	31.7	32.8	26.8	36.0	50.0	204	718	1,744	403	176	68.4	295
1960	73.7	63.1	18.7	17.3	13.4	49.2	93.3	816	1,626	454	106	71.0	283

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	3,420	2,490	1,960	1,750	1,780	2,380	6,950	62,490	100,800	69,410	26,930	16,780	297,100
1952	5,410	3,100	2,620	2,650	1,640	2,160	5,960	48,460	122,500	39,080	24,580	15,340	273,500
1953	3,680	2,150	1,870	2,180	2,250	2,050	2,890	20,450	72,440	27,080	18,150	7,810	162,800
1954	3,420	1,960	2,030	1,960	1,570	1,560	2,950	25,660	34,470	15,040	3,760	5,750	100,100
1955	5,020	1,650	1,060	1,220	920	1,240	1,980	22,080	60,930	28,190	15,640	4,360	144,300
1956	3,080	2,310	2,460	1,710	1,410	1,930	3,490	72,790	87,350	24,540	11,670	3,230	216,000
1957	2,040	1,220	1,600	1,290	1,360	1,440	7,060	35,530	136,300	104,600	20,330	9,720	322,500
1958	5,050	2,720	2,640	2,110	2,080	2,690	10,930	92,800	96,130	16,260	4,070	3,280	240,700
1959	3,180	1,880	2,020	1,650	2,000	3,070	12,120	44,150	103,800	24,810	10,820	4,070	213,600
1960	4,530	3,750	1,150	1,070	771	3,030	5,550	50,190	96,750	27,910	6,540	4,230	205,500

† Corrected.

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	289	209,500
1951	1210	4,630	Aug. 3, 1951	5.6	410	297,100	415	300,400
1952	1240	3,660	June 8, 1952	5.6	377	273,500	372	269,900
1953	1280	2,490	June 14, 1953	16	225	182,800	225	162,700
1954	1340	1,220	May 21, 1954	14	138	100,100	139	100,400
1955	1390	1,840	June 9, 1955	12	199	144,300	199	144,400
1956	1440	3,040	May 25, 1956	11	298	216,000	293	213,000
1957	1510	4,370	June 30, 1957	8.1	445	322,500	453	328,000
1958	1590	3,770	May 29, 1958	23	333	240,700	328	237,400
1959	1630	2,680	June 8, 1959	16	295	213,600	298	215,900
1960	1710	2,560	June 5, 1960	5	283	205,500	-	-

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 (revised).

Records available.--March to October 1903, August to November 1904, January 1914 to December 1919, June 1924 to September 1960. 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.--41 years (1914-19, 1924-60), 90.2 cfs (65,300 acre-ft per year).

Extremes.--1903-4, 1914-19, 1924-60: Maximum daily discharge, 4,220 cfs June 24, 26, 1917; minimum daily, 0.8 cfs Oct. 3, 1946.

Remarks.--Natural flow of stream affected by transmountain and transbasin diversions, storage reservoirs, power developments, diversion for municipal supply, diversions above station for irrigation of about 250,000 acres, and return flow from irrigated areas. Records of chemical analyses for the period August 1954 to August 1956 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	24.4	66.2	66.2	48.9	51.8	53.0	49.8	41.2	102	24.9	191	29.3	62.5
1952	90.7	131	99.6	113	111	102	109	92.6	188	32.3	23.0	21.7	90.9
1953	80.5	99.0	87.1	71.3	69.2	65.4	70.5	16.3	39.5	20.3	21.2	20.9	55.0
1954	48.0	88.0	77.7	68.2	61.4	50.8	20.1	9.58	9.50	13.0	16.0	9.84	39.2
1955	22.3	41.3	57.1	52.7	53.6	55.8	37.2	12.3	25.6	20.4	37.0	15.8	35.9
1956	38.9	64.7	66.3	57.1	52.0	55.5	36.5	90.9	113	15.9	20.3	15.8	52.2
1957	36.1	76.8	70.2	58.6	56.5	50.8	62.8	102	680	155	26.6	33.4	115
1958	93.8	159	166	116	141	117	246	1,102	426	45.0	21.4	21.6	222
1959	67.1	115	105	92.7	96.2	120	238	200	136	31.9	24.4	45.5	106
1960	131	126	111	108	100	110	71.4	37.4	58.6	37.8	18.9	33.3	78.6

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1,500	3,940	4,070	3,010	2,870	3,260	2,960	2,530	6,090	1,530	11,710	1,750	45,220
1952	5,580	7,770	6,130	6,950	6,390	6,270	6,490	5,700	10,000	1,990	1,410	1,290	65,970
1953	4,950	5,890	5,360	4,380	3,850	4,020	4,190	1,000	2,350	1,250	1,300	1,240	39,780
1954	2,950	5,240	4,780	4,190	3,410	3,120	1,200	589	565	798	985	586	28,410
1955	1,370	2,460	3,510	3,240	2,980	3,430	2,210	759	1,530	1,250	2,270	943	25,950
1956	2,390	3,850	4,070	3,510	2,990	3,410	2,170	5,590	6,720	977	1,250	941	37,870
1957	2,220	4,570	4,320	3,600	3,140	3,120	3,740	6,270	39,250	9,540	1,640	1,990	83,400
1958	5,770	9,490	10,220	7,110	7,850	7,180	14,650	67,790	25,340	2,770	1,320	1,290	160,800
1959	4,130	6,820	6,450	5,700	5,340	7,380	14,150	12,310	8,110	1,960	1,500	2,710	76,560
1960	8,040	7,520	6,850	6,640	5,770	6,740	4,250	2,300	3,490	2,320	1,160	1,980	57,060

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	39.7	28,760
1951	1210	3,760	Aug. 5, 1951	2.6	62.5	45,220	76.2	55,190
1952	1240	667	June 12, 1952	13	90.9	65,970	86.4	62,690
1953	1280	139	Oct. 23, 1952	7.1	55.0	39,780	50.5	36,550
1954	1340	341	July 1, 1954	4.7	39.2	28,410	31.5	22,780
1955	1390	950	Aug. 8, 1955	5.6	35.9	25,950	40.0	28,920
1956	1440	870	June 2, 1956	8.0	52.2	37,870	53.3	38,670
1957	1510	1,670	June 5, 1957	7.0	115	83,400	135	97,760
1958	1560	2,230	May 30, 1958	11	222	160,800	211	152,700
1959	1630	704	May 8, 1959	16	106	76,560	113	81,570
1960	1710	237	June 14, 1960	8.5	78.6	57,060	-	-

7535. Lonetree Creek near Nunn, Colo.

Location.--Lat 40°46'00", long 104°47'25", in NE $\frac{1}{4}$  sec.8, T.9 N., R.66 W., on right bank 200 ft upstream from bridge on U. S. Highway 85 and  $4\frac{1}{2}$  miles north of Nunn.

Drainage area.--199 sq mi (revised).

Records available.--July 1951 to September 1957.

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

Average discharge.--6 years (1951-57), 0.76 cfs (550 acre-ft per year).

Extremes.--1951-57: Maximum discharge, 775 cfs Aug. 7, 1955 (gage height, 4.65 ft), from rating curve extended above 110 cfs on basis of slope-area measurement of peak flow; no flow for many days in each year.

Remarks.--Flow is mainly return water from irrigation. There are many small diversion for irrigation and small reservoirs for stock water above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	-	-	-	-	-	1.32	3.72	0.20	-
1952	0.18	0.39	0.39	0.24	0.47	0.33	0.86	1.02	0.21	1.04	0	0	0.34
1953	0	0	0	0	0	0	0	.02	2.39	1.30	1.47	.04	.44
1954	0	0	.02	0	.06	.10	.08	.07	0	.01	.04	0	.03
1955	0	0	0	0	0	0	.04	2.65	10.4	.19	4.39	5.41	1.92
1956	.55	.39	.74	.49	.51	1.86	.35	2.92	2.83	.02	0	0	.89
1957	0	0	0	.01	.01	.10	.74	6.15	2.77	.42	.87	.03	.93
1958													
1959													
1960													

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	-	-	-	-	-	81	228	12	-
1952	11	23	24	14	27	20	51	63	13	2.4	0	0	248
1953	0	0	0	0	0	0	0	.99	142	80	90	2.6	316
1954	0	0	1.0	0	3.6	6.0	48	4.4	0	.8	2.4	0	23
1955	0	0	0	0	0	0	2.2	163	619	12	270	322	1,390
1956	34	23	46	30	29	115	21	179	189	1.0	0	0	647
1957	0	0	0	.6	.6	6.1	44	378	165	26	54	2.0	676
1958													
1959													
1960													

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950								
1951	1210	239	Aug. 3, 1951	-	-	-	-	-
1952	1240	14	June 27, 1952	0	0.34	248	0.26	190
1953	1280	107	July 30, 1953	0	.44	316	.44	317
1954	1340	7.3	July 16, 1954	0	.03	23	.03	22
1955	1390	775	Aug. 7, 1955	0	1.92	1,390	2.06	1,490
1956	1440	160	June 16, 1956	0	.89	647	.75	544
1957	1510	131	Aug. 7, 1957	0	.93	676	-	-
1958								
1959								
1960								

7540. South Platte River near Kersey, Colo.

Location.--Lat 40°24'44", long 104°33'46", in NW $\frac{1}{4}$ SW $\frac{1}{4}$  sec.9, T.5 N., R.64 W., near left bank at downstream side of bridge on State Highway 37, 1.9 miles north of railroad in Kersey, and 2 $\frac{1}{2}$  miles downstream from Cache la Poudre River.

Drainage area.--9,598 sq mi (revised).

Records available.--May 1901 to December 1903, March 1905 to September 1960. 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.--57 years (1901-3, 1905-60), 723 cfs (523,400 acre-ft per year).

Extremes.--1901-3, 1905-60: 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.--Natural flow of stream affected by transmountain and transbasin diversions (see elsewhere in this report), storage reservoirs, power developments, ground-water withdrawals and diversions for irrigation of about 888,000 acres, and return flow from irrigated areas. Records of chemical analyses for the periods October 1949 to September 1953 and August 1954 to August 1957, and water temperatures for the period December 1950 to September 1953 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	171	420	410	442	545	324	305	302	1,039	283	1,304	308	487
1952	617	640	613	614	551	542	878	2,189	1,936	280	246	175	772
1953	385	442	529	527	432	399	406	217	386	284	249	143	365
1954	248	504	483	466	363	308	111	63.2	109	159	120	76.9	250
1955	129	230	293	332	327	309	187	91.9	182	100	507	154	220
1956	267	367	344	332	287	268	179	339	289	127	216	91.3	259
1957	149	362	355	369	418	368	567	4,443	3,942	1,758	775	467	1,169
1958	710	975	930	689	626	542	1,034	6,824	2,133	332	326	190	1,275
1959	459	477	477	500	556	601	936	1,046	750	214	306	360	556
1960	677	634	595	529	623	1,101	815	1,553	917	265	193	181	674

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	10,520	25,000	25,200	27,160	30,280	19,890	18,130	18,580	61,850	17,420	80,150	18,200	352,400
1952	37,940	38,110	37,710	37,780	31,720	33,320	52,230	134,600	115,200	16,000	15,130	10,400	560,100
1953	23,650	26,330	32,540	32,410	23,990	24,510	24,180	13,330	22,990	16,230	15,330	8,540	264,000
1954	15,240	30,010	29,670	28,660	20,140	18,940	6,590	3,880	6,490	9,750	7,390	4,580	181,300
1955	7,940	13,690	18,040	20,420	18,170	19,000	11,130	5,650	10,800	6,150	18,850	9,160	159,000
1956	16,420	21,850	21,130	20,440	16,500	16,490	10,650	20,830	17,200	7,930	13,260	5,430	198,000
1957	9,180	21,550	21,840	22,710	23,210	22,600	33,750	273,200	234,600	108,100	47,870	27,810	846,200
1958	43,630	58,040	51,020	42,360	34,760	33,310	61,540	419,600	126,900	20,410	20,040	11,320	922,900
1959	28,200	28,380	29,320	30,720	30,870	36,950	55,700	64,300	44,630	13,180	18,830	21,430	402,500
1960	41,620	37,710	36,570	32,550	35,830	67,670	48,520	95,470	54,570	16,290	11,860	10,770	489,400

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	312	226,100	
1951	1210	10,300	Aug. 5, 1951	51	497	352,400	560	405,400	
1952	1240	5,470	June 9, 1952	120	772	560,100	729	528,900	
1953	1280	1,370	June 21, 1953	74	365	264,000	354	256,400	
1954	1340	610	Nov. 6, 1953	39	250	181,300	202	146,100	
1955	1390	2,510	Aug. 8, 1955	28	220	159,000	247	178,700	
1956	1440	2,190	May 28, 1956	49	259	188,000	250	181,200	
1957	1510	14,300	May 10, 1957	90	1,169	846,200	1,307	946,300	
1958	1560	11,200	May 26, 1958	115	1,275	922,900	1,183	856,100	
1959	1630	4,000	May 23, 1959	108	556	402,500	597	432,500	
1960	1710	3,800	May 20, 1960	75	674	489,400	-	-	

## 7545. Middle Crow Creek near Hecla, Wyo.

Location.--Lat 41°10'30", long 105°15'10", in sec.20, T.14 N., R.70 W., on left bank a quarter of a mile upstream from high-water line of Granite Springs Reservoir, 4½ miles northwest of Hecla, and 7 miles northwest of Granite Canyon.

Drainage area.--25.8 sq mi (revised).

Records available.--April to July 1902, April to November 1903, April 1933 to September 1960. Monthly discharge only for some periods, published in WSP 1310. Published as Middle Fork Crow Creek near Hecla 1933-45, 1948-55.

Gage.--Water-stage recorder and Cippoletti weir. Altitude of gage is 7,270 ft (from topographic map). Apr. 1, 1902, to Nov. 21, 1903, staff gages at sites 1¼ miles downstream at different datums.

Average discharge.--27 years (1933-60), 4.22 cfs (3,060 acre-ft per year).

Extremes.--1902-3, 1933-60: Maximum discharge, 495 cfs Sept. 8, 1933 (gage height, 4.90 ft., from rating curve extended above 52 cfs on basis of slope-area measurement of peak flow; no flow for many days in most years.

Remarks.--Diversions above station for irrigation of about 100 acres.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1.01	1.22	0.8	0.6	0.4	0.7	6.78	9.76	4.89	1.63	0.82	0.04	2.39
1952	.9	.9	.7	.6	.6	.8	20.6	24.9	6.87	1.32	.43	.13	4.89
1953	.48	.66	.7	.8	.8	1.5	5.68	8.38	4.73	1.50	1.77	.14	2.27
1954	.28	.5	.5	.5	.5	.6	5.12	2.48	.25	.02	0	0	.89
1955	0	.04	.1	.2	.3	.8	4.86	3.71	2.61	.13	0	0	1.06
1956	0	.03	.2	.2	.1	.6	4.91	8.50	.99	0	0	0	1.30
1957	0	.05	.2	.3	.6	.8	12.9	56.7	20.4	6.38	12.02	1.19	8.53
1958	2.69	2.19	1.5	1	1.5	2	15.0	23.8	7.23	5.06	1.11	.47	5.31
1959	.87	1.50	.8	.7	.7	1.2	13.1	23.6	9.13	2.53	.57	.36	4.60
1960	1.28	1	.8	.7	.6	4.2	6.02	4.25	1.16	.09	0	0	1.67

† Corrected.

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	62	73	49	37	22	43	403	600	291	100	50	2.2	1,730
1952	55	54	43	37	35	49	1,220	1,530	409	81	26	7.5	3,550
1953	29	39	43	49	44	92	338	515	281	92	109	81	1,640
1954	17	30	31	31	28	37	305	153	15	1.0	0	0	648
1955	0	2.6	6.1	12	17	49	289	228	155	7.7	0	0	766
1956	0	2.0	12	12	5.8	37	292	522	59	0	0	0	942
1957	0	3.0	12	18	33	49	770	3,490	1,210	392	124	71	6,170
1958	165	130	92	61	83	123	891	1,460	430	311	68	28	3,840
1959	54	89	49	43	39	71	777	1,450	543	156	35	22	3,330
1960	78	60	49	43	35	258	358	261	69	5.4	0	0	1,220

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	2.91	2,110
1951	1210	54	July 31, 1951	0	2.39	1,730	2.35	1,700
1952	1240	46	Apr. 30, 1952	0	4.89	3,550	4.84	3,510
1953	1280	23	July 31, 1953	0	2.27	1,640	2.22	1,610
1954	1340	20	Apr. 7, 1954	0	.89	648	.80	579
1955	1390	22	June 17, 1955	0	1.06	766	1.07	772
1956	1440	27	May 23, 1956	0	1.30	942	1.30	943
1957	1510	98	May 4, 1957	0	8.53	6,170	9.04	6,540
1958	1560	78	July 24, 1958	.1	5.31	3,840	5.04	3,650
1959	1630	38	May 23, 1959	0	4.60	3,330	4.59	3,320
1960	1710	418	Apr. 7, 1960	0	1.67	1,220	-	-

a Maximum recorded.

## PLATTE RIVER BASIN

7550. South Crow Creek near Hecla, Wyo.

Location.--Lat 41°07'40", long 105°12'00", in sec.2, T.13 N., R.70 W., on left bank just upstream from high-water line of South Crow Creek Reservoir, 2½ miles southwest of Hecla and 3 miles northwest of Granite Canyon.

Drainage area.--13.9 sq mi (revised).

Records available.--May 1933 to September 1960 (no winter records water years 1936-50). Monthly discharge only for some periods, published in WSP 1310. Prior to October 1950, published as South Fork Crow Creek near Hecla.

Gage.--Water-stage recorder. Altitude of gage is 7,190 ft (from topographic map).

Average discharge.--12 years (1933-35, 1950-60), 1.27 cfs (919 acre-ft per year).

Extremes.--1933-60: Maximum discharge, 110 cfs July 21, 1945 (gage height, 3.78 ft), from rating curve extended above 20 cfs; no flow for many days in most years.

Remarks.--Diversion above station for irrigation of about 100 acres.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	0.46	0.51	0.4	0.3	0.2	0.3	3.16	2.95	1.89	0.32	0.49	0.06	0.92
1952	.72	.72	.6	.5	.4	.5	9.18	6.01	1.07	.08	0	0	1.64
1953	.02	.34	.4	.5	.5	1.1	2.85	2.37	1.13	.85	.45	0	.88
1954	.16	.49	.5	.5	.5	.6	1.63	.94	1.13	0	0	0	.45
1955	0	0	.1	.1	.2	.4	2.64	1.11	1.05	.07	0	0	.47
1956	0	0	.04	.1	.1	.4	3.43	3.02	.44	0	0	0	.63
1957	0	0	.07	.2	.3	.5	6.41	12.5	3.46	1.45	.46	.44	2.16
1958	.86	.78	.6	.5	.6	.9	7.46	5.83	1.53	1.73	1.01	.48	1.86
1959	.61	.80	.6	.5	.5	.9	8.54	12.4	4.26	1.27	.48	.37	2.61
1960	1.05	.8	.6	.5	.4	3	3.07	1.88	.63	1.01	0	0	.98

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	28	30	25	18	11	18	188	181	112	20	30	3.4	664
1952	44	43	37	31	23	31	546	370	64	5.2	0	0	1,190
1953	1.0	20	25	31	28	68	168	146	67	52	28	0	634
1954	9.7	29	31	31	28	37	97	58	7.5	0	0	0	328
1955	0	0	6.1	6.1	11	25	157	68	62	4.2	0	0	339
1956	0	0	2.4	6.1	5.8	25	204	185	26	0	0	0	454
1957	0	0	4.2	12	17	31	381	771	207	89	28	26	1,570
1958	53	46	37	31	33	55	444	358	91	107	62	28	1,340
1959	37	48	37	31	28	53	508	763	254	78	29	22	1,890
1960	64	48	37	31	23	171	182	115	37	.8	0	0	709

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950									
1951	1210	12	May 17, 1951	0	0.92	664	0.98	705	
1952	1240	a20	Apr. 7, 1952	0	1.64	1,190	1.54	1,120	
1953	1280	20	July 10, 1953	0	.88	634	.91	658	
1954	1340	4.6	Apr. 7, 1954	0	.45	328	.36	265	
1955	1390	7.1	June 13, 1955	0	.47	339	.48	336	
1956	1440	13	May 22, 1956	0	.63	454	.63	456	
1957	1510	31	May 9, 1957	0	2.16	1,570	2.35	1,700	
1958	1560	62	Apr. 18, 1958	-	1.86	1,340	1.84	1,330	
1959	1630	29	May 24, 1959	0	2.61	1,890	2.64	1,920	
1960	1710	-	-	0	.98	709	-	-	

a Maximum recorded.



7560. Crow Creek near Cheyenne, Wyo.

Location.--Lat 41°07'00", long 104°45'20", in SE $\frac{1}{4}$  sec. 3, T.13 N., R.66 W., on left bank a quarter of a mile downstream from sewage-disposal plant and  $3\frac{1}{2}$  miles southeast of State Capitol in Cheyenne.

Drainage area.--297 sq mi (revised); area at site  $1\frac{1}{4}$  miles downstream, 320 sq mi (revised).

Records available.--October 1922 to November 1924, July 1951 to September 1957. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 5,940 ft (from topographic map). Oct. 20, 1922, to Nov. 1, 1924, staff gage on bridge  $1\frac{1}{4}$  miles downstream at different datum.

Average discharge.--8 years (1922-24, 1951-57), 12.0 cfs (8,690 acre-ft per year).

Extremes.--1922-24, 1951-57: Maximum discharge, 395 cfs June 14, 1955 (gage height, 5.62 ft), from rating curve extended above 120 cfs on basis of slope-area measurement of peak flow; minimum daily, 2.0 cfs Apr. 16, 17, 23, 1923.  
Flood of May 20, 1904, was estimated as 8,500 cfs at Cheyenne. Flood of June 2, 1929, reached a discharge of 8,200 cfs, by slope-area measurement about 5 miles upstream.

Remarks.--Practically all flow above station is diverted for municipal supply and irrigation. Flow at station is mainly drainage and waste water from Cheyenne. Ten small reservoirs above station (total capacity, about 400 acre-ft) for irrigation, stock water, and domestic use. Two reservoirs above station (total capacity, about 12,000 acre-ft) for municipal supply and power development for Cheyenne.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	-	-	-	-	-	9.94	10.7	5.86	-
1952	11.2	12.3	10.1	9.97	11.0	12.8	14.2	11.8	7.94	8.52	7.43	8.11	10.4
1953	7.05	8.98	9.35	9.95	10.3	11.4	11.8	8.58	11.9	9.83	9.21	7.06	9.61
1954	8.11	8.67	8.64	8.35	7.98	8.86	9.36	7.39	6.68	7.64	5.96	6.60	7.85
1955	7.37	7.41	7.25	6.60	7.18	13.0	18.8	9.00	24.9	8.38	6.24	6.89	10.2
1956	7.53	9.32	8.94	8.79	9.19	11.8	11.3	10.2	6.83	6.94	6.39	5.28	8.54
1957	6.56	9.05	8.36	8.50	9.37	10.2	17.1	27.0	14.9	12.1	12.5	8.62	12.0
1958													
1959													
1960													

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	-	-	-	-	-	611	657	349	-
1952	689	734	623	613	650	785	847	729	473	524	457	482	7,590
1953	434	534	575	612	570	700	705	528	708	604	566	420	6,960
1954	499	516	531	513	443	545	558	455	397	469	368	393	5,680
1955	453	441	445	406	399	797	1,120	554	1,480	515	383	410	7,400
1956	463	554	549	540	529	724	673	628	406	427	393	314	6,200
1957	403	559	514	522	520	629	1,020	1,660	885	747	769	513	8,720
1958													
1959													
1960													

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean
		Discharge	Date				
1950							
1951	1210	48	July 22, 1951	-	-	-	-
1952	1240	45	Oct. 5, 1951	5.3	10.4	7,590	9.76
1953	1280	103	June 7, 1953	4.9	9.61	6,960	9.61
1954	1340	35	May 17, 1954	4.3	7.85	5,680	7.57
1955	1390	395	June 14, 1955	4.1	10.2	7,400	10.5
1956	1440	108	May 29, 1956	3.7	8.54	6,200	8.39
1957	1510	114	May 14, 1957	4.4	12.0	8,720	-
1958							
1959							
1960							

## 7565. Crow Creek near Barnesville, Colo.

Location.--Lat 40°29'35", long 104°26'35", in NE¼NW¼ sec.16, T.6 N., R.63 W., on left bank 1 mile upstream from wasteway of Greeley Canal NO. 2, 2 miles northeast of Barnesville, and 15½ miles upstream from mouth.

Drainage area.--1,324 sq mi (revised), of which 112 sq mi is probably noncontributing.

Records available.--July 1951 to September 1957.

Gage.--Staff gage. Altitude of gage is 4,670 ft (from topographic map).

Remarks.--No flow since station was established July 25, 1951. All flow above station is normally diverted or stored in numerous small reservoirs for municipal supply, stock water, and irrigation.

## 7570. South Platte River at Sublette, Colo.

Location.--Lat 40°18'14", long 104°10'43", in NW¼ sec.23, T.4 N., R.61 W., on right bank 30 ft upstream from highway bridge, a quarter of a mile south of Sublette, and 3½ miles east of Masters.

Drainage area.--12,170 sq mi (revised).

Records available.--February 1926 to April 1942, September 1943 to September 1955.

Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 4,419.48 ft above mean sea level, datum of 1929. Prior to Sept. 14, 1943, at site 175 ft downstream at datum 1.00 ft higher. Sept. 14, 1943, to Sept. 30, 1948, at present site at datum 1.00 ft higher. Since June 1, 1950, supplementary water-stage recorder on secondary channel 600 ft to right at same datum.

Average discharge.--27 years (1926-41, 1943-55), 329 cfs (238,200 acre-ft per year).

Extremes.--1926-41, 1943-55: Maximum discharge, 17,100 cfs June 16, 1949 (gage height, 9.31 ft), from rating curve extended above 9,100 cfs; minimum daily, 29 cfs Feb. 3, 1941.

Remarks.--Natural flow of stream affected by transmountain and transbasin diversions (see elsewhere in this report), storage reservoirs, power developments, ground-water withdrawals and diversions above station for irrigation of about 940,000 acres, and return flow from irrigated areas.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	155	77.7	47.5	52.0	50.2	74.9	130	324	611	370	850	277	253
1952	184	74.9	207	279	342	225	500	1,614	1,685	316	275	317	501
1953	208	66.0	89.0	72.6	72.0	160	161	242	419	261	296	192	189
1954	223	78.2	52.9	50.5	48.0	92.5	111	139	124	118	136	112	108
1955	191	180	93.9	179	87.1	54.6	182	117	114	88.5	243	165	142

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	9,540	4,630	2,920	3,200	2,790	4,600	7,760	19,910	36,330	22,780	52,290	16,510	183,300
1952	11,330	4,450	12,740	17,170	19,670	13,860	29,720	99,240	100,200	19,430	16,910	18,860	363,600
1953	12,780	5,120	5,470	4,460	4,000	9,850	9,600	14,880	24,930	16,040	18,230	11,420	136,800
1954	13,730	4,650	3,250	5,110	2,660	5,690	6,610	6,530	7,400	7,260	6,390	6,670	77,950
1955	11,750	10,710	5,770	11,020	4,840	3,360	10,810	7,200	6,800	5,440	14,960	9,840	102,500

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	174	126,200
1951	1210	9,440	Aug. 6, 1951	42	253	183,300	269	194,700
1952	1240	4,950	June 10, 1952	64	501	363,600	494	358,400
1953	1280	1,060	June 21, 1953	54	189	136,800	187	135,000
1954	1340	485	Oct. 25, 1953	45	108	77,950	117	84,550
1955	1390	879	Aug. 9, 1955	42	142	102,500	-	-

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

Location.--Lat 39°04'00", long 104°34'55", in SE<sup>1</sup>/<sub>4</sub> NW<sup>1</sup>/<sub>4</sub> sec. 29, T.11 S., R.64 W., in reservoir area, 140 ft upstream and 250 ft from left end of earthfill dam on Kiowa Creek and 1.2 miles west of Eastonville.

Drainage area.--3.20 sq mi.

Records available.--August 1955 to September 1960 (no winter records).

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

Extremes.--1955-60: Maximum outflow discharge, 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 of monthly and yearly 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; invert of portholes on upstream face are at gage heights 2.90 and 6.87 ft, and invert 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 invert of portholes. No dead storage. Dam constructed by U. S. Soil Conservation Service as part of the Kiowa Creek Watershed Protection Project.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952													
1953													
1954													
1955	-	-	-	-	-	-	-	-	-	-	0.56	0.06	-
1956	0	0	-	-	-	-	0	0	0.03	0.14	.07	0	-
1957	-	-	-	-	-	-	.18	.18	.27	4.62	.45	.07	-
1958	.02	-	-	-	-	0.28	.21	.18	.03	.35	.08	.27	-
1959	.05	-	-	-	-	-	.21	.083	.028	.346	.058	.067	-
1960	.106	-	-	-	-	-	.62	.35	.067	.078	.03	.015	-

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952													
1953													
1954													
1955	-	-	-	-	-	-	-	-	-	-	†0.01	†0.01	-
1956	0	0	-	-	-	-	0	0	0	†0.03	0	0	-
1957	-	-	-	-	-	-	†0.01	†0.07	†0.01	†10.08	†0.02	†0.01	-
1958	-	-	-	-	-	-	†0.03	†0.01	†0.85	†0.95	†0.87	†0.03	-
1959	-	-	-	-	-	-	†0.01	†0.02	†0.89	†0.89	†0.86	†0.02	-
1960	.01	-	-	-	-	-	.02	.01	0	0	0	0	-

† Corrected.

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30						Calendar year	
		Maximum outflow		Maximum inflow/		Minimum daily outflow	Mean outflow	Mean outflow	
		Discharge	Date	Discharge	Date				
1950									
1951									
1952									
1953									
1954									
1955a	1630	b36	Aug. 18, 1955	-	Aug. 18, 1955	0	-	-	-
1956	1630	16	July 16, 1956	-	July 16, 1956	0	-	-	-
1957	1630	1,480	July 30, 1957	5,250	July 30, 1957	0	-	-	-
1958	1630	15	Sept. 9, 1958	255	Sept. 9, 1958	0	-	-	-
1959	1630	22	July 16, 1959	493	July 16, 1959	0	-	-	-
1960	1710	18	Mar. 25, 1960	33	Mar. 25, 1960	0	-	-	-

a Average for 5-minute interval, computed from outflow and change in reservoir contents; no rainfall on reservoir during time of peak inflow.

b Maximum during period August to September.

## PLATTE RIVER BASIN

7580. Kiowa Creek at Elbert, Colo.

Location.--Lat 39°12'35", long 104°32'00", in SE<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub> 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 1960.

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

Average discharge.--5 years (1955-60), 0.28 cfs (203 acre-ft per year).

Extremes.--1955-60: Maximum discharge, 305 cfs Aug. 27, 1955 (gage height, 4.40 ft), from rating curve extended above 61 cfs; no flow for 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.--Floodflows decreased by a series of retarding dams on Kiowa Creek and tributaries above this station. Records of suspended sediment loads for the period April 1956 to September 1960 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952													
1953													
1954													
1955	-	-	-	-	-	-	-	0	0	0	1.09	0	-
1956	0	0	0	0	0	0	0	0	0	0	0	0	0
1957	0	0	0	0	0	0	0	0	0	1.91	.18	0	.18
1958	0	0	0	0	0	0	0	0	0	.30	0	.07	.04
1959	0	0	0	0	0	0	0	0	0	0	0	0	0
1960	0	0	0	0	0	12.8	.38	.66	.06	0	0	0	1.18

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952													
1953													
1954													
1955	-	-	-	-	-	-	-	0	0	0	67	0	-
1956	0	0	0	0	0	0	0	0	0	0	0	0	0
1957	0	0	0	0	0	0	0	0	0	118	11	0	129
1958	0	0	0	0	0	0	0	0	0	18	0	.4	18
1959	0	0	0	0	0	0	0	0	0	0	0	0	0
1960	0	0	0	0	0	790	23	41	3.6	0	0	0	858

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950								
1951								
1952								
1953								
1954								
1955	1440	a305	Aug. 27, 1955	-	-	-	-	-
1956	1440	0	-	0	0	0	0	0
1957	1510	211	July 31, 1957	0	.18	129	.18	129
1958	1560	37	July 20, 1958	0	.04	18	.04	18
1959	1630	0	-	0	0	0	0	0
1960	1710	b220	Mar. 23, 1960	0	1.18	858	-	-

a Maximum during period May to September.

b About.

## 7532. Kiowa Creek at Kiowa, Colo.

Location.--Lat 39°20', long 104°29', in SW $\frac{1}{4}$  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 1960.

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

Average discharge.--5 years (1955-60), 4.01 cfs (2,900 acre-ft per year).

Extremes.--1955-60: 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 9 $\frac{1}{2}$  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.--Little or no diversion above station. Floodflow regulated to some extent by a series of retarding dams on Kiowa Creek and tributaries above station. Records of suspended sediment loads for the period April 1956 to September 1960 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1956	0	0	0.07	0.22	0.54	0.24	0	2.88	0.17	9.18	3.79	0	1.45
1957	0	.03	.10	.23	.56	.96	11.5	23.2	7.95	35.1	4.33	.34	7.10
1958	1.43	3.00	2.16	1.5	1.69	4.11	5.38	5.37	.97	.22	.02	.01	2.17
1959	.02	.1	.2	.3	1.2	1.83	5.48	5.11	.48	.02	0	0	1.22
1960	0	.003	.14	.41	.51	76.2	11.7	6.83	.10	0	0	0	8.09

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1956	0	0	4.2	14	31	15	0	177	10	565	233	0	1,050
1957	0	1.6	6.1	14	31	59	684	1,430	473	2,160	266	20	5,140
1958	88	185	133	92	94	253	320	330	58	14	1.4	.8	1,570
1959	1.2	6.0	12	18	64	115	325	314	29	1.0	0	0	884
1960	0	.2	8.5	25	29	4,690	699	420	5.8	0	0	0	5,880

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1956	1440	4,290	July 31, 1956	0	1.45	1,050	1.45	1,050
1957	1510	5,980	July 20, 1957	0	7.10	5,140	7.65	5,540
1958	1560	176	May 15, 1958	0	2.17	1,570	1.63	1,180
1959	1630	196	Apr. 9, 1959	0	1.22	884	1.21	874
1960	1710	1,080	Mar. 24, 1960	0	8.09	5,880	-	-

## 7583. Kiowa Creek at Bennett, Colo.

Location.--Lat 39°44'54", long 104°24'46", in NW $\frac{1}{4}$  sec.35, T.3 S., R.63 W., on left bank 350 ft upstream from U. S. Highway 36, 40, and 287, and 1 mile east of Bennett.

Drainage area.--236 sq mi.

Records available.--March to September 1960.

Gage.--Water-stage recorder. Altitude of gage is 5,430 ft (from topographic map).

Extremes.--Maximum discharge for water year 1960, 1,040 cfs Mar. 24, 1960 (gage height, 1.39 ft), from rating curve extended above 470 cfs; no flow for most of time.

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

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1960	-	-	-	-	-	113	7.06	7.97	0.01	0	0	0	-

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1960	-	-	-	-	-	6,950	420	490	0.6	0	0	0	-

## 7585. South Platte River near Weldona, Colo.

Location.--Lat 40°19'20", long 103°55'15", in SW<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub> sec. 7, T. 4 N., R. 58 W., on left bank 400 ft (corrected) 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 1960.

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

Average discharge.--8 years (1952-60), 399 cfs (288,900 acre-ft per year).

Extremes.--1952-60: Maximum discharge, 14,200 cfs May 11, 1957 (gage height, 9.92 ft); minimum daily, 43 cfs Dec. 9, 1952.

Remarks.--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.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952													
1953	207	143	113	181	199	266	258	184	327	231	262	220	216
1954	164	139	113	159	139	150	145	131	172	157	180	166	151
1955	163	112	118	258	196	146	177	150	168	178	172	222	172
1956	166	85.8	85.1	124	143	141	150	252	224	185	170	191	160
1957	160	222	144	148	140	132	217	3,460	2,877	1,120	589	403	805
1958	268	281	700	600	474	487	890	5,014	1,589	266	308	301	937
1959	325	185	128	133	170	416	888	789	381	265	272	367	360
1960	285	141	121	354	572	965	500	630	414	244	202	288	393

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952													
1953	12,710	8,490	6,970	11,160	11,070	16,340	15,380	11,280	19,430	14,210	16,120	13,100	156,300
1954	10,100	8,260	6,950	9,760	7,740	9,250	8,650	8,030	10,250	9,670	11,080	9,860	109,600
1955	10,000	6,690	7,280	15,890	10,890	8,970	10,550	9,220	10,020	10,960	10,600	13,220	124,300
1956	10,190	5,110	5,230	7,590	8,200	8,660	8,940	15,520	13,360	11,400	10,420	11,350	116,000
1957	9,810	13,190	8,860	9,110	7,790	8,110	12,940	212,700	71,200	68,880	36,190	23,970	582,800
1958	16,470	16,720	43,040	38,900	26,310	29,960	52,930	508,300	94,530	16,380	18,920	17,890	678,400
1959	20,000	11,010	7,850	8,190	9,420	25,590	52,850	48,520	22,660	16,300	16,720	21,850	261,000
1960	17,530	8,420	7,410	21,760	32,900	59,320	29,760	38,760	24,640	14,990	12,390	17,110	285,000

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950								
1951								
1952								
1953	1280	822	June 22, 1953	43	216	156,300	212	153,400
1954	1340	637	Aug. 6, 1954	54	151	109,600	150	108,300
1955	1440	1,740	June 15, 1955	48	172	124,300	167	120,800
1956	1440	1,080	May 29, 1956	56	160	116,000	175	127,300
1957	1510	14,200	May 11, 1957	60	805	582,800	866	627,100
1958	1560	8,840	May 27, 1958	140	937	678,400	885	641,000
1959	1630	2,560	May 24, 1959	101	360	281,000	353	255,500
1960	1710	1,810	May 21, 1960	101	393	285,000	-	-

7590. Bijou Creek near Wiggins, Colo.

Location.--Lat 40°14'53", long 104°02'08", in SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec.6, T.3 N., R.59 W., on downstream side of fifth pier from right end of bridge on U. S. Highways 6 and 34, 2 miles north-east of Wiggins, and 5.7 miles downstream from Antelope Creek.

Drainage area.--1,314 sq mi (revised).

Records available.--April 1950 to September 1956.

Gage.--Water-stage recorder. Altitude of gage is 4,490 ft (from topographic map).

Average discharge.--6 years (1950-56), 9.20 cfs (6,660 acre-ft per year).

Extremes.--1950-56: Maximum discharge, 50,100 cfs Aug. 3, 1951 (gage height, 10.22 ft), from rating curve extended above 35,000 cfs; no flow for most of each year.

Maximum discharge probably occurred May 31, 1935. Discussion of this flood published in WSP 997.

Remarks.--Small diversions above station for irrigation. Records of suspended sediment loads for the period April 1950 to June 1956 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	0	0	0	0	0	0	0	0.06	2.46	3.12	373	12.9	33.2
1952	0	0	0	0	0	0	0	0	0	0	61.1	0	5.17
1953	0	0	0	0	0	0	0	.04	.003	14.6	4.68	0	1.64
1954	0	0	0	0	0	0	0	0	0	25.3	13.0	.12	3.27
1955	0	0	0	0	0	0	0	.55	14.4	1.63	19.0	4.43	3.34
1956	0	0	0	0	0	0	0	0	.28	90.4	10.5	0	8.57
1957													
1958													
1959													
1960													

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	0	0	0	0	0	0	0	3.6	146	192	22,960	768	24,070
1952	0	0	0	0	0	0	0	0	0	0	3,750	0	3,750
1953	0	0	0	0	0	0	0	2.4	.2	899	288	0	1,190
1954	0	0	0	0	0	0	0	0	0	1,560	802	6.9	2,370
1955	0	0	0	0	0	0	0	34	858	100	1,170	264	2,430
1956	0	0	0	0	0	0	0	0	17	5,560	648	0	6,220
1957													
1958													
1959													
1960													

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	-	-
1951	1210	50,100	Aug. 3, 1951	0	33.2	24,070	33.2	24,070
1952	1240	7,840	Aug. 22, 1952	0	5.17	3,750	5.17	3,750
1953	1280	1,080	July 30, 1953	0	1.64	1,190	1.64	1,190
1954	1340	5,700	July 30, 1954	0	3.27	2,370	3.27	2,370
1955	1390	2,450	Aug. 28, 1955	0	3.34	2,430	3.34	2,430
1956	1440	19,000	July 31, 1956	0	8.57	6,220	-	-
1957								
1958								
1959								
1960								

## 7595. South Platte River at Fort Morgan, Colo.

Location.--Lat 40°16'08", long 103°48'02", in sec.31, T.4 N., R.57 W., on downstream side of pier near center of bridge on State Highway 52, half a mile north of Fort Morgan and 3½ miles downstream from Bijou Creek.

Drainage area.--14,810 sq mi (revised).

Records available.--October 1943 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 4,254.39 ft above mean sea level (levels by State engineer of Colorado).

Average discharge.--15 years (1943-58), 458 cfs (331,600 acre-ft per year).

Extremes.--1943-58: Maximum discharge, 33,800 cfs Aug. 3, 1951 (gage height, 12.90 ft), from rating curve extended above 15,000 cfs; minimum daily, 25 cfs Oct. 7-9, 1956. Maximum flood known, 84,300 cfs May 31, 1935, by slope-area measurement of peak flow 1 mile upstream; flood came principally from Bijou Creek.

Remarks.--Natural flow of stream affected by transmountain and transbasin diversions, storage reservoirs, power developments, ground-water withdrawals and diversions for irrigation of about 980,000 acres, and return flow from irrigated areas.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	91.3	137	124	200	196	211	188	163	388	210	874	298	257
1952	219	168	273	415	478	358	520	1,216	1,168	229	280	194	459
1953	162	143	190	235	228	284	292	139	271	171	231	172	209
1954	142	144	158	191	167	209	168	110	113	129	150	135	151
1955	133	136	146	280	250	183	182	161	191	175	185	216	186
1956	184	158	151	183	160	178	151	220	223	227	228	159	186
1957	162	270	177	190	175	166	243	3,912	2,883	1,105	538	362	853
1958	334	328	770	654	516	513	969	5,082	1,503	259	223	254	956
1959													
1960													

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	5,610	8,120	7,630	12,300	10,910	12,970	11,190	10,010	23,060	12,880	53,730	17,720	186,100
1952	13,460	10,000	16,800	25,490	27,470	21,980	30,920	74,750	69,500	14,080	17,200	11,530	333,200
1953	9,970	8,500	11,660	14,420	12,650	17,480	17,350	8,520	16,140	10,520	14,190	10,210	151,600
1954	8,710	8,570	9,700	11,770	9,300	12,850	9,980	6,730	6,710	7,940	9,230	8,010	109,500
1955	8,210	8,110	8,960	17,250	13,860	11,270	10,830	9,920	11,390	10,760	11,360	12,830	134,800
1956	11,320	9,430	9,300	11,280	9,220	10,970	8,990	13,540	13,280	13,940	14,040	9,450	134,700
1957	9,950	16,050	10,870	11,660	9,730	10,180	14,450	240,500	71,600	67,970	33,100	21,550	617,600
1958	20,550	19,540	47,360	40,220	28,640	31,520	57,680	312,500	89,450	15,930	13,730	15,090	692,200
1959													
1960													

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	183	132,700
1951	1210	33,800	Aug. 3, 1951	48	257	186,100	283	205,000
1952	1240	4,080	Aug. 22, 1952	112	459	333,200	446	323,000
1953	1280	1,460	July 30, 1953	35	209	151,600	205	148,500
1954	1340	1,000	Aug. 6, 1954	42	151	109,500	149	107,800
1955	1390	1,660	June 15, 1955	33	186	134,800	193	139,500
1956	1440	5,600	July 31, 1956	36	186	134,700	195	141,600
1957	1510	20,900	May 16, 1957	25	853	617,600	923	668,200
1958	1560	9,850	May 18, 1958	102	956	692,200	-	-
1959								
1960								



7600. South Platte River at Balzac, Colo.

Location.--Lat 40°24'24", long 103°27'58", in NE $\frac{1}{4}$  sec.13, T.5 N., R.55 W., on right bank just upstream from highway bridge at Balzac siding, 2 $\frac{1}{2}$  miles northeast of Union.

Drainage area.--16,852 sq mi (revised).

Records available.--October 1916 to September 1960. 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.--44 years (1916-60), 358 cfs (259,200 acre-ft per year).

Extremes.--1917-60: Maximum gage height, 11.43 ft May 31, 1935 (discharge not determined); minimum daily discharge 1.3 cfs Jan. 25, 1947.  
Flood of June 11, 1921, reached daily discharge of 31,200 cfs.

Remarks.--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. Records of chemical analyses for the periods January 1950 to September 1951 and August 1954 to August 1957 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	45.8	22.1	13.7	14.1	20.7	13.9	130	189	153	154	854	302	160
1952	21.1	18.7	9.93	50.0	304	487	291	966	864	175	297	177	305
1953	85.8	14.3	33.7	40.7	49.6	14.2	180	165	274	147	183	168	113
1954	155	12.6	11.6	10.1	6.55	14.6	91.2	148	120	130	140	146	82.8
1955	141	28.9	8.99	9.97	14.8	10.1	128	118	138	148	241	179	97.6
1956	171	24.4	5.49	7.05	9.05	7.15	153	165	259	154	208	152	110
1957	143	104	74.8	99.9	22.4	68.8	14.5	2,419	1,902	551	463	333	519
1958	54.0	40.1	180	770	451	619	792	5,127	1,353	241	164	223	840
1959	25.0	13.8	15.5	17.3	20.6	240	898	796	270	126	159	274	238
1960	71.4	15.8	12.5	63.3	135	537	477	420	251	112	128	203	202

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	2,810	1,320	845	869	1,150	857	7,720	11,640	9,080	9,480	51,980	17,960	115,700
1952	1,300	1,110	610	3,070	17,500	29,950	17,340	59,410	51,440	10,790	18,260	10,530	221,300
1953	5,280	850	2,070	2,500	2,750	878	10,710	10,150	16,290	9,060	11,260	9,980	81,780
1954	9,520	761	711	621	475	908	5,420	9,120	7,140	7,970	8,590	8,710	59,950
1955	8,700	1,720	553	613	820	619	7,590	7,250	8,230	9,080	14,830	10,670	70,680
1956	10,500	1,450	337	433	521	439	9,100	10,130	15,420	9,460	12,790	9,020	79,600
1957	16,770	6,170	4,600	6,140	1,250	4,230	863	48,700	13,100	33,910	26,460	19,790	376,000
1958	3,320	2,390	11,070	47,340	25,040	38,050	47,110	515,300	80,500	14,830	10,090	13,290	608,300
1959	1,540	823	952	1,060	1,140	14,730	53,460	46,970	16,090	7,770	9,770	16,280	172,600
1960	4,390	942	768	3,690	7,750	33,000	28,360	25,800	14,910	6,860	7,690	12,050	146,600

† Corrected.

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	120	87,200
1951	1210	11,200	Aug. 4, 1951	9.5	160	115,700	157	113,600
1952	1240	3,490	May 30, 1952	3.2	305	221,300	312	226,500
1953	1280	593	June 23, 1953	4.8	113	81,780	117	84,570
1954	1340	507	Aug. 7, 1954	7.8	82.8	59,950	82.8	59,930
1955	1390	2,310	June 15, 1955	5.6	97.6	70,680	99.4	71,990
1956	1440	2,200	Aug. 1, 1956	3.9	110	79,600	120	86,850
1957	1510	8,010	May 16, 1957	7.0	519	376,000	516	373,200
1958	1560	8,220	May 19, 1958	12	840	608,300	822	594,900
1959	1630	2,290	May 25, 1959	9.4	238	172,600	242	175,400
1960	1710	1,720	Mar. 31, 1960	11	202	146,600	-	-

7605. South Platte River near Crook, Colo.

Location.--Lat 40°50'36", long 102°48'46", in SW $\frac{1}{4}$ NE $\frac{1}{4}$  sec.15, T.10 N., R.49 W., on left bank 0.4 mile upstream from bridge on State Highway 25 and 1 mile south of Crook.

Drainage area.--19,238 sq mi (revised).

Records available.--August 1953 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 3,705.39 ft above mean sea level, datum of 1929.

Average discharge.--5 years (1953-58), 309 cfs (223,700 acre-ft per year).

Extremes.--1953-58: Maximum discharge, 9,890 cfs May 18, 1957 (gage height, 8.02 ft); minimum daily, 3.0 cfs July 28, 1956.

Remarks.--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. Records of chemical analyses for the period September 1955 to August 1957 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	-	-	-	-	-	-	-	-	-
1952	-	-	-	-	-	-	-	-	-	-	-	-	-
1953	-	-	-	-	-	-	-	-	-	-	-	-	-
1954	54.4	131	226	200	143	150	50.2	34.8	10.4	7.12	19.3	21.6	86.2
1955	25.2	45.9	30.4	34.6	162	94.6	14.3	43.7	119	15.6	9.68	13.4	49.8
1956	43.5	41.4	37.2	77.9	142	34.1	7.60	659	17.8	17.3	46.4	10.1	39.8
1957	13.2	184	37.0	81.6	44.7	10.6	36.6	2831	2,162	349	101	164	504
1958	201	260	394	879	651	721	888	4,412	1,533	288	35.3	80.4	866
1959													
1960													

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	-	-	-	-	-	-	-	-	-
1952	-	-	-	-	-	-	-	-	-	-	-	-	-
1953	-	-	-	-	-	-	-	-	-	-	-	-	-
1954	3,340	7,780	13,910	12,270	7,950	9,210	2,990	2,140	618	438	1,180	1,290	62,420
1955	1,550	2,730	1,870	2,130	8,980	5,820	850	2,680	7,110	959	595	798	36,070
1956	2,670	2,460	2,280	4,790	8,160	2,100	452	405	1,060	1,060	2,850	601	28,890
1957	812	10,980	2,270	5,020	2,480	651	2,180	174,100	128,700	21,460	6,180	9,760	364,600
1958	12,360	15,480	24,250	54,030	36,130	44,310	52,820	171,300	91,240	17,710	2,170	4,790	626,600
1959													
1960													

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950								
1951								
1952								
1953								
1954	1340	360	Aug. 16, 1954	4.2	86.2	62,420	60.1	43,540
1955	1390	670	June 17, 1955	6.8	49.8	36,070	51.6	37,330
1956	1440	431	Aug. 3, 1956	3.0	39.8	28,890	49.0	35,540
1957	1510	9,890	May 18, 1957	5.1	504	364,600	556	402,600
1958	1560	8,140	May 20, 1958	27	866	626,600	-	-
1959								
1960								

## 7625. Lodgepole Creek at Bushnell, Nebr.

Location.--Lat 41°14', long 103°51', in sec.33, T.15 N., R.57 W., on right bank  $1\frac{1}{2}$  miles east of Bushnell and  $1\frac{1}{2}$  miles upstream from Oliver Reservoir.

Drainage area.--1,361 sq mi (revised).

Records available.--October 1931 to September 1960. Records for March to September 1931, at site  $1\frac{1}{2}$  miles upstream, not equivalent owing to diversions. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 4,812.3 ft above mean sea level, datum of 1929. Prior to Mar. 26, 1938, staff gage at same site and datum.

Average discharge.--29 years (1931-60), 13.0 cfs (9,410 acre-ft per year).

Extremes.--1931-60: Maximum discharge, 16,500 cfs Sept. 15, 1950 (gage height, 9.98 ft), from rating curve extended above 2,700 cfs on basis of slope-area measurement of peak flow; minimum daily, 1.2 cfs Dec. 14, 1935.

Remarks.--Natural flow of stream affected by ground-water withdrawals and diversions for irrigation and return flow from irrigated areas.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	9.61	9.19	9.47	9.91	10.1	9.81	10.1	9.08	17.1	12.3	8.00	58.8	14.4
1952	21.9	11.9	10.3	10.9	13.7	14.7	12.8	11.3	6.77	5.58	5.98	5.63	10.2
1953	7.44	8.01	6.65	8.13	8.61	12.7	11.2	9.70	6.97	22.7	18.5	8.70	10.8
1954	8.76	9.37	8.30	11.0	10.5	10.9	10.4	6.32	6.79	4.90	6.59		8.72
1955	6.66	7.60	6.05	6.52	5.09	11.8	12.4	22.1	20.2	7.91	13.3	26.3	12.2
1956	10.4	9.76	9.35	9.99	11.2	13.2	11.9	10.9	9.13	6.19	6.18	5.82	9.50
1957	6.33	8.95	10.6	9.80	11.9	12.7	12.4	22.5	15.2	21.6	11.8	11.5	13.0
1958	12.9	13.7	12.6	12.7	14.0	15.3	15.8	15.4	12.3	20.5	12.9	11.8	14.0
1959	12.5	14.5	14.7	15.0	14.5	17.8	19.9	16.4	12.2	8.22	6.94	8.30	13.4
1960	11.8	10.2	12.3	9.83	13.4	14.4	13.3	15.8	11.9	15.8	7.37	8.00	12.0

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	591	547	583	610	560	603	600	558	1,020	757	492	3,500	10,420
1952	795	710	632	667	789	901	760	693	403	343	368	335	7,400
1953	457	477	409	500	478	783	669	596	415	1,390	1,140	517	7,830
1954	539	557	510	676	584	672	649	637	376	417	301	392	6,310
1955	410	452	372	401	282	728	737	1,360	1,200	487	817	1,560	8,810
1956	642	581	575	614	643	813	708	668	543	380	380	346	6,890
1957	369	533	652	603	661	783	740	1,380	902	1,340	726	684	9,390
1958	795	813	778	781	778	938	938	823	729	1,260	791	702	10,130
1959	772	863	906	924	805	1,090	1,180	1,010	728	505	427	494	9,700
1960	724	604	756	605	774	883	791	970	708	972	453	476	8,720

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	12.1	8,770
1951	1210	3,540	Sept. 7, 1951	7.2	14.4	10,420	15.0	10,840
1952	1240	24	Mar. 24, 1952	4.7	10.2	7,400	9.09	6,600
1953	1280	1,850	Aug. 1, 1953	3.0	10.8	7,830	11.2	8,090
1954	1340	88	July 14, 26, 1954	2.5	8.72	6,310	8.20	5,940
1955	1390	4,560	Sept. 19, 1955	2.4	12.2	8,810	12.9	9,370
1956	1440	26	Feb. 28, 1956	5.3	9.50	6,890	9.19	6,670
1957	1510	494	July 19, 1957	2.0	13.0	9,390	14.1	10,200
1958	1560	390	July 18, 1958	8.5	14.0	10,130	14.2	10,280
1959	1630	35	Mar. 30, 1959	6.3	13.4	9,700	12.8	9,250
1960	1710	260	July 7, 1960	6.2	12.0	8,720	-	-

## 7635. Lodgepole Creek at Ralton, Nebr.

Location.--Lat 41°02'00", long 102°24'00", in NE $\frac{1}{4}$  NW $\frac{1}{4}$  sec.12, T.12 N., R.45 W., on right bank 20 ft downstream from county road bridge at Ralton, 2.1 miles north of Colorado-Nebraska State line, and  $5\frac{1}{2}$  miles southeast of Chappell.

Drainage area.--3,307 sq mi (revised).

Records available.--March to September 1931, June 1951 to September 1960.

Gage.--Water-stage recorder. Altitude of gage is 3,590 ft (from topographic map). March to September 1931 staff gage at site a quarter of a mile downstream at different datum.

Average discharge.--9 years (1951-60), 12.0 cfs (8,690 acre-ft per year).

Extremes.--1931, 1951-60: Maximum discharge, 1,150 cfs Sept. 2, 1951 (gage height, 5.70 ft), from rating curve extended above 70 cfs on basis of slope-area measurement of peak flow; no flow at times in 1931, 1955, 1957, 1960.

Remarks.--Natural flow of stream affected by ground-water withdrawals and diversions for irrigation and return flow from irrigated areas.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	-	-	-	-	-	34.9	18.8	122	-
1952	29.8	26.9	15.6	16.1	23.3	31.9	27.6	32.6	15.7	14.0	2.48	.97	19.8
1953	3.58	4.97	6.71	11.5	12.6	13.7	14.2	14.6	5.73	3.00	28.1	12.1	10.9
1954	7.93	15.2	18.1	19.2	15.2	12.4	10.3	13.5	4.94	1.62	5.07	3.97	10.6
1955	6.48	8.94	8.67	7.17	6.45	18.0	11.0	17.2	32.3	9.75	3.65	3.73	11.1
1956	4.27	6.84	11.5	9.37	10.6	11.8	7.60	.77	.69	2.03	1.56	1.48	5.70
1957	1.20	4.49	2.71	3.19	2.34	3.23	.98	12.6	7.64	7.80	9.15	5.89	5.13
1958	5.65	11.2	13.7	12.8	12.7	16.8	24.5	29.1	21.2	49.0	19.5	22.1	19.9
1959	17.2	17.6	17.5	15.7	17.4	24.7	34.5	34.2	14.8	4.96	2.23	1.98	16.9
1960	3.02	2.59	5.57	2.48	3.59	25.9	16.1	17.3	14.0	5.81	1.48	2.64	8.38

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	-	-	-	-	-	2,150	1,160	7,250	-
1952	1,830	1,600	958	988	1,340	1,960	1,640	2,010	931	861	153	58	14,330
1953	220	296	413	710	698	843	844	896	341	185	1,730	721	7,900
1954	487	904	1,110	1,180	847	762	610	832	294	99	312	236	7,670
1955	398	532	533	441	358	1,100	652	1,060	1,920	600	224	222	8,040
1956	263	407	705	576	612	728	452	48	41	125	96	88	4,140
1957	74	267	166	196	130	199	59	774	455	480	563	350	3,710
1958	348	668	845	785	704	1,030	1,460	1,790	1,260	3,010	1,200	1,310	14,410
1959	1,060	1,050	1,080	966	964	1,520	2,050	2,100	879	305	137	118	12,230
1960	186	154	343	153	206	1,590	956	1,060	832	357	91	157	6,080

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean
		Discharge	Date				
1950							
1951	1210	1,150	Sept. 2, 1951	-	-	-	-
1952	1240	89	May 19, 1952	0.6	19.8	14,330	15.0
1953	1260	81	Aug. 20, 1953	1.0	10.9	7,900	13.1
1954	1340	52	Apr. 7, 1954	.3	10.6	7,670	9.17
1955	1390	209	May 30, 1955	0	11.1	8,040	11.0
1956	1440	48	Apr. 4, 1956	.2	5.70	4,140	4.51
1957	1510	74	May 26, 1957	0	5.13	3,710	7.00
1958	1560	152	July 21, 1958	4.7	19.9	14,410	21.7
1959	1630	69	Apr. 3, 1959	1.2	16.9	12,230	13.4
1960	1710	-	-	0	8.38	6,080	-

7640. South Platte River at Julesburg, Colo.

Location (revised).--Lat 40°58'46", long 102°15'15", in NE $\frac{1}{4}$  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 (revised); at site 8 $\frac{1}{2}$  miles upstream, 19,600 sq mi.

Records available.--April 1902 to September 1960. 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 8 $\frac{1}{2}$  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 a supplemental 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.--58 years (1902-60), 458 cfs (331,600 acre-ft per year).

Extremes.--1902-60: 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.--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. Records of chemical analyses and water temperatures are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	150	312	333	307	321	215	142	164	305	165	375	427	267
1952	352	378	349	454	567	777	655	1,045	854	55.6	45.1	60.2	465
1953	113	212	308	382	320	327	412	192	50.3	45.2	64.3	38.5	205
1954	96.2	210	312	291	258	248	112	68.9	28.6	16.2	16.2	23.6	140
1955	37.0	59.0	101	106	217	235	88.1	94.4	212	30.3	20.9	20.6	101
1956	47.9	99.9	114	130	195	139	49.1	29.4	47.9	22.1	30.9	16.1	76.3
1957	32.7	185	108	90.4	132	68.7	200	2,641	2,210	336	124	152	525
1958	259	376	476	921	776	790	1,002	4,107	1,585	437	53.7	83.6	908
1959	202	318	327	280	310	437	1,040	892	257	29.9	20.5	21.7	344
1960	149	192	281	268	403	777	624	315	273	41.9	16.5	16.1	279

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	9,240	18,560	20,480	18,870	17,840	13,250	8,450	10,110	18,140	10,180	23,030	25,420	193,600
1952	21,610	22,510	21,470	27,910	32,590	47,760	39,000	64,250	50,850	3,420	2,770	3,580	337,700
1953	6,930	12,600	18,940	23,480	17,780	20,100	24,500	11,780	2,990	2,780	3,950	2,290	148,100
1954	5,910	12,500	19,160	17,860	14,300	15,260	6,880	4,230	1,700	994	996	1,400	101,000
1955	2,270	3,510	6,240	6,530	12,050	14,440	5,240	5,800	12,640	1,860	1,280	1,220	73,080
1956	2,950	5,940	6,980	7,970	11,240	8,520	2,920	1,810	2,850	1,360	1,900	956	55,400
1957	2,010	11,000	6,610	5,560	7,320	4,230	11,920	162,400	131,500	20,650	7,600	9,060	379,900
1958	15,940	22,350	29,290	56,650	43,080	48,600	59,640	252,500	94,340	26,870	3,300	4,980	657,500
1959	12,430	18,910	20,120	17,210	17,220	26,860	61,910	54,850	15,290	1,840	1,260	1,290	249,200
1960	9,160	11,420	17,270	16,470	23,190	47,770	37,140	19,380	16,220	2,580	1,020	956	202,600

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	244	176,300
1951	1210	2,350	Aug. 10, 1951	37	267	193,600	291	210,900
1952	1240	3,700	June 1, 1952	30	465	337,700	428	310,600
1953	1280	707	Apr. 19, 1953	24	205	148,100	203	147,200
1954	1340	463	Nov. 25, 1953	13	140	101,000	104	75,440
1955	1390	562	June 19, 1955	15	101	73,080	106	76,930
1956	1440	399	June 18, 1956	11	76.3	55,400	81.5	59,150
1957	1510	8,160	May 21, 1957	16	525	379,900	591	427,800
1958	1560	7,510	May 21, 1958	28	908	657,500	886	641,400
1959	1630	1,900	May 29, 1959	13	344	249,200	325	235,600
1960	1710	al,500	Mar. 12, 1960	12	279	202,600	-	-

a Maximum daily.

7650. South Platte River at Paxton, Nebr.

Location.--Lat 41°07', long 101°21', in sec.8, T.13 N., R.35 W., near left bank on down-stream side of pier of highway bridge, half a mile south of Paxton.

Drainage area.--23,700 sq mi, approximately.

Records available.--January to December 1923, April 1931 to September 1933, May 1937 to September 1960 (irrigation seasons only 1937-39). Monthly discharge only for some periods, published in WSP 1310. Published as "at Ogallala" prior to October 1939.

Gage.--Water-stage recorder. Datum of gage is 3,047.34 ft above mean sea level, datum of 1929. Prior to September 1933, staff gage at site 19 miles upstream at an altitude of 3,210 ft (from topographic map). August 1939 to Apr. 1, 1940, staff gage and Apr. 2, 1940, to Oct. 15, 1947, water-stage recorder, at present site at datum 1.50 ft higher. Oct. 16, 1947, to June 24, 1948, water-stage recorder at datum 0.50 ft higher. June 25, 1948, to Oct. 3, 1951, water-stage recorder at datum 1.50 ft higher.

Extremes.--1939-60: Maximum discharge, 16,900 cfs May 7, 1942; maximum gage height, 9.5 ft Apr. 30, 1942, present datum; minimum daily discharge, 0.1 cfs Sept. 26-29, 1940. No flow at times prior to 1939.

Remarks.--Natural flow of stream affected by transmountain diversion, storage reservoirs, power developments, diversions and ground-water withdrawals for irrigation, and return flow from irrigated areas. South Platte canal diverts 6 miles above station; diversion began Nov. 13, 1946.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	8.6	10.1	9.0	10.5	10.8	11.0	9.7	85.6	23.1	16.3	65.9	271	44.2
1952	11.7	10.3	8.9	10.8	17.1	103	294	440	577	9.0	7.7	14.2	125
1953	14.1	7.2	6.6	8.2	9.9	13.0	11.7	69	105	4.1	3.9	5.4	8.5
1954	3.2	7.4	9.6	7.8	8.5	10.2	7.8	13.7	6.2	2.6	2.9	2.7	6.9
1955	3.26	3.61	6.14	6.27	7.22	11.8	7.77	7.90	7.71	3.06	2.02	2.04	5.73
1956	2.40	2.95	5.02	5.68	6.25	6.96	6.33	5.80	2.6	3.11	2.22	1.95	4.29
1957	2.11	2.79	4.06	5.18	7.54	7.72	14.5	2,107	906	19.7	41.9	45.8	266
1958	16.4	9.59	10.1	9.34	27.2	17.0	34.4	2,609	1,246	41.2	27.0	44.2	344
1959	12.5	10.5	10.1	7.82	8.32	10.4	14.4	33.3	33.2	6.24	7.92	5.53	13.4
1960	6.44	8.52	7.30	7.31	11.4	176	22.3	16.3	11.8	5.65	5.97	3.46	23.6

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	530	603	551	649	597	676	579	5,260	1,370	1,000	4,050	16,150	32,020
1952	718	613	549	666	984	6,360	17,480	27,070	34,320	551	476	847	90,630
1953	865	430	409	506	547	799	696	547	625	252	238	204	6,120
1954	196	438	591	480	470	627	466	843	367	161	179	163	4,980
1955	200	215	377	386	401	728	463	486	459	188	124	121	4,150
1956	147	176	309	349	359	428	377	357	170	191	137	116	3,120
1957	130	166	250	319	419	475	865	129,600	53,910	1,210	2,580	2,730	192,700
1958	1,010	571	621	574	1,510	1,040	2,050	160,400	74,140	2,530	1,680	2,630	248,700
1959	767	623	622	481	462	637	857	2,050	1,980	384	487	329	9,680
1960	396	507	449	449	653	10,620	1,330	1,000	702	347	244	206	17,100

Yearly discharge, in cubic feet per second

Tertiary discharge, in cubic feet per second								
Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	39.9	28,910
1951	1210	3,820	May 21, 1951	6	44.2	32,020	44.5	32,210
1952	1240	2,660	June 3, 1952	5	125	90,630	125	90,460
1953	1280	155	June 7, 1953	2	8.5	6,120	7.8	5,640
1954	1340	88	May 16, 1954	2	6.9	4,980	6.28	4,550
1955	1390	51	June 18, 1955	.8	5.73	4,150	5.51	3,990
1956	1440	56	Mar. 29, 1956	1.4	4.29	3,120	4.17	3,030
1957	1510	8,680	May 22, 1957	1.2	266	192,700	268	194,300
1958	1560	6,610	May 23, 1958	7.8	344	248,700	343	248,500
1959	1630	420	May 31, 1959	2.9	13.4	9,680	12.4	9,020
1960	1710	906	Mar. 20, 1960	3.2	23.6	17,100	-	-

7655. South Platte River at North Platte, Nebr.

Location.--Lat 41°07', long 100°46', in sec.9, T.13 N., R.30 W., near left bank on downstream side of bridge on U. S. Highway 83, three-quarters of a mile south of city of North Platte and 4 miles upstream from confluence with North Platte River.

Drainage area.--24,300 sq mi, approximately.

Records available.--June to November 1897, June to August 1914, May to September 1915, May 1917 to September 1960. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder at present site since July 19, 1945. Datum of gage is 2,790.30 ft above mean sea level (city of North Platte bench mark). Prior to Dec. 8, 1936, staff gages and Dec. 8, 1936, to July 18, 1945, water-stage recorders, near present site at different datums. July 19, 1945, to July 9, 1952, at datum 4.90 ft higher, July 10, 1952, to Dec. 6, 1953, at datum 3.90 ft higher, Dec. 7, 1953, to July 18, 1954, at datum 2.90 ft higher, and July 19, 1954, to Dec. 10, 1956, at datum 1.90 ft higher.

Extremes.--1897, 1914-15, 1917-60: Maximum discharge observed, 37,100 cfs June 3, 1935 (gage height, 14.02 ft, present datum); no flow at times in summers of most years prior to 1938.

Remarks.--Natural flow of stream affected by transmountain diversion, storage reservoirs, power developments, diversions and ground-water withdrawals for irrigation, and return flow from irrigated areas. South Platte canal diverts around station; diversion began Nov. 13, 1946. Records of chemical analyses for the period November 1950 to September 1951 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	160	153	144	143	154	144	142	388	327	210	221	410	216
1952	169	161	131	175	177	264	432	483	683	123	134	121	254
1953	136	124	145	148	156	153	143	152	135	108	113	114	135
1954	136	150	160	143	150	148	137	168	137	90.1	107	119	137
1955	138	127	130	144	124	157	137	147	161	119	94.4	89.9	131
1956	127	124	121	135	139	141	141	132	167	132	121	111	132
1957	125	128	126	101	125	134	170	2,127	1,084	197	148	186	390
1958	155	146	139	149	150	187	231	2,342	1,653	264	186	192	485
1959	141	151	145	143	148	153	172	187	201	137	116	124	151
1960	129	140	136	144	172	349	217	181	160	119	98.5	104	162

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	9,830	9,100	8,830	8,780	8,550	8,840	8,430	23,830	19,460	12,920	13,580	24,390	156,500
1952	10,390	9,590	8,030	10,780	10,170	16,210	25,680	29,720	40,630	7,560	8,240	7,210	184,200
1953	8,350	7,380	8,890	9,100	8,640	9,430	8,520	9,350	8,050	6,640	6,950	6,770	98,070
1954	8,380	8,940	9,840	8,770	8,310	9,090	8,140	10,360	8,140	5,540	6,550	7,110	99,170
1955	8,490	7,580	8,020	8,840	6,880	9,680	8,140	9,050	9,600	7,340	5,810	5,350	94,780
1956	7,800	7,390	7,450	8,300	7,920	8,680	8,400	8,130	9,950	8,090	7,430	6,620	96,160
1957	7,660	7,610	7,740	6,180	6,970	8,210	10,130	130,600	64,510	12,140	9,110	11,040	282,100
1958	9,510	8,710	8,560	9,170	8,350	11,480	12,730	144,000	98,360	16,260	11,410	11,410	351,000
1959	8,690	9,010	8,920	8,820	8,200	9,430	10,220	11,490	11,970	8,440	7,100	7,390	109,700
1960	7,900	8,330	8,330	8,880	9,890	21,470	12,940	11,140	9,500	7,350	6,060	6,190	118,000

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	183	132,600
1951	1210	1,700	May 22, 1951	90	216	156,500	217	156,800
1952	1240	2,240	June 4, 1952	50	254	184,200	249	180,800
1953	1280	*a270	Feb. 26, 1953	*a65	135	98,070	139	100,600
1954	1340	239	May 19, 1954	76	137	99,170	133	96,100
1955	1390	471	June 28, 1955	60	131	94,780	129	93,330
1956	1440	575	June 17, 1956	65	132	96,160	133	96,530
1957	1510	8,620	May 23, 1957	55	390	282,100	395	285,900
1958	1560	6,400	June 2, 1958	80	485	351,000	484	350,800
1959	1630	529	June 2, 1959	87	151	109,700	149	107,600
1960	1710	1,380	Mar. 23, 1960	87	162	118,000	-	-

\* Not previously published.  
a. About.

## 7660. Platte River at Brady, Nebr.

Location.--Lat 41°02', long 100°23', on two channels in secs. 11 and 23, T.12 N., R.27 W., on downstream side of highway bridges, half a mile and 2½ miles, respectively, south of Brady and 18 miles downstream from confluence of North Platte and South Platte Rivers.

Drainage area.--56,900 sq mi, approximately.

Records available.--May to September 1937, May 1938 to September 1960. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorders on two channels. Datum of gage on north channel is 2,639.28 ft above mean sea level, datum of 1929, and on south channel, 2,641.66 ft above mean sea level, datum of 1929. No information available on gages operated by State engineer prior to Nov. 18, 1938. Nov. 18, 1938, to Sept. 30, 1942, gage on north channel at datum 1 ft higher.

Extremes.--1937-60: Maximum discharge, 15,400 cfs May 7, 1942; no flow Aug. 22-24, 1941.

Remarks.--Natural flow of stream affected by transmountain diversions, storage reservoirs, power developments, diversions and ground-water withdrawals for irrigation, and return flow from irrigated areas. Tri-County main supply canal (capacity, about 2,000 cfs) diverts 8 miles above station; diversion started Nov. 26, 1940. River flows in two channels for which separate records are computed; figures given herein represent combined discharge. Records of chemical analyses and water temperatures are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	115	137	257	198	498	222	196	759	718	398	814	387	391
1952	268	312	535	569	1,899	2,333	817	519	1,304	1,147	570	185	868
1953	121	126	221	349	237	227	160	153	134	1,223	631	265	323
1954	121	162	171	225	245	178	160	179	123	1,068	435	117	267
1955	132	135	162	293	336	243	174	244	176	925	784	132	313
1956	138	160	207	184	170	172	169	164	300	828	569	109	264
1957	117	129	142	100	171	183	223	1,795	574	557	941	213	433
1958	211	198	195	257	251	454	404	1,660	1,165	341	759	170	508
1959	172	175	213	221	217	274	256	227	223	557	562	125	270
1960	166	234	219	329	351	635	292	260	212	443	793	106	338

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	7,060	8,170	15,790	12,200	27,670	13,670	11,640	46,640	42,740	24,460	50,070	23,050	283,200
1952	16,490	18,560	32,890	34,960	109,200	143,500	48,600	31,890	77,590	70,530	35,080	11,030	630,300
1953	7,440	7,520	13,590	21,440	13,180	13,940	9,490	9,390	7,940	75,220	38,810	15,800	233,800
1954	7,420	9,870	10,520	13,820	13,590	10,940	9,500	10,980	7,320	65,660	26,740	6,960	193,100
1955	8,150	8,030	9,940	18,040	18,680	14,930	10,340	15,010	10,440	56,860	48,230	7,860	226,500
1956	8,520	9,490	12,750	10,110	9,800	10,600	10,070	10,060	17,850	50,880	34,990	6,460	191,600
1957	7,210	7,660	6,730	6,180	8,520	11,260	13,280	110,400	34,180	34,240	57,830	12,670	313,200
1958	12,980	11,650	11,980	15,790	13,930	27,930	24,050	102,100	69,320	20,990	46,650	10,100	367,500
1959	10,560	10,420	13,070	13,570	12,040	16,860	15,240	13,950	13,300	34,240	34,530	7,450	195,200
1960	10,240	13,940	13,480	20,200	20,200	39,050	17,350	15,960	12,630	27,240	48,780	6,290	245,400

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	193	139,400
1951	1210	6,830	May 16, 1951	70	391	283,200	442	320,100
1952	1240	4,540	Mar. 25, 1952	128	868	630,300	814	590,900
1953	1280	1,860	July 10, 1953	79	323	233,800	322	232,800
1954	1340	1,660	July 23, 1954	62	267	193,100	265	191,600
1955	1390	1,550	July 21, 1955	33	313	226,500	319	231,200
1956	1440	2,510	June 19, 1956	64	264	191,600	254	184,400
1957	1510	6,550	May 24, 1957	59	433	313,200	451	326,200
1958	1560	4,970	June 4, 1958	107	508	367,500	504	364,900
1959	1630	1,430	Aug. 5, 1959	64	270	195,200	275	198,800
1960	1710	2,600	Mar. 23, 1960	56	338	245,400	-	-



7665. Platte River near Cozad, Nebr.

Location.--Lat 40°50', long 99°59', in sec.18, T.10 N., R.23 W., on downstream side of highway bridges, 1½ miles south of Cozad.

Drainage area.--57,200 sq mi, approximately.

Records available.--July to September 1932, May 1937 to September 1960 (prior to April 1939, irrigation seasons only). Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorders on two channels. Altitude of gages is approximately 2,470 ft (from report of State engineer). No information on gages operated by State engineer prior to installation of water-stage recorders on north channel Mar. 17, 1939, and south channel May 4, 1940. South channel gage at datum 4.02 ft higher May 4 to Sept. 30, 1940, 3.02 ft higher Oct. 1, 1940, to July 20, 1947, 2.02 ft higher July 21 to Sept. 22, 1947, and 1.53 ft higher Sept. 23, 1947, to July 18, 1949. North channel gage at datum 2.00 ft higher Mar. 17, 1939, to Sept. 30, 1940, and 1.00 ft higher Oct. 1, 1940, to July 11, 1955.

Extremes.--1932, 1937-60: Maximum discharge, 16,600 cfs May 10, 1942; no flow at times in 1937-40.

Remarks.--Natural flow of stream affected by transmountain diversions, storage reservoirs, power developments, diversions and ground-water withdrawals for irrigation, and return flow from irrigated areas. River flows in two channels for which separate records are computed; figures given herein represent combined discharge.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	126	216	344	213	569	355	312	958	834	239	209	424	398
1952	342	417	545	742	2,162	2,473	983	509	557	96.3	91.6	69.2	744
1953	127	191	302	455	273	344	242	226	37.0	44.7	46.8	38.7	194
1954	73.9	225	279	274	338	286	213	119	15.7	19.6	41.6	9.93	157
1955	140	203	219	343	360	387	244	43.8	34.6	20.0	14.4	39.0	169
1956	35.6	137	275	226	275	259	219	24.0	200	31.3	24.2	10.7	142
1957	76.2	177	131	125	262	342	1,200	494	56.2	54.5	136	329	329
1958	256	260	253	317	312	563	636	1,530	1,077	347	127	37.8	478
1959	141	252	293	244	262	396	395	263	32.9	35.7	37.7	61.0	201
1960	216	312	280	340	505	917	454	336	158	30.1	33.6	20.7	300

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	7,770	13,000	21,180	13,100	31,560	21,840	18,570	58,880	49,650	14,720	12,860	25,230	288,400
1952	21,030	24,820	33,500	45,600	124,400	152,100	59,490	31,290	33,150	5,920	5,640	4,120	540,100
1953	7,810	11,380	18,550	27,990	15,150	21,130	14,400	13,870	2,200	2,750	2,880	2,300	140,400
1954	4,550	13,370	17,160	16,830	18,800	17,560	12,670	7,320	934	1,200	2,560	591	113,500
1955	8,580	12,100	13,450	21,110	19,980	23,800	14,510	2,690	2,060	1,230	883	2,320	122,700
1956	2,190	8,120	16,890	13,910	15,910	15,920	13,010	1,460	11,870	1,920	1,490	638	103,200
1957	4,680	10,530	11,830	8,030	12,490	15,470	20,360	111,000	29,420	2,230	3,960	8,110	238,100
1958	15,770	15,450	15,560	19,480	17,310	34,600	37,990	94,100	64,090	21,560	+7,820	2,250	345,800
1959	8,700	14,990	18,010	14,980	14,540	24,340	23,530	16,170	1,960	2,200	2,320	3,630	145,400
1960	13,280	18,560	17,220	20,920	29,070	56,370	27,000	20,650	9,420	1,850	2,070	1,230	217,600

† Corrected.

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950		-	-	-	-	-	197	142,500	
1951	1210	6,140	May 17, 1951	24	398	288,400	450	325,800	
1952	1240	*3,300	Mar. 26, 1952	15	744	540,100	667	498,400	
1953	1280	783	Jan. 9, 1953	8	194	140,400	190	137,800	
1954	1340	*525	Feb. 1, 1954	7	157	113,500	156	112,600	
1955	1390	607	Mar. 11, 1955	8	169	122,700	160	115,800	
1956	1440	1,840	June 20, 1956	8.4	142	103,200	142	103,100	
1957	1510	6,230	May 25, 1957	8.7	329	238,100	356	257,800	
1958	1560	4,710	May 26, 1958	6.7	478	345,800	471	340,700	
1959	1630	800	May 21, 1959	6.5	201	145,400	211	152,700	
1960	1710	3,630	Mar. 23, 1960	7.2	300	217,600	-	-	

\* Not previously published.

## PLATTE RIVER BASIN

7675. Plum Creek near Smithfield, Nebr.

Location.--Lat 40°39'40", long 99°42'00", in NW $\frac{1}{4}$ SW $\frac{1}{4}$  sec.15, T.8 N., R.21 W., on left bank about 100 ft downstream from county highway bridge and 6 $\frac{1}{2}$  miles northeast of Smithfield.

Drainage area.--229 sq mi (revised).

Records available.--June 1946 to September 1953, water years 1954-60 (annual maximum).

Gage.--Water-stage recorder and crest-stage gage. Altitude of recording gage is 2,390 ft (from topographic map). Datum of crest-stage gage is 5.17 ft lower prior to June 13, 1958, and 4.78 ft lower June 13, 1958, to Sept. 30, 1960.

Average discharge.--7 years (1946-53), 10.1 cfs (7,310 acre-ft per year).

Extremes.--1946-60: Maximum discharge, 2,800 cfs June 23, 1947 (gage height, 18.63 ft). 1946-53: No flow for many days in each year.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	0.53	0	0	0	0	0	0	22.1	106	8.87	7.15	4.82	12.4
1952	0	0	0	0	0	4.90	.33	1.93	0	.17	.20	0	.64
1953	0	0	0	0	0	0	0	1.05	.05	0	.07	0	.10

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	32	0	0	0	0	0	0	1,560	8,290	546	440	287	8,960
1952	0	0	0	0	0	301	20	119	0	11	12	0	463
1953	0	0	0	0	0	0	0	65	2.8	0	4.4	0	72

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	3.59	2,610
1951	1210	588	June 10, 1951	0	12.4	8,960	12.3	8,920
1952	1240	90	May 27, 1952	0	.64	463	.64	463
1953	1280	18	May 10, 1953	0	.10	72	-	-
1954	-	220	May 16, 1954	-	-	-	-	-
1955	-	196	June 16, 1955	-	-	-	-	-
1956	-	116	July 7, 1956	-	-	-	-	-
1957	-	844	June 16, 1957	-	-	-	-	-
1958	-	259	Feb. 27, 1958	-	-	-	-	-
1959	-	175	Mar. 26, 1959	-	-	-	-	-
1960	-	620	Mar. 22, 1960	-	-	-	-	-

7680. Platte River near Overton, Nebr.

Location.--Lat 40°41', long 99°32', in sec.12, T.8 N., R.20 W., on right bank just downstream from highway bridge, 4 miles south of Overton and 4 miles downstream from Plum Creek.

Drainage area.--58,400 sq mi, approximately.

Records available.--July to September 1914 (gage heights only), October 1914 to September 1960. Monthly discharge only for some periods, published in WSP 1310. Published as "near Elm Creek" 1914-15.

Gage.--Water-stage recorder. Datum of gage is 2,299.83 ft above mean sea level, datum of 1929. July 1914 to October 1917, staff or chain gage at site 8 miles downstream at different datum. June 1918 to Sept. 12, 1928, staff gage at present site at datum 2 ft higher and Sept. 13, 1928, to Sept. 30, 1930, staff gage at present site and datum.

Extremes.--1914-60: Maximum discharge, 37,600 cfs June 5, 1935 (gage height, 6.25 ft); no flow at times in 1919, 1922, 1925, 1927-28, 1930-41.

Remarks.--Natural flow of stream affected by transmountain diversions, storage reservoirs, power developments, diversions and ground-water withdrawals for irrigation, and return flow from irrigated areas. Records of chemical analyses for the periods December 1951 to September 1952 and November 1958 to September 1960 and water temperatures for the period November 1958 to September 1960 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1,233	1,599	1,653	1,642	1,866	1,880	1,656	2,040	2,335	1,533	866	1,896	1,680
1952	1,857	2,133	1,754	2,392	3,881	4,265	2,751	2,002	1,528	714	448	436	2,007
1953	883	1,058	1,128	1,560	1,553	1,736	1,339	1,160	544	221	159	163	956
1954	631	1,152	1,247	1,133	1,388	1,211	901	869	243	179	468	130	793
1955	636	919	908	965	1,260	1,371	871	520	511	222	166	140	687
1956	603	855	867	923	922	987	815	171	268	159	83.7	54.9	558
1957	404	641	573	607	723	665	802	2,479	1,638	339	157	601	802
1958	996	1,047	1,164	1,239	1,452	1,836	2,224	2,548	1,805	746	396	321	1,313
1959	771	1,053	1,088	1,100	1,396	1,698	1,769	813	232	222	168	492	896
1960	1,193	1,264	1,188	1,204	1,532	2,344	1,626	1,011	815	371	129	225	1,074

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	75,820	95,170	101,600	101,000	103,600	115,600	98,520	125,400	138,900	94,260	53,240	112,800	1,216,000
1952	114,200	26,900	107,900	147,100	223,300	262,300	163,700	123,100	90,850	43,950	27,530	25,950	1,457,000
1953	54,310	62,960	69,350	95,910	86,240	106,700	79,700	71,500	32,400	13,590	9,800	9,700	692,000
1954	38,770	68,570	76,680	69,640	77,080	74,440	53,600	55,430	14,470	10,990	28,760	7,750	574,200
1955	39,080	54,710	55,700	59,320	69,960	84,270	51,860	19,670	30,420	13,630	10,200	8,340	497,200
1956	37,080	50,900	53,310	56,760	53,030	60,690	48,480	10,510	15,960	9,750	5,150	3,260	404,900
1957	24,860	38,150	35,230	37,340	40,170	40,910	47,740	52,400	97,340	20,840	9,670	35,750	580,400
1958	61,220	62,310	71,560	76,160	80,630	112,900	132,400	156,700	107,400	45,860	24,370	19,100	950,600
1959	47,410	62,670	66,870	67,640	77,510	104,300	105,300	49,980	13,820	13,640	10,330	29,250	648,700
1960	73,560	75,250	73,040	74,020	88,110	144,100	96,750	62,160	48,520	22,800	7,910	13,400	779,400

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	1,226	887,500
1951	1210	7,550	May 18, 1951	478	1,680	1,216,000	1,785	1,292,000
1952	1240	5,710	Mar. 27, 1952	130	2,007	1,457,000	1,783	1,294,000
1953	1280	4,640	Jan. 9, 1953	64	956	692,000	952	689,360
1954	1340	2,930	Nov. 6, 1954	66	793	574,200	745	539,600
1955	1390	2,370	Mar. 10, 1955	33	687	497,200	675	498,900
1956	1440	1,970	Mar. 31, 1956	18	558	404,900	498	361,800
1957	1510	7,530	May 25, 1957	20	802	580,400	936	677,200
1958	1560	5,800	May 26, 1958	149	1,313	950,600	1,290	932,500
1959	1630	2,960	Mar. 29, 1959	95	896	648,700	958	693,400
1960	1710	6,950	Mar. 24, 1960	60	1,074	779,400	-	-

7685. Buffalo Creek near Darr, Nebr.

Location--Lat 40°54'00", long 99°50'00", in NE $\frac{1}{4}$  sec.28, T.11 N., R.22 W., on left bank 12 ft downstream from bridge on county road and  $6\frac{1}{2}$  miles northeast of Darr.

Drainage area--63 sq mi, approximately.

Records available--October 1946 to September 1960.

Gage--Water-stage recorder. Datum of gage is 2,466.7 ft above mean sea level, datum of 1929.

Average discharge--14 years (1946-60), 4.60 cfs (3,330 acre-ft per year).

Extremes--1946-60: Maximum discharge, 9,000 cfs June 22, 1947 (gage height, 18.4 ft, from floodmark), from rating curve extended above 1,000 cfs on basis of slope-area measurement of peak flow; no flow for many days in each year.

Remarks--Flow affected at times by waste from Gothenburg Canal which is spilled into Buffalo Creek above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	5.67	0.01	0	0	0	0	0	11.4	15.7	14.8	7.78	11.0	5.57
1952	2.09	0	0	0	0	2.16	0	1.04	10.5	7.74	19.8	11.2	4.56
1953	5.90	0	0	0	0	0	0	1.65	7.33	2.63	9.32	18.6	3.79
1954	20.7	.60	0	0	0	0	0	5.05	3.00	.50	1.62	7.32	3.27
1955	3.59	0	0	0	1.52	.80	1.37	9.91	5.61	.08	0	.27	1.93
1956	8.02	2.92	0	0	0	0	1.23	4.93	.50	.40	.23	.44	1.57
1957	2.59	.12	0	0	0	0	.82	1.93	10.8	3.03	8.52	6.96	2.90
1958	3.73	0	0	0	.16	1.44	.05	5.33	5.92	25.0	6.65	5.20	4.51
1959	1.48	0	0	0	.45	.03	0	.88	5.71	6.53	2.06	6.97	2.01
1960	.46	0	0	0	1.47	23.1	.11	1.73	12.8	2.11	.26	12.6	4.55

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	348	0.6	0	0	0	0	0	704	935	909	479	657	4,030
1952	128	0	0	0	0	133	0	64	628	476	1,220	664	3,310
1953	363	0	0	0	0	0	0	101	436	161	573	1,110	2,740
1954	1,270	36	0	0	0	0	0	310	178	31	100	436	2,360
1955	221	0	0	0	84	49	82	610	334	4.8	0	16	1,400
1956	493	174	0	0	0	0	73	303	30	25	14	26	1,140
1957	159	6.9	0	0	0	0	49	118	641	186	524	414	2,100
1958	229	0	0	0	8.7	89	3.2	327	352	1,530	409	310	3,260
1959	91	0	0	0	25	1.6	0	54	340	402	127	415	1,460
1960	28	0	0	0	84	1,420	6.5	107	764	130	16	748	3,300

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	3.11	2,250	
1951	1210	344	May 31, 1951	0	5.57	4,030	5.26	3,810	
1952	1240	108	Aug. 11, 1952	0	4.56	3,310	4.88	3,550	
1953	1280	42	Sept. 21, 1953	0	3.79	2,740	5.10	3,690	
1954	1340	-	-	0	3.27	2,360	1.76	1,280	
1955	1390	35	June 28, 1955	0	1.93	1,400	2.55	1,850	
1956	1440	25	Oct. 14, 1955	0	1.57	1,140	.88	637	
1957	1510	586	June 16, 1957	0	2.90	2,100	2.99	2,180	
1958	1560	1,130	July 19, 1958	0	4.51	3,260	4.31	3,120	
1959	1630	235	July 3, 1959	0	2.01	1,460	1.92	1,390	
1960	1710	538	Sept. 21, 1960	0	4.55	3,300	-	-	

7690. Buffalo Creek near Overton, Nebr.

Location.--Lat 40°44'00", long 99°30'20", in SE $\frac{1}{4}$  sec.20, T.9 N., R.19 W., on left bank just downstream from bridge on U. S. Highway 30,  $1\frac{1}{2}$  miles east of Overton and 10 miles upstream from mouth.

Drainage area.--175 sq mi.

Records available.--June 1949 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 2,297.08 ft above mean sea level, datum of 1929.

Average discharge.--9 years (1949-58), 14.0 cfs (10,140 acre-ft per year).

Extremes.--1949-58: Maximum discharge, 383 cfs July 12, 1958 (gage height, 10.47 ft); no flow for many days 1953-58.

Remarks.--Flow affected by spill from irrigation canals above station and small diversions by pumping.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	33.1	3.10	3.47	3.05	4.01	2.93	3.73	12.5	108	106	86.8	44.6	34.5
1952	7.35	5.32	4.51	3.80	5.57	15.3	8.90	8.72	46.0	40.4	66.2	65.6	23.2
1953	16.6	1.16	1.27	1.64	1.86	3.34	1.39	5.56	28.2	4.03	18.2	37.2	10.0
1954	26.7	3.43	.04	0	2.28	.63	.44	17.5	12.6	2.04	10.1	10.4	7.23
1955	7.37	0	0	0	0	.75	0	11.0	12.3	4.34	0	.68	3.07
1956	7.31	3.37	0	0	0	0	0	6.85	10.4	3.90	1.22	3.99	3.09
1957	.30	0	0	0	0	0	0	11.1	43.5	16.7	11.9	26.1	9.12
1958	2.69	0	0	0	0	0	1.84	2.12	11.3	64.8	28.3	35.3	14.0
1959													
1960													

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	2,030	185	213	188	223	180	222	767	6,430	6,510	5,340	2,650	24,940
1952	452	316	277	234	321	942	530	536	2,740	2,480	4,070	3,910	16,810
1953	1,020	69	78	101	103	205	83	342	1,680	248	1,120	2,210	7,260
1954	1,640	204	2.6	0	126	38	26	1,080	752	125	623	617	5,230
1955	453	0	0	0	0	46	0	675	731	267	0	53	2,220
1956	449	201	0	0	0	0	0	421	618	240	75	238	2,240
1957	18	0	0	0	0	0	0	682	2,590	1,030	734	1,550	6,600
1958	166	0	0	0	0	0	109	130	672	5,210	1,740	2,100	10,130
1959													
1960													

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	23.7	17,140
1951	1210	270	June 26, 1951	1.3	34.5	24,940	32.5	23,560
1952	1240	195	Aug. 13, 1952	2.0	23.2	16,810	23.3	16,930
1953	1280	90	Oct. 8, 1953	0	10.0	7,260	11.0	7,940
1954	1340	107	Aug. 20, 1954	0	7.23	5,230	5.30	3,840
1955	1390	34	July 1, 1955	0	3.07	2,220	3.34	2,420
1956	1440	43	June 22, 1956	0	3.09	2,240	2.22	1,610
1957	1510	186	June 19, 1957	0	9.12	6,600	9.33	6,750
1958	1560	383	July 12, 1958	0	14.0	10,130	-	-
1959								
1960								

7695. Elm Creek near Overton, Nebr.

Location.--Lat 40°50'40", long 99°30'20", in NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec.17, T.10 N., R.19 W., on left bank 250 ft downstream from county road bridge and  $7\frac{1}{2}$  miles northeast of Overton.

Drainage area.--31 sq mi, approximately.

Records available.--September 1946 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 2,390 ft (from topographic map).

Average discharge.--12 years (1946-58), 1.98 cfs (1,430 acre-ft per year).

Extremes.--1956-58: Maximum discharge, about 8,000 cfs June 22, 1947 (gage height, 19.65 ft), from rating curve extended above 250 cfs on basis of velocity-area study; no flow for many days in each year.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	0	0	0	0	0	0	2.14	1.28	7.36	1.81	0.08	0.13	1.06
1952	0	0	0	0	0	0.70	0.003	0	0	0.70	0	0	.12
1953	0	0	0	0	0	0	0	3.83	0.007	0	0	.01	.34
1954	0	0	0	0	.21	0	0	.12	0	0	1.49	0	.15
1955	0	0	0	0	.24	.12	0	.003	.96	.07	.08	1.00	.20
1956	0	0	0	0	.04	.003	0	.003	0	.02	.02	.02	.008
1957	.003	0	0	0	0	0	0	.76	15.9	.003	0	.09	1.38
1958	0	0	0	0	0	.84	.09	.19	.54	51.9	.51	0	4.59
1959													
1960													

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	0	0	0	0	0	0	27	79	438	111	5.0	7.7	768
1952	0	0	0	0	0	43	.2	0	0	43	0	0	86
1953	0	0	0	0	0	0	0	235	.4	0	.8	11	247
1954	0	0	0	0	12	0	0	7.5	0	0	92	0	112
1955	0	0	0	0	13	7.1	0	.2	57	4.2	5.0	59	146
1956	0	0	0	0	2.4	.2	0	.2	0	1.0	1.0	1.4	6.2
1957	.2	0	0	0	0	0	0	46	948	.2	0	5.6	1,000
1958	0	0	0	0	0	51	5.6	12	32	3,190	32	0	3,320
1959													
1960													

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	0.30	214
1951	1210	338	June 22, 1951	0	1.06	768	1.06	768
1952	1240	63	July 14, 1952	0	.12	86	.12	86
1953	1280	256	May 10, 1953	0	.34	247	.34	247
1954	1340	72	Aug. 18, 1954	0	.15	112	.15	112
1955	1390	35	June 15, 1955	0	.20	146	.2	146
1956	1440	4.2	Sept. 23, 1956	0	.008	6.2	.009	6.4
1957	1510	1,320	June 16, 1957	0	1.38	1,000	1.38	1,000
1958	1560	4,470	July 10, 1958	0	4.59	3,320	-	-
1959								
1960								

## 7700. Platte River near Odessa, Nebr.

Location.--Lat 40°40', long 99°15', in sec.16, T.8 N., R.17 W., near right bank on downstream side of pier of highway bridge, 2½ miles south of Odessa and 5 miles downstream from Elm Creek.

Drainage area.--58,800 sq mi, approximately.

Records available.--March 1937 to September 1960. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 2,197.07 ft above mean sea level, datum of 1929. Prior to Oct. 7, 1938, staff gage and Oct. 7, 1938, to Sept. 30, 1942, water-stage recorder, at same site at datum 1.00 ft higher.

Extremes.--1937-60: Maximum discharge, 22,700 cfs June 24, 1947 (gage height, 5.52 ft); maximum gage height, 5.89 ft Mar. 5, 1952 (backwater from ice); no flow for periods in each year prior to 1947 and in 1953-57.

Remarks.--Natural flow of stream affected by transmountain diversions, storage reservoirs, power developments, diversions and ground-water withdrawals for irrigation, and return flow from irrigated areas. Records of chemical analyses for the period October 1950 to September 1952 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1,004	1,398	1,523	1,603	1,795	1,949	1,744	2,052	2,637	1,454	635	1,722	1,622
1952	1,676	1,856	1,525	1,958	3,815	4,120	2,591	1,902	1,355	600	257	244	1,817
1953	704	856	1,167	1,480	1,627	1,614	1,214	1,236	517	19.1	0	56.7	870
1954	536	1,190	1,248	1,096	1,379	1,115	704	678	133	.3	244	5.6	690
1955	634	658	816	1,133	1,460	1,567	820	174	452	51.7	1.6	30.5	645
1956	287	665	758	797	949	1,018	761	120	72.0	+24.1	0	0	451
1957	126	481	408	414	683	685	828	2,379	1,760	194	32	330	690
1958	875	912	1,059	1,330	1,451	1,910	2,356	2,401	1,620	964	202	129	1,265
1959	682	1,126	1,179	1,114	1,387	1,543	1,627	764	59.7	286	11.7	313	837
1960	1,168	1,206	1,125	1,105	1,637	2,810	1,659	889	912	297	14.1	119	1,077

† Corrected.

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	61,710	83,160	93,660	98,580	99,670	119,800	103,800	126,200	156,900	89,390	39,030	102,500	1,174,000
1952	103,000	110,400	93,740	120,400	219,400	253,300	154,200	117,000	80,650	36,860	15,770	14,490	1,319,000
1953	43,310	50,920	71,740	90,990	90,350	99,260	72,210	75,990	30,780	1,170	0	3,370	630,100
1954	32,950	70,810	76,750	67,410	76,590	68,530	41,900	41,670	7,890	18	15,020	333	499,900
1955	39,000	39,150	50,160	69,650	81,060	96,380	48,800	10,720	26,890	3,180	97	1,810	466,900
1956	17,640	39,560	46,590	49,010	54,580	62,620	45,280	7,370	4,280	148	0	0	327,100
1957	7,770	28,600	25,070	25,450	37,910	42,090	49,250	146,300	105,900	11,930	19	19,640	499,900
1958	53,810	54,300	63,880	81,810	80,580	117,500	140,200	147,600	96,410	59,280	12,410	7,680	915,500
1959	41,950	67,010	72,490	68,510	77,030	94,870	96,830	46,960	3,550	17,620	721	18,650	606,200
1960	71,810	71,780	69,160	67,970	94,180	172,800	98,690	54,680	54,280	18,240	868	7,060	781,500

† Corrected.

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean
		Discharge	Date				
1950	-	-	-	-	-	-	1,242
1951	1210	7,690	June 26, 1951	158	1,622	1,174,000	1,717
1952	1240	7,110	Mar. 27, 1952	5	1,817	1,319,000	1,623
1953	1280	2,780	Mar. 6, 1953	0	870	630,100	690
1954	1340	2,650	Nov. 7, 1954	0	690	499,900	618
1955	1390	2,790	Mar. 22, 1955	0	645	466,900	611
1956	1440	1,670	Mar. 16, 1956	0	451	327,100	392
1957	1510	7,110	May 26, 1957	0	690	499,900	843
1958	1560	5,360	May 28, 1958	11	1,265	915,500	1,278
1959	1630	3,520	July 4, 1959	.4	837	606,200	681
1960	1710	8,020	Mar. 24, 1960	.9	1,077	781,500	-

## 7705. Platte River near Grand Island, Nebr.

Location.--Lat 40°53', long 98°17', in sec.36, T.11 N., R.9 W., on left bank 30 ft downstream from bridge on U. S. Highway 34, 2 miles upstream from Chicago, Burlington & Quincy Railroad bridge, and 5 miles southeast of Grand Island.

Drainage area.--59,500 sq mi, approximately.

Records available.--October 1933 to September 1960.

Gage.--Water-stage recorder. Altitude of gage is 1,840 ft (from report of State engineer). Prior to Oct. 23, 1933, chain gage at bridge 30 ft upstream at same datum.

Extremes.--1933-60: Maximum discharge, 30,000 cfs June 6, 1935 (gage height, 5.99 ft), from rating curve extended above 18,000 cfs; maximum gage height, 6.16 ft Mar. 27, 1960 (backwater from ice); no flow at times in 1934-44, 1946, 1948, 1953-57, 1959-60.

Remarks.--Natural flow of stream affected by transmountain diversions, storage reservoirs, power developments, diversions and ground-water withdrawals for irrigation, and return flow from irrigated areas.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1,232	1,304	1,394	1,448	1,947	1,961	1,817	1,983	2,508	1,609	647	1,828	1,635
1952	1,807	1,940	1,389	1,968	4,037	4,066	3,121	2,168	1,256	757	176	162	1,879
1953	663	1,036	1,136	1,645	1,785	1,903	1,412	1,237	533	0	0	0	941
1954	118	979	1,042	941	1,983	1,292	877	929	268	0	91.4	8.0	702
1955	266	778	740	802	1,094	1,628	842	148	553	34.7	0	0	570
1956	91.7	500	597	834	1,000	1,048	737	169	20.0	1.0	0	0	414
1957	0	139	267	200	707	769	958	2,444	2,233	307	6.3	369	697
1958	882	1,088	1,217	1,334	1,369	2,114	2,656	2,262	1,921	1,040	239	77.2	1,341
1959	489	957	954	614	1,318	2,373	2,081	1,233	156	211	8.6	107	872
1960	943	1,145	990	928	1,701	2,893	2,161	1,400	1,373	447	1.6	0	1,163

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	75,750	77,610	85,740	89,010	108,100	120,600	108,100	21,900	149,200	98,930	39,800	108,800	1,164,000
1952	98,840	115,400	85,420	121,000	32,200	250,000	185,700	33,300	74,730	46,540	10,850	9,630	1,364,000
1953	40,770	61,820	69,820	101,100	99,140	117,000	84,040	76,060	31,720	0	0	0	681,300
1954	7,270	58,250	64,090	57,850	110,100	79,440	52,200	57,150	15,960	0	5,620	479	508,400
1955	16,330	46,270	45,490	49,310	60,740	100,100	50,120	9,080	32,890	2,130	0	0	412,500
1956	5,640	29,740	36,710	51,250	57,510	64,440	43,860	10,390	1,190	60	0	0	300,800
1957	0	8,280	16,400	12,300	39,280	47,290	57,030	150,300	132,900	18,890	385	21,950	505,000
1958	54,210	64,770	69,310	82,020	76,060	30,000	158,000	39,100	14,300	63,960	14,680	4,600	971,000
1959	30,040	56,960	58,670	37,750	73,170	145,900	123,800	75,790	9,370	12,990	528	6,390	631,400
1960	57,960	68,110	60,870	56,990	97,820	178,300	128,600	86,080	81,690	27,480	97	0	844,000

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	1,197	866,500
1951	1210	7,060	May 19, 1951	224	1,635	1,184,000	1,719	1,244,000
1952	1240	a7,800	Mar. 27, 1952	15	1,879	1,364,000	1,703	1,236,000
1953	1280	a2,970	Mar. 6, 1953	0	941	681,300	882	638,700
1954	1340	b3,450	Feb. 22, 1954	0	702	508,400	673	486,900
1955	1390	a4,500	Mar. 10, 1955	0	570	412,500	520	376,500
1956	1440	1,860	Mar. 1, 1956	0	414	300,800	349	253,400
1957	1510	5,830	May 27, 1957	0	697	505,000	923	668,600
1958	1560	4,680	Apr. 3, 1958	7	1,341	971,000	1,282	928,400
1959	1630	4,000	Mar. 26, 1959	0	872	631,400	929	672,600
1960	1710	10,100	Mar. 27, 1960	0	1,163	844,000	-	-

a Not previously published.

b About.

c May have been greater during ice period.



7710. Wood River near Riverdale, Nebr.

Location.--Lat 40°47'50", long 99°11'50", in NW $\frac{1}{4}$  sec.31, T.10 N., R.16 W., near right bank on downstream side of bridge on State Highway 40,  $\frac{1}{2}$  miles northwest of Riverdale.

Drainage area.--379 sq mi.

Records available.--June 1946 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 2,163.8 ft above mean sea level, unadjusted.

Average discharge.--14 years (1946-60), 15.1 cfs (10,930 acre-ft per year); median of yearly mean discharges, 9.3 cfs (6,700 acre-ft per year).

Extremes.--1946-60: Maximum discharge, 20,000 cfs June 22, 1947 (gage height, 19.75 ft). From rating curve extended above 3,000 cfs on basis of contracted-opening measurement of peak flow; no flow at times in 1946, 1953-60.

Remarks.--A few small diversions above station for irrigation. Pump located in gage pool occasionally diverts flow during dry periods. Records of suspended sediment loads for the period March 1947 to January 1952 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	8.09	2.98	3.44	3.29	5.15	4.62	11.4	10.8	57.1	10.4	3.50	1.31	10.1
1952	1.70	1.49	2.00	3.20	4.47	20.1	5.75	18.6	2.38	7.19	.68	.37	5.53
1953	.33	1.12	1.29	1.42	3.01	4.29	4.16	28.3	3.84	.90	.05	0	4.09
1954	0	.45	1.56	2.00	9.89	3.40	3.32	4.46	17.4	.94	5.94	.37	4.08
1955	0	.38	1.34	1.59	3.01	6.30	2.60	8.23	42.7	1.30	1.41	1.93	5.86
1956	.15	0	.11	.18	1.55	2.86	2.57	.71	.20	8.50	1.57	.003	1.54
1957	0	0	0	.72	.76	.88	4.99	77.3	8.25	2.02	1.50		7.97
1958	.03	.03	.35	.82	1.29	5.59	7.25	15.7	27.3	154	6.85	.58	18.6
1959	.19	.74	1.93	2.98	5.54	7.25	4.89	5.51	1.47	21.3	4.62	.03	4.73
1960	.18	.24	.52	.84	2.10	112	7.63	21.4	44.7	2.71	1.49	9.78	17.1

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	497	178	212	203	286	284	678	662	3,400	842	215	78	7,340
1952	105	86	123	197	257	1,230	342	1,020	142	442	41	22	4,010
1953	20	66	79	87	167	264	248	1,740	228	56	3.2	0	2,960
1954	0	27	96	123	549	209	198	275	1,030	58	365	22	2,950
1955	0	23	82	98	167	388	155	506	2,540	80	87	115	4,240
1956	9.1	0	6.5	11	89	176	153	43	12	522	97	.2	1,120
1957	0	0	0	0	40	47	53	307	4,600	507	124	89	5,770
1958	1.8	2.0	21	50	71	344	431	965	1,620	9,480	421	35	13,440
1959	12	44	118	183	308	446	291	339	88	1,310	284	1.6	3,420
1960	11	14	32	52	121	6,900	454	1,310	2,660	166	91	582	12,390

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	11.1	8,050
1951	1210	296	June 2, 1951	0.4	10.1	7,340	9.34	6,760
1952	1240	215	July 14, 1952	-	5.53	4,010	5.32	3,860
1953	1280	588	May 27, 1953	0	4.09	2,360	4.03	2,920
1954	1340	394	June 15, 1954	0	4.08	2,950	4.06	2,930
1955	1390	700	June 17, 1955	0	5.86	4,240	5.73	4,150
1956	1440	406	July 5, 1956	0	1.54	1,120	1.52	1,100
1957	1510	815	June 17, 1957	0	7.97	5,770	8.00	5,790
1958	1560	1,500	July 20, 1958	0	18.6	13,440	18.8	13,590
1959	1630	316	July 4, 1959	0	4.73	3,420	4.57	3,510
1960	1710	1,130	Mar. 25, 1960	0	17.1	12,390	-	-

7715. Wood River near Gibbon, Nebr.

Location.--Lat 40°46'10", long 98°48'00", in NW $\frac{1}{4}$  sec. 9, T.9 N., R.13 W., on left bank 10 ft downstream from bridge on county highway and 2 $\frac{1}{2}$  miles northeast of Gibbon.

Drainage area.--572 sq mi.

Records available.--April 1949 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 2,024.88 ft above mean sea level, datum of 1929. Prior to July 26, 1949, wire-weight gage at same site and datum.

Average discharge.--11 years (1949-60), 13.9 cfs (10,060 acre-ft per year); median of yearly mean discharges, 12.3 cfs (8,900 acre-ft per year).

Extremes.--1949-60: Maximum discharge, 2,100 cfs Mar. 28, 1960 (gage height, 16.14 ft); no flow for many days in 1952-60.

Remarks.--Numerous small diversions for irrigation above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	10.9	5.74	5.64	6.13	7.73	7.40	13.4	23.0	93.0	19.4	4.90	4.09	16.7
1952	2.22	4.97	4.81	5.45	6.74	37.7	15.7	57.5	10.2	20.0	1.64	.03	14.0
1953	0	.45	2.69	2.68	3.53	6.34	4.84	50.3	9.97	1.04	1.46	.02	6.92
1954	0	0	0	.08	8.78	1.96	2.06	14.0	38.5	.21	2.73	.003	5.62
1955	0	0	0	0	0	10.7	.79	29.8	46.7	3.91	1.64	6.27	8.32
1956	.02	0	0	0	.007	.59	0	0	4.28	22.1	4.02	.03	2.62
1957	0	0	0	0	0	0	0	11.0	103	8.06	21.9	14.1	13.1
1958	0	0	0	0	0	12.0	11.5	14.0	25.5	228	29.6	.40	27.2
1959	0	.24	.89	.04	.17	7.37	4.20	4.31	.63	51.5	18.0	.56	7.46
1960	.20	.29	.26	0	.25	124	14.2	35.7	95.0	18.0	11.0	9.11	25.8

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	670	342	347	377	429	455	798	1,410	5,530	1,190	301	243	12,090
1952	137	296	296	335	388	2,320	932	3,530	609	1,230	101	2.0	10,180
1953	0	27	166	165	196	390	288	3,090	593	64	28	1.0	5,010
1954	0	0	0	5.0	487	121	122	863	2,290	13	168	.2	4,070
1955	0	0	0	0	0	659	47	1,630	2,780	240	101	373	6,030
1956	1.2	0	0	0	.4	36	0	0	255	1,360	247	1.8	1,900
1957	0	0	0	0	0	0	0	679	6,160	495	1,350	840	9,520
1958	0	0	0	0	0	740	682	858	1,520	14,050	1,820	24	19,690
1959	0	14	55	2.6	9.5	453	250	265	38	3,170	1,110	33	5,400
1960	12	17	16	0	14	7,630	842	2,190	5,650	1,110	674	542	18,700

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet		
		Discharge	Date							
1950	-	-	-	-	-	-	25.9	-	-	18,760
1951	1210	534	June 27, 1951	0.3	16.7	12,090	15.8	11,460	-	-
1952	1240	992	May 28, 1952	0	14.0	10,180	13.3	9,640	-	-
1953	1280	766	May 11, 1953	0	6.92	5,010	6.66	4,820	-	-
1954	1340	707	June 18, 1954	0	5.62	4,070	5.62	4,070	-	-
1955	1390	672	June 18, 1955	0	8.32	6,030	8.33	6,030	-	-
1956	1440	568	July 6, 1956	0	2.62	1,900	2.62	1,900	-	-
1957	1510	821	June 17, 1957	0	13.1	9,520	13.1	9,520	-	-
1958	1560	1,140	July 19, 1958	0	27.2	19,690	27.3	19,760	-	-
1959	1630	590	July 5, 1959	0	7.46	5,400	7.42	5,380	-	-
1960	1710	2,100	Mar. 28, 1960	0	25.8	18,700	-	-	-	-

7720. Wood River near Alda, Nebr.

Location.--Lat 40°51'10" long 98°28'20", in NE $\frac{1}{4}$ SE $\frac{1}{4}$  sec.7, T.10 N., R.10 W., on right bank 1.2 miles south of Alda, 2.2 miles upstream from old north channel of the Platte River, and 19 miles upstream from present mouth.

Drainage area.--628 sq mi.

Records available.--October 1953 to September 1960.

Gage.--Water-stage recorder. Altitude of gage is 1,910 ft (from topographic map).

Average discharge.--7 years (1953-60), 9.89 cfs (7,160 acre-ft per year).

Extremes.--1953-60: Maximum discharge, 1,370 cfs Mar. 29, 1960 (gage height, 10.95 ft); no flow for most of each year.

Remarks.--Numerous small diversions for irrigation above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952													
1953													
1954	0		0	0	3.72	0	0	7.96	40.5	0	0.88	0	4.36
1955	0		0	0	0	2.54	0	25.2	43.6	17.2	.63	5.23	7.89
1956	.06	0	0	0	0	0	0	0	1.46	13.8	1.82	0	1.49
1957	0	0	0	0	0	0	.007	6.61	71.5	6.91	11.1	20.2	9.63
1958	0	0	0	0	0	4.70	13.0	4.82	21.7	173	27.8	.14	20.7
1959	0	0	0	0	0	2.12	1.25	.46	.43	39.3	17.0	.19	5.15
1960	0	0	0	0	0	71.4	12.4	29.5	98.2	14.8	9.16	4.93	20.0

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952													
1953													
1954	0	0	0	0	207	0	0	490	2,410	0	54	0	3,160
1955	0	0	0	0	0	156	0	1,550	2,600	1,060	38	311	5,720
1956	37	0	0	0	0	0	0	0	87	846	112	0	1,080
1957	0	0	0	0	0	0	.4	407	4,250	425	682	1,200	6,960
1958	0	0	0	0	0	289	772	297	1,290	10,610	1,710	8.5	14,980
1959	0	0	0	0	0	130	74	28	26	2,420	1,040	12	3,730
1960	0	0	0	0	0	4,390	741	1,810	5,840	910	563	288	14,540

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950								
1951								
1952								
1953								
1954	1340	484	June 19, 1954	0	4.36	3,160	4.36	3,160
1955	1390	523	June 20, 1955	0	7.89	5,720	7.94	5,750
1956	1440	351	July 8, 1956	0	1.49	1,080	1.44	1,040
1957	1510	472	June 21, 1957	0	9.63	6,960	9.63	6,960
1958	1560	742	July 25, 1958	0	20.7	14,980	20.7	14,980
1959	1630	390	July 6, 1959	0	5.15	3,730	5.15	3,730
1960	1710	1,370	Mar. 29, 1960	0	20.0	14,540	-	-

## PLATTE RIVER BASIN

7730. Dry Creek at Cairo, Nebr.

Location.--Lat 41°00'10", long 98°36'30", in SW $\frac{1}{4}$  sec.18, T.12 N., R.11 W., on left bank 15 ft downstream from bridge on State Highway 60 at north limits of Cairo and 8 miles upstream from mouth.

Drainage area.--22.2 sq mi (revised).

Records available.--July 1949 to September 1953.

Gage.--Water-stage recorder. Datum of gage is 1,938.37 ft above mean sea level, unadjusted.

Extremes.--1949-53: Maximum discharge, 586 cfs May 27, 1953 (gage height, 7.64 ft); no flow for most of each year.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	0.49	0	0	0	0	0.01	0.78	5.24	0.20	0.34	0.19	0.10	0.62
1952	.01	0	0	.006	0	.77	.03	1.15	0	2.20	.003	0	.35
1953	0	0	0	0	0	0	.02	8.07	1.05	0	.003	.007	.77

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	30	0	0	0	0	0.6	46	322	12	21	12	5.8	449
1952	.8	0	0	.4	0	48	2.0	70	0	135	.2	0	256
1953	0	0	0	0	0	0	1.4	496	63	0	.2	.4	561

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	1.41	1,020	
1951	1210	340	May 31, 1951	0	0.62	449	.58	420	
1952	1240	134	July 14, 1952	0	.35	256	.35	256	
1953	1280	586	May 27, 1953	0	.77	561	-	-	

7735. Prairie Creek near Silver Creek, Nebr.

Location.--Lat 41°19'15", long 97°41'40", in NW $\frac{1}{4}$  sec.29, T.16 N., R.3 W., on right bank 200 ft downstream from bridge on State Highway 39, 1 $\frac{1}{2}$  miles northwest of Silver Creek, and 11 miles upstream from mouth.

Drainage area.--406 sq mi.

Records available.--August 1949 to September 1953.

Gage.--Water-stage recorder. Datum of gage is 1,549.02 ft above mean sea level, unadjusted.

Extremes.--1949-53: Maximum discharge, 1,070 cfs June 3, 1951 (gage height, 6.86 ft); no flow Aug. 21 to Sept. 2, Sept. 4-30, 1953.

Remarks.--A few small diversions for irrigation above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	12.7	8.47	6.95	8.08	8.51	29.5	41.2	54.5	239	43.4	22.3	15.7	40.5
1952	11.8	14.8	8.20	5.82	19.8	40.2	102	58.9	29.2	34.3	6.97	2.14	27.8
1953	2.04	2.97	2.81	2.20	3.74	14.9	16.1	24.3	24.9	5.47	.55	.01	6.79

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	781	504	427	374	473	1,810	2,450	3,350	14,190	2,670	1,370	936	29,340
1952	724	881	504	358	1,140	2,470	6,080	3,620	1,740	2,110	429	127	20,180
1953	125	177	173	135	541	916	956	1,490	1,480	336	34	.6	6,360

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	35.6	25,750	
1951	1210	1,070	June 3, 1951	2.9	40.5	29,340	41.1	29,730	
1952	1240	359	Apr. 24, 1952	.6	27.8	20,180	25.5	18,550	
1953	1280	203	June 1, 1953	0	8.79	6,360	-	-	

## 7740. Platte River near Duncan, Nebr.

Location.--Lat 41°22', long 97°29', in sec.12, T.16 N., R.2 W., on left bank 25 ft downstream from highway bridge, 1½ miles south of Duncan, and 12 miles upstream from Loup River.

Drainage area.--61,600 sq mi, approximately.

Records available.--June 1895 to December 1909 (irrigation seasons only 1895-1900), July 1910 to December 1911 (gage heights and discharge measurements only), April 1912 to September 1915, June 1928 to September 1960. Published as "near Columbus" 1895-1915.

Gage.--Water-stage recorder. Datum of gage is 1,478.55 ft above mean sea level, October 1929. June 1895 to December 1909, April 1912 to September 1915, and June to October 1928, staff or chain gage at site 7 miles downstream at different datums. Oct. 25, 1928, to Feb. 20, 1935, staff gage at present site and datum.

Extremes.--1895-1909, 1912-15, 1928-60: Maximum discharge observed, 44,100 cfs June 23, 1905 (gage height, 6.50 ft, site and datum then in use); no flow at times.

Remarks.--Natural flow of stream affected by transmountain diversions, storage reservoirs, power developments, diversions and ground-water withdrawals for irrigation, and return flow from irrigated areas.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1,249	1,376	1,573	1,467	2,314	2,846	2,147	2,429	3,719	1,908	742	2,008	1,975
1952	1,953	2,289	1,409	2,032	5,647	5,640	4,088	2,669	1,484	911	136	60.8	2,346
1953	504	938	899	1,370	2,105	2,176	1,704	1,452	629	18.6	12.5	1.12	977
1954	1.16	947	1,109	808	2,157	1,445	1,078	1,121	438	6.18	58.3	4.08	755
1955	169	947	764	697	656	1,987	1,053	150	747	46.2	.02	.12	600
1956	10.3	459	628	860	1,196	1,627	875	288	11.3	0	0	0	494
1957	0	0	128	154	584	820	979	2,293	2,453	409	3.58	273	673
1958	787	1,049	1,074	1,110	1,431	2,272	2,922	2,367	1,946	1,537	214	63.5	1,396
1959	305	856	739	604	1,117	2,365	2,216	1,618	264	341	69.9	18.6	875
1960	914	1,179	1,152	888	1,574	3,976	3,268	2,244	2,186	516	68.0	10.1	1,496

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	76,790	81,890	96,730	90,170	28,500	175,000	127,800	49,400	221,300	117,300	45,650	119,500	1,430,000
1952	120,100	136,200	66,650	125,000	524,800	546,800	243,200	64,100	88,310	56,040	8,360	3,620	1,703,000
1953	30,980	55,830	55,250	84,230	16,900	133,800	101,400	89,300	37,410	1,150	772	67	707,100
1954	72	56,370	68,190	49,680	19,800	98,880	64,130	68,950	26,080	350	3,590	243	546,300
1955	10,400	56,360	46,970	42,850	36,440	22,200	62,670	9,190	44,460	2,840	1.0	7.3	434,400
1956	631	27,330	38,640	52,900	68,790	100,100	52,050	17,700	673	0	0	0	358,800
1957	0	0	7,880	9,490	32,440	50,450	58,280	41,000	146,000	25,170	220	16,230	487,200
1958	48,390	62,410	66,050	68,250	79,460	139,700	73,900	145,500	15,800	94,520	13,170	3,780	1,011,000
1959	18,730	50,930	45,470	37,170	62,040	145,400	31,800	99,460	15,690	20,960	4,300	1,110	633,100
1960	56,170	70,140	70,820	54,630	90,570	244,500	194,400	138,000	130,100	31,720	4,180	603	1,086,000

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean
		Discharge	Date				
1950	-	-	-	-	-	-	1,345
1951	1210	7,840	June 29, 1951	350	1,975	1,430,000	2,096
1952	1240	10,000	Mar. 10, 1952	0	2,346	1,703,000	2,089
1953	1280	6,300	Mar. 6, 1953	0	977	707,100	953
1954	1340	43,980	Feb. 8, 1954	0	755	546,300	740
1955	1390	6,080	Mar. 11, 1955	0	600	434,400	535
1956	1440	3,920	Mar. 18, 1956	0	494	358,800	413
1957	1510	6,580	May 29, 1957	0	673	487,200	906
1958	1560	5,090	July 25, 1958	6.0	1,396	1,011,000	1,311
1959	1630	4,470	Mar. 28, 1959	0	875	633,100	988
1960	1710	25,400	Mar. 28, 1960	5.6	1,496	1,086,000	-

\* Not previously published.

7750. Middle Loup River near Seneca, Nebr.

Location.--Lat 42°02'40", long 100°56'10", in SW $\frac{1}{4}$  sec.17, T.24 N., R.31 W., on right bank a quarter of a mile north of Kelso siding on Chicago, Burlington & Quincy Railroad and 5 miles west of Seneca.

Drainage area.--1,140 sq mi, approximately, of which about 60 sq mi contributes directly to surface runoff.

Records available.--April 1948 to September 1953.

Gage.--Water-stage recorder. Altitude of gage is 3,000 ft (from topographic map).

Average discharge.--5 years (1948-53), 199 cfs (144,100 acre-ft per year).

Extremes.--1948-53: Maximum discharge, 457 cfs Aug. 8, 1950; maximum gage height, 2.61 ft Jan. 7, 1949 (backwater from ice); minimum daily discharge, 145 cfs Jan. 16, 1953.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	200	189	191	190	204	185	185	230	222	216	202	246	205
1952	186	199	185	179	214	206	238	216	196	189	190	200	200
1953	192	203	173	180	200	209	210	188	179	179	191	192	191

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	12,300	11,220	11,720	11,670	11,310	11,370	11,010	14,140	13,230	13,260	12,410	14,680	148,300
1952	11,440	11,820	11,350	11,010	12,340	12,680	14,140	13,300	11,670	11,680	11,680	11,920	145,000
1953	11,820	12,090	10,620	11,100	11,110	12,850	12,500	11,550	10,640	11,010	11,720	11,410	138,400

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	196	141,700
1951	1210	358	Sept. 5, 1951	164	205	148,300	204	147,700
1952	1240	384	Apr. 1, 1952	1150	200	145,000	200	144,900
1953	1280	373	Mar. 13, 1953	145	191	138,400	-	-

a Minimum daily determined.

7755. Middle Loup River at Dunning, Nebr.

Location.--Lat 41°49'50", long 100°06'20", in SW $\frac{1}{4}$  sec.33, T.22 N., R.24 W., on right bank just downstream from highway bridge at north limits of Dunning, a quarter of a mile upstream from bridge on State Highway 2 and  $1\frac{1}{4}$  miles upstream from Dismal River.

Drainage area.--1,760 sq mi, approximately, of which about 80 sq mi contributes directly to surface runoff.

Records available.---September 1945 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 2,607.17 ft above mean sea level, datum of 1929. Prior to Sept. 12, 1946, staff gage at same site and datum.

Average discharge.--15 years (1945-60), 390 cfs (282,300 acre-ft per year).

Extremes.--1945-60: Maximum discharge, 830 cfs Sept. 13, 1958 (gage height, 3.90 ft); maximum gage height, 7.02 ft Mar. 31, 1949 (backwater from ice); minimum daily discharge, 100 cfs Dec. 5, 6, 1950.

Remarks.--Records of suspended sediment loads for the periods March 1950 to September 1952 and October 1953 to September 1954 and water temperatures for the period October 1949 to September 1956 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	346	384	393	371	432	377	334	408	407	380	367	399	383
1952	388	385	388	380	404	437	433	409	355	349	364	344	386
1953	375	372	366	418	426	445	394	419	388	359	350	360	389
1954	373	382	398	364	392	407	394	401	376	356	361	369	381
1955	409	375	411	373	377	522	456	392	426	357	346	330	396
1956	347	397	396	386	384	473	401	397	349	332	375	368	384
1957	372	378	396	368	420	435	423	504	413	373	407	415	409
1958	417	418	432	407	438	429	545	448	412	418	375	394	427
1959	371	416	401	388	445	466	428	408	365	355	354	376	398
1960	392	387	399	353	441	442	434	422	373	364	374	389	397

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	21,280	22,820	24,160	22,810	23,990	23,200	19,850	25,100	24,200	23,360	22,540	23,720	277,000
1952	23,880	22,930	23,830	23,370	23,270	26,860	25,760	25,130	21,150	21,490	22,390	20,440	280,500
1953	23,040	22,120	22,480	25,730	23,670	27,380	23,460	25,750	23,090	22,080	21,540	21,440	281,800
1954	22,950	22,700	24,450	22,350	21,800	25,030	23,470	24,660	22,380	21,920	22,220	21,940	275,900
1955	25,140	22,290	25,280	22,950	20,920	32,100	25,950	24,080	25,330	21,960	21,250	19,660	286,900
1956	21,310	23,640	24,340	23,760	22,120	29,070	23,880	24,400	20,740	20,380	23,050	21,920	278,600
1957	22,880	22,480	24,380	22,630	23,350	26,730	25,160	30,970	24,590	22,920	25,000	24,670	295,800
1958	25,620	24,880	26,580	25,060	24,330	26,380	32,430	27,520	24,540	25,690	23,050	23,420	309,500
1959	22,630	24,770	24,670	23,870	24,730	28,630	25,500	25,100	21,730	21,850	21,780	22,370	287,900
1960	24,100	23,020	24,530	21,680	25,360	27,190	25,800	25,940	22,190	22,400	22,980	23,140	288,300

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	369	267,300
1951	1210	#630	Sept. 5, 1951	100	383	277,000	386	279,400
1952	1240	#626	May 26, 1952	140	386	280,500	382	277,500
1953	1280	637	Mar. 14, 1953	230	389	281,800	393	284,200
1954	1340	642	Apr. 29, 1954	290	381	275,900	385	278,500
1955	1390	720	Mar. 10, 1955	298	396	286,900	392	283,500
1956	1440	589	Mar. 16, 1956	255	384	278,600	384	279,100
1957	1510	742	May 14, 1957	250	409	295,800	419	303,100
1958	1560	830	Sept. 13, 1958	338	427	309,500	421	304,700
1959	1630	621	Mar. 14, 1959	250	398	287,900	397	287,200
1960	1710	a670	Mar. 18, 1960	182	397	288,300	-	-

\* Not previously published.

a About.

7760. Dismal River near Gem, Nebr.

Location.--Lat 41°47', long 100°17', in sec.24, T.21 N., R.26 W., on right bank 4 miles north of Gem and 10 miles southwest of Dunning.

Drainage area.--1,360 sq mi, approximately.

Records available.--October 1946 to September 1953 (monthly discharge only).

Gage.--Staff gage. Altitude of gage is 2,690 ft (from topographic map).

Average discharge.--7 years (1946-53), 278 cfs (201,300 acre-ft per year).

Extremes.--1946-53: Not determined.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	294	284	292	275	313	274	273	310	294	290	267	284	287
1952	274	275	287	305	307	320	286	280	267	264	271	270	284
1953	295	279	296	325	305	304	293	275	264	294	280	258	289

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	18,050	16,880	17,930	16,940	17,380	16,820	16,280	19,030	17,520	17,860	16,420	16,890	208,000
1952	18,860	16,390	17,660	18,720	17,670	19,670	17,010	17,210	15,880	16,230	16,670	16,060	206,000
1953	18,160	16,610	18,190	19,970	16,940	18,690	17,430	16,920	15,700	18,080	17,230	15,350	209,300

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	286	206,700
1951	1210	-	-	-	287	208,000	285	206,000
1952	1240	-	-	-	284	206,000	287	208,100
1953	1280	-	-	-	289	209,300	-	-



7765. Dismal River at Dunning, Nebr.

Location.--Lat 41°49'23", long 100°06'05", in sec.4, T.21 N., R.24 W., on right bank 100 ft downstream from bridge on State Highway 2 at southeast corner of Dunning and 1 mile upstream from mouth.

Drainage area.--1,780 sq mi, approximately, of which about 50 sq mi contributes directly to surface runoff.

Records available.--March to June 1932, September 1945 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 2,606.3 ft above mean sea level, datum of 1929. Mar. 1 to June 30, 1932, staff gage at site a quarter of a mile upstream at datum 0.5 ft lower. Sept. 13, 1945, to Apr. 19, 1956, staff gage on bridge 100 ft upstream at same datum.

Average discharge.--15 years (1945-60), 319 cfs (230,900 acre-ft per year).

Extremes.--1932, 1945-60: Maximum discharge, 996 cfs May 26, 1952 (gage height, 3.18 ft); maximum gage height observed, 5.21 ft Jan. 19, 1947 (backwater from ice); minimum daily discharge, 100 cfs Jan. 25, 1950.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	323	310	326	307	350	305	305	348	328	320	292	321	319
1952	296	304	323	333	339	353	321	312	303	296	305	304	316
1953	326	310	310	340	326	324	338	326	311	312	316	288	319
1954	304	331	338	298	347	321	321	320	341	302	321	330	322
1955	333	334	304	312	342	340	338	324	317	293	320	305	322
1956	306	326	318	297	347	318	326	308	299	299	298	285	310
1957	319	330	317	300	331	341	335	357	350	337	356	335	332
1958	316	318	321	342	337	348	370	337	315	344	337	318	333
1959	319	338	348	326	321	345	334	309	322	316	300	307	324
1960	322	320	327	337	348	358	351	351	314	316	315	307	330

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	19,870	18,420	20,030	18,860	19,430	18,770	18,150	21,420	19,540	19,680	17,950	19,080	231,200
1952	18,220	18,090	19,840	20,470	19,500	21,680	19,120	19,200	18,060	18,200	18,730	18,070	229,200
1953	20,060	18,430	19,070	20,900	18,090	19,900	20,120	20,040	18,520	19,160	19,430	17,140	230,900
1954	18,690	19,680	20,770	18,340	19,260	19,710	19,080	19,700	20,300	18,570	19,750	19,620	233,500
1955	20,480	19,870	18,690	19,170	19,020	20,890	20,110	19,910	18,890	18,040	19,690	18,170	†232,900
1956	18,830	19,380	19,530	18,260	19,950	19,560	19,380	18,970	17,770	18,390	18,340	16,930	225,300
1957	19,620	19,660	19,470	18,460	18,380	20,990	19,950	21,950	19,650	20,700	21,890	19,950	240,700
1958	19,460	18,890	19,720	21,020	18,730	21,370	22,010	20,740	18,720	21,130	20,700	18,920	241,400
1959	19,610	20,100	21,410	20,030	17,850	21,210	19,900	19,010	19,170	19,450	18,440	18,260	234,400
1960	19,770	19,040	20,140	20,730	20,000	22,000	20,890	21,600	18,700	19,380	19,360	18,280	239,900

† Corrected.

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	311	225,300
1951	1210	568	May 14, 1951	127	319	231,200	316	229,200
1952	1240	996	May 26, 1952	124	316	229,200	318	230,600
1953	1280	‡a550	Jan. 20, 1953	220	319	230,900	321	232,400
1954	1340	‡a480	Feb. 1, 1954	210	322	233,500	322	233,400
1955	1390	‡a500	Mar. 4, 1955	200	322	†232,900	320	231,600
1956	1440	‡a460	Feb. 11, 1956	191	310	225,300	312	226,300
1957	1510	658	May 14, 1957	230	332	240,700	332	240,000
1958	1560	635	Sept. 14, 1958	286	333	241,400	338	244,500
1959	1630	460	July 16, 1959	200	324	234,400	321	232,300
1960	1710	a475	Jan. 31, 1960	240	330	239,900	-	-

† Corrected.

‡ Not previously published.

a About.

7770. Middle Loup River near Milburn, Nebr.

Location--Lat 41°49'02", long 99°58'15", in NE $\frac{1}{4}$ SW $\frac{1}{4}$  sec.3, T.21 N., R.23 W., on right bank at upstream side of Laughran bridge, 9 miles upstream from Rifle Creek and 15 miles northwest of Milburn.

Drainage area--3,690 sq mi, approximately, of which about 135 sq mi contributes directly to surface runoff.

Records available--October 1951 to September 1956, October 1957 to September 1958.

Gage--Water-stage recorder. Datum of gage is 2,556.00 ft above mean sea level, datum of 1929. Prior to November 1951, staff gage at site 11 miles downstream at different datum. Nov. 9, 1951, to May 7, 1953, water-stage recorder at site 7.6 miles downstream and May 8, 1953, to Aug. 8, 1955, water-stage recorder at site 7.0 miles downstream, at different datums.

Average discharge--6 years (1951-56, 1957-58), 794 cfs (574,800 acre-ft per year).

Extremes--1951-56, 1957-58: Maximum discharge, 2,440 cfs May 26, 1952 (gage height, 4.43 ft, site and datum then in use); minimum daily, 260 cfs Mar. 3, 1954.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952	841	814	701	824	864	885	948	823	750	688	743	741	801
1953	809	757	795	936	818	940	861	845	830	783	711	694	815
1954	833	876	789	626	890	744	821	791	783	685	770	778	781
1955	875	754	831	674	945	900	867	736	838	673	686	631	783
1956	656	763	824	790	786	842	721	809	719	661	694	769	753
1957													
1958	816	774	832	792	775	811	932	898	855	875	799	776	828
1959													
1960													

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952	51,690	48,460	43,110	50,640	49,690	54,390	56,400	50,610	44,640	42,330	45,670	44,090	581,700
1953	49,760	45,030	48,910	57,540	45,400	57,790	51,230	51,970	49,390	48,150	43,690	41,290	590,200
1954	51,210	52,100	48,480	38,500	49,440	45,760	49,850	48,610	46,580	42,090	47,360	46,310	565,300
1955	53,800	44,880	51,070	41,450	52,480	55,320	51,570	45,240	49,890	41,380	42,170	37,530	566,800
1956	40,350	45,430	50,640	48,580	45,240	51,750	42,880	49,740	42,780	40,650	42,640	45,790	546,500
1957													
1958	50,180	46,090	51,130	48,720	43,400	49,870	55,440	55,220	50,890	53,810	49,130	46,170	599,700
1959													
1960													

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950								
1951								
1952	1240	2,440	May 26, 1952	262	801	581,700	802	582,200
1953	1280	*1,790	Jan. 21, 1953	500	815	590,200	826	598,200
1954	1340	*1,580	Feb. 5, 1954	260	781	565,300	775	563,200
1955	1390	*1,540	Mar. 27, 1955	440	783	566,800	764	553,500
1956	1440	*1,050	Dec. 12, 1955	510	753	546,500	-	-
1957								
1958	1560	1,850	Sept. 14, 1958	640	828	599,700	-	-
1959								
1960								

\* Not previously published.

## 7775. Middle Loup River at Walworth, Nebr.

Location.--Lat 41°39'20", long 99°34'00", in NW $\frac{1}{4}$  sec.1, T.19 N., R.20 W., on left bank 40 ft downstream from highway bridge, a quarter of a mile northeast of Walworth, and 2 miles upstream from Lillian Creek.

Drainage area.--4,340 sq mi, approximately, of which about 430 sq mi contributes directly to surface runoff.

Records available.--October 1940 to September 1960. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 2,377.56 ft above mean sea level, unadjusted. Prior to July 8, 1943, staff gage at site 40 ft upstream at same datum.

Average discharge.--20 years (1940-60), 798 cfs (577,700 acre-ft per year).

Extremes.--1940-60: Maximum discharge, 2,990 cfs Oct. 5, 1946; maximum gage height, 6.03 ft Feb. 12, 1954 (backwater from ice); minimum daily discharge, 48 cfs Dec. 6, 1950.

Remarks.--Diversions for Sargent Irrigation district and numerous small diversions for irrigation above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	795	827	800	722	900	837	873	1,024	927	816	840	855	851
1952	876	775	712	926	976	924	954	895	750	717	742	733	821
1953	841	762	880	937	838	918	944	902	821	684	728	671	827
1954	813	869	783	685	1,026	757	840	877	792	690	757	787	804
1955	871	757	773	761	893	984	917	761	846	679	701	728	805
1956	729	749	906	773	868	937	826	763	704	694	719	705	781
1957	748	745	758	696	899	825	858	825	781	704	696	758	781
1958	795	784	794	730	744	785	921	827	874	728	812	812	800
1959	779	779	747	770	913	1,018	820	845	763	662	578	744	784
1960	817	800	812	703	818	1,018	955	938	753	623	609	655	792

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	48,910	49,200	49,160	44,390	50,010	51,490	51,960	62,970	55,190	50,180	51,650	50,890	616,000
1952	53,850	46,110	43,800	56,910	56,150	56,840	56,780	55,020	44,600	44,100	45,610	43,590	603,400
1953	51,720	45,370	54,130	57,620	46,520	56,450	56,180	55,460	48,870	42,070	44,790	39,920	599,100
1954	50,010	51,730	48,150	42,100	56,980	46,570	49,990	53,950	47,110	42,400	46,580	46,860	582,400
1955	53,570	45,070	47,500	46,780	49,580	60,490	54,570	46,790	50,360	41,730	43,130	43,330	582,900
1956	44,840	44,560	55,740	47,530	49,930	57,620	49,150	46,940	41,870	42,660	44,220	41,930	567,000
1957	45,990	44,340	46,640	42,770	49,370	50,760	51,030	56,910	46,480	43,300	42,800	45,110	565,500
1958	48,860	45,430	48,850	44,880	41,340	48,270	54,820	50,830	49,200	53,720	44,780	48,350	579,300
1959	47,890	46,360	45,960	47,380	50,690	62,570	48,790	51,930	45,400	40,730	35,520	44,280	567,500
1960	50,210	47,620	49,950	43,230	47,050	62,600	56,830	57,680	44,800	38,280	37,440	39,000	574,700

† Corrected.

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30						Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet		Mean	Acre-feet
		Discharge	Date						
1950	-	-	-	-	-	-	-	810	586,100
1951	1210	2,930	May 15, 1951	48	851	616,000	846	612,500	
1952	1240	1,670	May 27, 1952	351	831	603,400	841	610,800	
1953	1280	†1,490	Feb. 26, 1953	470	827	599,100	826	597,800	
1954	1340	†1,610	Feb. 5, 1954	211	804	582,400	799	578,700	
1955	1390	†1,740	Mar. 28, 1955	520	805	582,900	804	581,900	
1956	1440	†a1,340	Mar. 2, 1956	77	781	567,000	770	558,800	
1957	1510	†1,630	May 14, 1957	465	781	565,500	790	571,700	
1958	1560	2,390	Sept. 14, 1958	560	800	579,500	796	576,400	
1959	1630	1,420	Mar. 14, 1959	296	784	567,500	794	575,100	
1960	1710	a2,700	Mar. 25, 1960	422	792	574,700	-	-	

† Not previously published.

a About.

## 7780. Middle Loup River at Sargent, Nebr.

Location.--Lat 41°37'50", long 99°23'10" in NE $\frac{1}{4}$ SE $\frac{1}{4}$  sec.9, T.19 N., R.18 W., on left bank 0.8 mile downstream from Sand Creek, 0.8 mile upstream from county highway bridge, and 1 mile southwest of Sargent.

Drainage area.--4,480 sq mi, approximately, of which about 475 sq mi contributes directly to surface runoff.

Records available.--December 1936 to December 1938, October 1952 to September 1960.

Gage.--Water-stage recorder. Altitude of gage is 2,300 ft (from topographic map). Dec. 4, 1936, to Dec. 31, 1938, chain gage on highway bridge 0.8 mile downstream at different datum.

Average discharge.--9 years (1937-38, 1952-60), 813 cfs (588,600 acre-ft per year).

Extremes.--1936-38, 1952-60: Maximum discharge, about 3,400 cfs Mar. 26, 1960 (backwater from ice); maximum gage height, 4.58 ft Apr. 27, 1938 (datum then in use); minimum daily discharge, 97 cfs Nov. 28, 1955.

Remarks.--Natural flow of stream affected by diversions for irrigation and return flow from irrigated areas.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952													
1953	786	774	890	888	822	1,036	876	851	803	739	745	704	827
1954	811	875	759	718	1,059	848	972	907	817	654	755	734	824
1955	876	790	856	770	922	991	745	766	937	718	653	691	809
1956	761	732	793	731	847	967	881	828	748	666	683	698	778
1957	757	754	775	671	981	940	955	1,034	854	708	734	808	830
1958	792	824	755	729	713	912	991	831	809	813	739	768	807
1959	815	819	761	860	943	†1,025	800	848	753	680	602	747	804
1960	886	791	771	723	868	1,173	1,001	932	822	639	615	688	825

† Corrected.

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952													
1953	48,360	46,060	54,730	54,610	45,660	63,720	52,110	52,340	47,770	45,430	45,820	41,880	598,500
1954	49,880	52,080	46,680	44,130	58,800	52,130	57,820	55,790	48,590	40,210	46,420	43,690	596,200
1955	53,880	46,990	52,650	47,340	51,220	60,950	44,340	47,100	55,740	44,140	40,160	41,120	585,600
1956	46,810	43,540	48,750	44,950	48,740	59,480	52,440	50,910	44,530	40,960	41,990	41,550	564,600
1957	46,570	44,900	47,630	41,250	54,460	57,810	56,810	63,600	50,820	43,560	45,100	48,080	600,600
1958	48,710	49,050	46,450	44,810	39,580	56,050	58,960	51,120	48,140	50,000	45,430	45,700	584,000
1959	50,120	48,760	46,780	52,870	52,370	63,040	47,610	52,160	44,810	41,800	37,030	44,430	581,900
1960	54,450	47,050	47,380	44,440	49,950	72,140	59,570	57,290	48,920	39,310	37,790	40,920	599,200

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950									
1951									
1952									
1953	1280	†1,560	Feb. 26, 1953	259	827	598,500	826	598,000	
1954	1340	†1,660	Feb. 6, 1954	230	824	596,200	830	601,100	
1955	1390	†2,000	Mar. 28, 1955	471	809	585,600	789	571,200	
1956	1440	†a1,480	Mar. 4, 1956	97	778	564,600	778	564,600	
1957	1510	1,720	May 13, 1957	450	830	600,600	837	605,700	
1958	1560	1,920	Sept. 14, 1958	480	807	584,000	809	585,500	
1959	1630	1,500	Mar. 12, 1959	200	804	581,800	808	585,000	
1960	1710	a3,400	Mar. 26, 1960	350	825	599,200	-	-	

† Not previously published.

a About.

7790. Middle Loup River at Arcadia, Nebr.

Location.--Lat 41°25'20", long 99°08'10", in sec.26, T.17 N., R.16 W., on left bank just downstream from bridge on State Highway 57 at southwest edge of Arcadia.

Drainage area.--4,730 sq mi, approximately, of which about 820 sq mi contributes directly to surface runoff.

Records available.--July 1937 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 2,146.30 ft above mean sea level, datum of 1929 (levels by Bureau of Reclamation). Prior to Apr. 23, 1938, chain gage at bridge just upstream at datum 1.23 ft lower.

Average discharge.--23 years (1937-60), 802 cfs (580,600 acre-ft per year).

Extremes.--1937-60: Maximum gage height, 6.41 ft Mar. 27, 1960; maximum discharge not determined, occurred June 22, 1947 (gage height, 6.24 ft); minimum daily, 92 cfs Dec. 11, 1941.

Remarks.--Middle Loup Public Power and Irrigation District began diversion above station Mar. 30, 1938.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	905	791	747	691	932	883	877	1,150	871	914	806	906	872
1952	873	838	737	911	978	1,150	1,087	998	555	486	500	608	809
1953	769	772	1,028	1,006	889	1,062	974	996	744	501	495	638	823
1954	806	894	760	700	1,173	855	959	929	730	392	700	655	793
1955	797	780	853	796	702	1,165	929	670	949	479	384	512	751
1956	855	797	896	852	938	998	913	839	731	490	507	541	779
1957	827	843	842	632	1,041	996	1,060	1,222	880	599	568	823	859
1958	971	968	856	801	832	903	1,092	866	798	829	532	679	844
1959	817	893	682	772	986	1,144	964	999	658	490	351	634	781
1960	905	845	855	684	872	1,395	1,178	1,065	801	516	383	531	836

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	55,620	47,080	45,910	42,480	51,790	54,260	52,180	70,680	51,820	56,210	49,580	53,880	631,500
1952	53,680	49,850	45,320	56,030	56,260	70,710	64,890	61,350	33,010	29,860	30,710	36,170	587,600
1953	47,250	45,910	63,200	61,830	49,350	65,310	57,940	61,250	44,300	30,800	30,460	37,880	595,600
1954	49,580	53,230	46,750	43,010	65,130	52,550	57,080	57,130	43,450	24,120	43,020	33,000	574,000
1955	48,020	46,440	52,420	48,970	38,980	71,640	55,300	41,190	56,460	29,420	23,630	30,440	543,900
1956	52,550	47,420	55,120	52,360	53,950	61,380	54,330	51,600	43,490	30,110	31,170	32,220	565,700
1957	50,870	50,150	51,780	38,860	57,800	61,220	63,090	75,150	52,370	36,840	34,960	48,950	622,000
1958	59,680	57,620	52,640	49,250	46,230	55,890	64,960	53,240	47,480	50,990	32,700	40,430	611,100
1959	50,230	53,110	41,930	47,450	54,750	70,330	57,350	61,400	39,180	30,110	21,560	37,720	565,100
1960	55,630	50,260	52,580	42,050	50,140	85,800	70,110	65,500	47,660	31,720	23,540	31,570	606,600

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	827	598,400
1951	1210	4,660	Aug. 13, 1951	112	872	631,500	873	631,700
1952	1240	2,570	May 27, 1952	180	809	587,600	820	595,200
1953	1280	1,890	June 7, 1953	271	823	595,600	813	588,800
1954	1340	†a1,880	Feb. 6, 1954	200	795	574,000	791	572,400
1955	1390	2,440	June 23, 1955	193	751	543,900	761	551,100
1956	1440	2,140	May 29, 1956	125	779	565,700	776	563,400
1957	1510	4,520	May 14, 1957	280	859	622,000	883	639,200
1958	1560	a2,300	Feb. 25, 1958	190	844	611,100	810	586,400
1959	1630	1,600	Mar. 1, 1959	135	781	565,100	799	578,300
1960	1710	a5,000	Mar. 27, 1960	143	836	606,600	-	-

† Not previously published.

a About.

7795. Middle Loup River at Loup City, Nebr.

Location.--Lat 41°16'40", long 98°59'50", in NE $\frac{1}{4}$  sec.14, T.15 N., R.15 W., on left bank 200 ft downstream from bridge on State Highway 92, 1 mile west of Loup City, and  $\frac{1}{2}$  miles upstream from Cob Creek.

Records available.--December 1936 to April 1938, June 1949 to September 1956.

Gage.--Water-stage recorder. Datum of gage is 2,056.9 ft above mean sea level, datum of 1929. December 1936 to April 1938 chain gage at bridge 200 ft upstream at different datum. June 1949 to August 1954 at site 200 ft upstream at 3.0 ft higher datum and August 1954 to February 1956 at present site at 3.0 ft higher datum.

Average discharge.--7 years (1949-56), 823 cfs (59,580 acre-ft per year).

Extremes.--1936-38, 1949-56: Maximum discharge, 4,220 cfs May 19, 1950, from rating curve extended above 2,200 cfs; minimum daily, 69 cfs Dec. 7, 1950 (result of freezeup).

Remarks.--Middle Loup Public Power and Irrigation District began diversion above station Mar. 30, 1938.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	902	803	720	754	919	874	987	1,164	892	1,017	782	1,003	901
1952	989	815	755	1,001	1,089	1,210	1,080	1,119	566	446	567	589	852
1953	844	962	846	1,098	880	1,273	745	855	753	518	460	551	816
1954	762	878	907	792	1,386	1,011	991	892	670	400	731	682	838
1955	698	847	816	728	709	1,073	1,010	670	951	485	428	511	743
1956	795	732	849	974	902	1,126	1,039	809	685	411	470	510	775
1957													
1958													
1959													
1960													

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	55,450	47,800	44,240	46,370	51,040	53,750	58,740	71,540	53,090	62,520	48,070	59,670	652,300
1952	60,830	48,470	46,450	61,530	62,620	74,400	64,260	68,820	33,680	27,420	34,860	35,070	618,400
1953	51,910	57,230	52,030	67,500	48,890	78,290	44,350	52,550	44,790	31,870	28,270	32,770	590,400
1954	46,880	52,250	55,790	48,690	76,960	62,170	58,980	54,840	39,880	24,590	44,970	40,590	606,600
1955	42,910	50,420	50,190	44,770	39,370	65,960	60,130	41,200	56,560	29,800	26,320	30,430	538,100
1956	48,860	43,570	52,170	59,890	51,900	69,250	61,810	49,760	40,750	25,300	28,900	30,370	562,500
1957													
1958													
1959													
1960													

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	832	602,500
1951	1210	3,940	Aug. 13, 1951	69	901	652,300	912	660,500
1952	1240	2,810	May 27, 1952	210	852	618,400	859	623,800
1953	1280	2,110	Mar. 14, 1953	180	816	590,400	807	584,200
1954	1340	-	-	202	838	606,600	822	595,200
1955	1390	-	-	220	743	538,100	745	539,100
1956	1440	-	-	100	775	562,500	-	-
1957								
1958								
1959								
1960								

7800. Middle Loup River at Rockville, Nebr.

Location.--Lat 41°06'39", long 98°50'19", in NE $\frac{1}{4}$ SW $\frac{1}{4}$  sec.8, T.13 N., R.13 W., on right bank just downstream from bridge on State Highway 68, 0.6 mile southwest of Rockville.

Records available.--October 1955 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 1,956.68 ft above mean sea level, datum of 1929, supplementary adjustment of 1954.

Average discharge.--5 years (1955-60), 830 cfs (600,900 acre-ft per year).

Extremes.--1955-60: Maximum discharge, 10,400 cfs June 16, 1957 (gage height, 4.62 ft); maximum gage height, 6.20 ft Mar. 25, 1960 (backwater from ice); minimum daily discharge, 77 cfs Nov. 29, 1955.

Remarks.--Natural flow of stream affected by many diversions for irrigation and return flow from irrigated areas.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1956	844	678	750	832	897	1,164	958	784	691	462	493	531	756
1957	792	778	817	534	1,027	997	943	1,175	1,087	578	571	953	852
1958	1,060	964	890	804	930	1,052	1,182	865	765	903	560	649	885
1959	812	951	745	676	855	1,367	900	864	647	543	366	664	785
1960	899	791	939	721	942	1,615	1,031	1,187	788	575	372	612	873

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1956	51,880	40,200	46,120	51,140	51,570	71,570	56,910	48,210	41,100	28,410	30,300	31,570	549,000
1957	48,690	46,300	50,230	32,810	57,050	61,310	56,100	72,250	64,660	35,520	35,130	56,730	618,800
1958	65,160	57,360	54,740	49,410	51,640	64,680	70,330	53,210	45,510	55,500	34,450	38,640	640,600
1959	49,900	56,610	45,800	41,560	47,470	84,060	53,550	54,370	38,500	33,400	23,750	39,480	568,400
1960	55,250	47,050	57,730	44,330	54,190	99,290	61,350	72,970	46,900	35,360	22,980	36,400	633,700

† Corrected.

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1956	1440	2,540	Nov. 20, 1955	77	756	549,000	766	556,000
1957	1510	10,400	June 16, 1957	150	852	616,800	896	648,800
1958	1560	5,480	Feb. 25, 1958	200	885	640,600	850	615,700
1959	1630	2,090	Mar. 26, 1959	180	785	568,400	796	576,200
1960	1710	9,660	Mar. 28, 1960	100	873	633,700	-	-

7805. Boelus power canal near Boelus, Nebr.

Location.--Lat 41°03'55", long 98°40'25", in SE $\frac{1}{4}$  sec.27, T.13 N., R.12 W., at powerhouse on left bank of South Loup River, 2 miles southeast of Boelus and 3 miles downstream from diversion on Middle Loup River.

Records available.--July 1952 to September 1960 in reports of Geological Survey. October 1933 to September 1938 (fragmentary) and October 1939 to September 1942 in reports of State engineer.

Gage.--Discharge computed from flow through powerhouse. October 1933 to September 1942 staff gages at various sites and datums along canal.

Extremes.--1933-42, 1952-60: Maximum daily discharge observed, 1,280 cfs Nov. 2, 1933; no flow for many days in each year.

Remarks.--Water taken from Middle Loup River about 7 miles below station at Rockville (see p. 235) and released into South Loup River about 2 miles above confluence.

Cooperation.--Records of powerplant operation furnished by Consumers Public Power District.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	-	-	-	-	-	-	417	480	-
1952	498	414	11.9	26.8	99.8	396	502	472	382	271	403	457	329
1953	495	382	30.5	92.2	294	287	464	493	462	285	500	512	358
1954	509	450	80.8	0	57.2	153	521	466	467	379	287	384	315
1955	95.0	226	290	287	129	218	514	489	474	347	381	441	324
1956	508	347	141	140	208	246	477	447	447	398	426	487	356
1957	494	372	248	53.6	20.8	164	464	477	498	466	429	473	348
1958	515	388	116	186	248	207	484	492	455	356	314	463	352
1959	521	178	236	103	113	49.9	315	449	497	384	208	408	289
1960													

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	-	-	-	-	-	-	25,630	28,540	-
1952	30,620	24,640	734	1,650	5,540	24,360	29,860	29,050	22,740	16,670	24,780	27,220	237,900
1953	30,410	22,710	1,880	5,670	16,350	17,630	27,640	30,330	27,500	17,530	30,760	30,460	258,900
1954	31,280	26,790	4,970	0	3,180	9,380	30,990	28,650	28,970	23,310	17,660	22,840	228,000
1955	5,840	13,460	17,830	17,650	7,410	13,400	30,590	30,040	28,210	21,330	23,450	26,270	235,500
1956	31,270	20,640	8,660	8,590	11,580	15,130	28,410	27,510	26,570	24,470	26,200	28,970	258,000
1957	30,360	22,120	15,270	3,300	1,150	10,080	27,590	29,340	29,660	28,650	26,380	28,170	252,100
1958	31,680	23,120	7,180	11,410	13,750	12,720	28,800	30,270	27,060	21,880	19,330	27,570	254,800
1959	32,040	10,620	14,500	6,360	6,510	3,070	18,730	27,610	29,600	23,640	12,810	24,250	209,700
1960													

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950								
1951								
1952	1280	-	-	-	-	-	-	-
1953	1280	601	Oct. 30, 1952	0	329	237,900	327	236,900
1954	1340	592	Sept. 30, 1954	0	358	258,900	369	266,900
1955	1390	575	Oct. 2, 1954	0	315	228,000	279	202,100
1956	1440	585	May 14, 1956	0	324	235,500	357	258,900
1957	1560	572	(a)	0	356	258,000	366	265,200
1958	1560	592	May 20, 1958	0	348	252,100	340	246,300
1959	1630	588	(b)	0	352	254,800	345	250,000
1960	1710	595	Oct. 1, 1959	0	289	209,700	-	-

a Nov. 11, 12, Dec. 2, 1956.

b Oct. 31 to Nov. 2, Nov. 4, 16, 1958.



## 7810. Middle Loup River at Boelus, Nebr.

Location.--Lat 41°04'00", long 98°42'45", in SE $\frac{1}{4}$  sec.29, T.13 N., R.12 W., on downstream side of county road bridge, 0.5 mile south of Boelus, 1 mile downstream from diversion to Boelus power canal, and 4 miles upstream from South Loup River.

Records available.--June 1952 to September 1955. December 1936 to September 1938, published under same name, not equivalent as they contain flow of Boelus power canal.

Gage.--Water-stage recorder. Datum of gage is 1,903.35 ft above mean sea level, unadjusted.

Extremes.--1952-55: Maximum discharge, 4,590 cfs June 17, 1954 (gage height, 3.21 ft); maximum gage height, 4.98 ft Feb. 10, 1955 (backwater from ice); minimum daily discharge, 2.0 cfs May 14, 1955.

Remarks.--A large part of the flow is diverted above the station into the Boelus power canal which empties into the South Loup River. Principal irrigation diversions above station are those by Middle Loup Public Power and Irrigation District.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1952	-	-	-	-	-	-	-	-	-	55.5	109	121	-
1953	245	368	904	842	837	705	415	617	384	210	44.5	128	473
1954	257	527	834	533	963	551	429	406	357	59.3	217	208	442
1955	328	378	667	809	644	1,029	303	193	452	78.3	20.7	145	437

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1952	-	-	-	-	-	-	-	-	-	3,410	8,700	7,230	-
1953	15,060	21,920	55,580	51,790	46,500	43,200	24,690	37,930	22,850	12,890	2,740	7,600	342,800
1954	15,790	31,340	51,290	32,790	53,490	33,850	25,560	24,980	21,220	3,640	13,350	12,370	319,700
1955	20,140	22,500	53,310	49,720	35,770	63,280	18,050	11,850	26,890	4,810	1,270	8,610	316,200

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year			
		Discharge	Maximum	Minimum	Mean	Acre-feet	Mean	Acre-feet	
			Date	day					
1952	1280	889	Sept. 17, 1952	-	-	-	-	-	-
1953	1280	2,650	Feb. 27, 1953	8.0	473	342,800	482	348,600	
1954	1340	4,590	June 17, 1954	3.0	442	319,700	438	317,200	
1955	1390	2,870	June 23, 1955	2.0	437	316,200	-	-	

a Maximum for the period June to September.

## 7820. South Loup River near Cumro, Nebr.

Location.--Lat 41°02'40", long 99°22'30", in NE $\frac{1}{4}$  sec.4, T.12 N., R.18 W., near left bank on downstream side of bridge on State Highway 183, 7 $\frac{1}{2}$  miles southeast of Cumro.

Drainage area.--1,340 sq mi, approximately, of which about 700 sq mi contributes directly to surface runoff.

Records available.--May 1946 to September 1953.

Gage.--Water-stage recorder. Datum of gage is 2,202.68 ft above mean sea level, datum of 1929. Prior to July 24, 1952, at site half a mile upstream at datum 5.0 ft higher.

Average discharge.--7 years (1946-53), 165 cfs (119,500 acre-ft per year).

Extremes.--1946-53: Maximum discharge, 7,200 cfs June 22, 1947 (gage height, 10.94 ft, present site and datum); minimum daily, 52 cfs Dec. 6, 1950, result of freezeup.

Remarks.--Minor irrigation developments above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	144	146	135	142	163	161	169	375	228	172	146	158	178
1952	155	152	136	168	208	213	179	159	122	103	110	104	150
1953	121	134	139	174	164	187	169	192	156	105	98.7	93.4	143

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	8,830	8,700	8,290	8,710	9,040	9,890	10,050	23,080	13,570	10,580	9,000	9,420	129,100
1952	9,550	9,060	8,360	10,190	11,820	13,110	10,680	9,770	7,230	6,340	6,770	6,200	130,500
1953	7,440	7,980	8,520	10,680	9,120	11,480	10,070	11,830	8,100	6,480	6,070	5,560	103,500

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year			
		Discharge	Maximum	Minimum	Mean	Acre-feet	Mean	Acre-feet	
			Date	day					
1950	-	-	-	-	-	-	154	111,900	
1951	1210	1,700	May 18, 1951	52	178	129,100	180	130,500	
1952	1240	3,313	Mar. 17, 1952	75	150	109,100	146	106,000	
1953	1280	3,150	May 27, 1953	98	143	103,500	-	-	

\* Not previously published.

7825. South Loup River at Ravenna, Nebr.

Location.--Lat 41°00'35", long 98°54'45", on line between secs. 16 and 17, T. 12 N., R. 14 W., near center of main span on downstream side of highway bridge, three-quarters of a mile south of Ravenna and 1 mile upstream from Mud Creek.

Drainage area.--1,660 sq mi, approximately, of which about 890 sq mi contributes directly to surface runoff.

Records available.--October 1940 to September 1958.

Gage.--Wire-weight gage and crest-stage gage. Datum of gage is 1,984.21 ft above mean sea level, unadjusted. Prior to Mar. 10, 1958, at datum 0.48 ft lower.

Average discharge.--18 years (1940-58), 200 cfs (144,800 acre-ft per year).

Extremes.--1940-58: Maximum gage height, 12.6 ft June 22, 1947 (discharge not determined), from floodmark; minimum daily discharge, 8.6 cfs Aug. 28, 1955.

Remarks.--Minor irrigation developments above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	172	182	177	149	204	203	234	494	330	234	180	188	229
1952	177	186	153	160	256	310	240	216	140	108	93.6	87.7	177
1953	122	140	151	174	238	271	214	307	170	89.9	76.3	75.6	169
1954	108	167	190	160	253	180	171	179	306	69.7	111	85.0	164
1955	133	145	161	157	139	276	206	168	171	78.3	27.8	62.2	144
1956	94.5	104	113	141	162	205	180	138	241	95.2	74.4	58.0	133
1957	89.9	134	126	108	151	148	240	314	458	122	99.4	171	180
1958	156	167	151	167	160	231	257	257	216	576	151	136	220
1959													
1960													

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	10,560	10,810	10,900	9,150	11,350	12,510	13,950	30,370	19,640	14,370	14,100	11,190	165,900
1952	10,900	11,050	9,430	9,850	14,710	19,090	14,290	13,300	8,300	6,610	5,750	5,220	128,500
1953	7,490	8,350	9,300	10,680	13,220	16,660	12,750	18,880	10,090	5,530	4,690	4,500	122,100
1954	6,670	9,940	11,690	9,840	14,060	11,060	10,150	11,000	18,180	4,280	6,850	5,060	118,780
1955	8,190	8,660	9,930	9,640	7,720	16,960	12,250	10,340	10,180	4,810	1,710	3,700	104,100
1956	5,810	6,160	8,930	8,860	9,310	12,610	10,700	8,460	14,360	5,850	4,570	3,450	96,870
1957	5,530	7,990	7,750	6,620	8,390	9,130	14,300	19,290	27,280	7,510	6,110	10,160	130,100
1958	9,590	9,910	9,300	10,280	8,880	14,210	15,290	15,800	12,870	35,410	9,310	8,110	159,000
1959													
1960													

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	196	142,300
1951	1210	2,210	May 31, 1951	75	229	165,900	228	165,000
1952	1240	1,900	May 27, 1952	76	177	128,500	168	122,300
1953	1280	3,150	May 27, 1953	59	169	122,100	173	125,300
1954	1340	11,200	June 17, 1954	46	164	118,780	162	117,300
1955	1390	1,460	May 25, 1955	8.6	144	104,100	133	96,210
1956	1440	2,010	June 18, 1956	16	133	96,870	137	99,240
1957	1510	6,560	June 16, 1957	40	180	130,100	190	137,600
1958	1560	7,590	July 19, 1958	72	220	159,000	-	-
1959								
1960								

7830. Mud Creek near Broken Bow, Nebr.

Location.--Lat 41°22'30", long 99°35'10", in NW $\frac{1}{4}$  sec.11, T.16 N., R.20 W., on right bank 6 ft downstream from bridge on State Highway 2 about 3 miles southeast of Broken Bow.

Records available.--June 1949 to September 1953.

Gage.--Water-stage recorder. Prior to Aug. 5, 1949, wire-weight gage at same site and datum.

Extremes.--1949-53: Maximum discharge, 410 cfs July 23, 1950 (gage height, 7.75 ft); minimum daily, 0.1 cfs Sept. 14-26, 28, 29, 1953.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1.13	1.16	1.21	1.22	1.25	1.41	1.82	4.73	3.18	9.86	2.32	1.67	2.60
1952	1.32	1.44	1.71	1.42	1.85	3.58	2.41	2.05	.99	.74	.71	.42	1.55
1953	.58	.64	.85	.96	.85	1.51	1.48	1.56	2.84	.71	1.26	.17	1.12

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	69	69	74	75	70	87	108	291	189	606	142	99	1,680
1952	81	86	105	87	107	220	143	126	59	45	44	25	1,130
1953	36	38	53	59	47	93	87	96	189	44	78	10	810

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean
		Discharge	Date				
1950	-	-	-	-	-	-	2.37
1951	1210	401	July 21, 1951	1.0	2.60	1,880	2.68
1952	1240	77	Mar. 16, 1952	.2	1.55	1,130	1.35
1953	1280	155	June 7, 1953	.1	1.12	810	-
							1,720
							1,940
							982
							-

7835. Mud Creek near Sweetwater, Nebr.

Location.--Lat 41°02'15", long 98°59'35", in NE $\frac{1}{4}$ SE $\frac{1}{4}$  sec.3, T.12 N., R.15 W., on right bank 12 ft downstream from bridge on State Highway 2, 0.9 mile southeast of Sweetwater, and 11.6 miles upstream from mouth.

Drainage area.--1,020 sq mi, of which 655 sq mi contributes directly to surface runoff.

Records available.--July 1946 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 2,014.17 ft above mean sea level, unadjusted.

Average discharge.--14 years (1946-60), 46.4 cfs (33,590 acre-ft per year).

Extremes.--1946-60: Maximum gage height, 23.20 ft June 22, 1947 (discharge not determined); no flow at times in 1955-56.

Maximum stage known since at least 1929, that of June 22, 1947, from information by local resident.

Remarks.--Minor irrigation developments above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	51.4	34.1	27.2	28.6	35.8	37.1	47.1	91.7	92.6	113	66.2	42.1	55.8
1952	33.7	34.6	30.1	44.4	59.1	82.1	46.8	38.2	26.4	18.3	14.2	14.3	36.8
1953	18.6	21.4	21.2	26.6	20.9	34.3	28.9	59.0	54.6	18.3	7.25	9.74	26.6
1954	12.5	18.2	21.8	16.0	33.9	28.4	24.8	31.9	51.3	4.33	15.8	7.95	22.1
1955	14.1	15.8	16.9	16.4	21.9	34.9	19.8	38.4	30.6	11.9	0.49	3.18	18.7
1956	7.36	9.75	11.1	10.2	17.6	28.9	19.1	16.5	103	14.5	9.79	3.11	20.6
1957	8.37	10.8	12.0	11.1	13.8	21.5	20.2	114	187	45.3	10.3	47.4	41.8
1958	26.4	20.7	21.4	18.9	35.4	61.8	36.9	50.3	32.1	95.3	32.6	15.8	37.4
1959	16.7	21.7	20.0	17.6	29.6	43.3	33.5	34.2	41.2	22.1	22.0	23.2	27.1
1960	14.0	16.5	17.6	17.7	23.7	176	54.9	130	62.5	121	21.8	17.8	56.5

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	3,160	2,030	1,670	1,760	1,990	2,280	2,800	5,640	5,510	6,970	4,070	2,510	40,390
1952	2,070	2,060	1,850	2,730	3,400	5,050	2,780	2,350	1,570	1,120	873	851	26,700
1953	1,020	1,280	1,300	1,640	1,150	2,110	1,720	3,630	3,250	1,120	445	580	19,240
1954	768	1,060	1,340	964	1,880	1,740	1,480	1,960	3,050	268	972	473	15,990
1955	866	940	1,040	1,010	1,220	2,150	1,180	2,360	1,820	730	30	189	13,540
1956	453	580	684	630	1,010	1,660	1,140	1,010	6,130	891	602	185	14,980
1957	515	643	738	682	768	1,320	1,200	7,030	11,120	2,780	633	2,820	30,250
1958	1,620	1,230	1,310	1,160	1,970	3,800	2,200	3,090	1,910	5,860	2,010	938	27,100
1959	1,030	1,290	1,230	1,080	1,650	2,660	1,990	2,100	2,450	1,360	1,350	1,380	19,570
1960	861	980	1,080	1,090	1,360	10,800	3,270	7,960	3,720	7,460	1,340	1,060	40,980

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	62.2	-	45,010
1951	1210	920	Aug. 14, 1951	13	55.8	40,390	54.6	-	39,510
1952	1240	245	Mar. 18, 1952	9.0	36.8	26,700	33.6	-	24,320
1953	1280	1,200	May 27, 1953	1.3	26.6	19,240	26.0	-	18,840
1954	1340	1,660	June 17, 1954	0.7	22.1	15,990	21.6	-	15,650
1955	1390	555	May 19, 1955	0	18.7	13,540	17.1	-	12,410
1956	1440	1,060	June 29, 1956	0	20.6	14,980	20.9	-	15,150
1957	1510	1,740	June 18, 1957	0.2	41.8	30,250	44.9	-	32,510
1958	1560	1,350	July 19, 1958	11	37.4	27,100	36.6	-	26,490
1959	1630	742	June 30, 1959	1.9	27.1	19,570	26.2	-	18,940
1960	1710	1,760	July 30, 1960	9.1	56.5	40,980	-	-	-

7840. South Loup River at St. Michael, Nebr.

Location.--Lat 41°01'52", long 98°44'28", in NE<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub> sec.11, T.12 N., R.13 W., on right bank 100 ft upstream from county highway bridge, 0.6 mile northeast of St. Michael, and 3.4 miles upstream from Sweet Creek.

Drainage area.--2,560 sq mi, approximately, of which about 1,650 sq mi contributes directly to surface runoff.

Records available.--October 1943 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 1,921.28 ft above mean sea level, unadjusted. Prior to June 22, 1947, water-stage recorder and June 25 to Sept. 30, 1947, wire-weight gage, at site 100 ft downstream at datum 2.00 ft higher. Oct. 1, 1947, to July 3, 1958, wire-weight gage at site 100 ft downstream at present datum. July 4, 1958, to Sept. 7, 1960, water-stage recorder at site 500 ft upstream at present datum.

Average discharge.--17 years (1943-60), 250 cfs (181,000 acre-ft per year).

Extremes.--1943-60: Maximum flood occurred June 22, 1947, discharge and gage height not determined; minimum daily discharge, 6.6 cfs Aug. 30, 1955.

Remarks.--Minor irrigation developments above station. Records of suspended sediment loads for the period June 1946 to June 1953 and water temperatures for the period October 1952 to June 1953 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	229	206	174	173	233	233	300	562	441	410	261	228	288
1952	211	214	187	199	312	430	307	284	164	139	105	106	220
1953	140	189	171	208	260	275	217	429	224	124	83.8	90.3	201
1954	125	186	224	184	305	210	200	242	449	76.8	124	99.0	201
1955	140	165	170	165	165	288	196	245	218	101	21.3	54.4	161
1956	108	136	116	142	162	215	195	186	422	119	89.8	51.0	161
1957	87.5	129	144	121	184	205	242	504	623	162	89.4	207	225
1958	163	193	209	169	210	322	317	311	252	706	205	154	272
1959	163	198	174	156	220	337	278	283	228	203	127	156	206
1960	165	216	211	157	244	782	360	536	507	287	128	109	309

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	14,100	12,230	10,700	10,620	12,970	14,330	17,880	34,570	26,240	25,190	16,070	13,590	208,500
1952	12,950	12,750	11,500	12,240	17,970	26,460	18,290	16,250	9,750	8,530	6,460	6,280	159,400
1953	8,630	11,240	10,500	12,780	14,450	16,900	12,900	26,360	13,310	7,640	5,150	5,380	145,200
1954	7,680	11,060	13,780	11,290	16,920	12,880	11,910	14,880	26,730	4,720	7,600	5,890	†145,300
1955	8,630	9,840	10,450	10,140	9,160	17,710	11,690	15,070	12,980	6,180	1,310	3,240	116,400
1956	6,640	8,090	7,120	8,760	9,310	13,220	11,600	11,410	25,130	7,320	5,520	3,030	117,100
1957	5,380	7,690	8,830	7,470	10,240	12,630	14,420	31,010	37,080	9,980	5,500	12,330	162,600
1958	11,220	11,510	12,840	11,630	11,650	19,780	18,850	19,100	14,980	43,410	12,590	9,170	196,700
1959	10,020	11,780	10,710	9,700	12,210	20,720	16,450	16,200	13,600	12,510	7,790	9,270	151,000
1960	10,130	12,860	12,990	9,640	14,020	48,110	21,430	32,940	30,160	17,660	7,850	6,480	224,300

† Corrected.

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	261	189,200
1951	1210	2,780	May 31, 1951	56	288	208,500	288	208,700
1952	1240	1,870	May 27, 1952	78	220	159,400	210	152,600
1953	1280	4,180	May 27, 1953	51	201	145,200	†204	†147,400
1954	1340	7,820	June 17, 1954	34	201	†145,300	196	141,700
1955	1390	1,480	June 17, 1955	6.6	161	116,400	151	109,300
1956	1440	2,300	June 19, 1956	31	161	117,100	162	117,200
1957	1510	6,010	June 17, 1957	52	225	162,600	243	176,200
1958	1560	7,680	July 20, 1958	90	272	196,700	268	193,700
1959	1630	1,700	June 30, 1959	69	208	151,000	213	154,400
1960	1710	5,750	Mar. 27, 1960	69	309	224,300	-	-

† Corrected.

7843. Oak Creek near Loup City, Nebr.

Location.--Lat 41°17'36", long 98°52'04", near center of north line of sec.12, T.15 N., R.14 W., on left bank 30 ft downstream from county bridge and 5.1 miles northeast of Loup City.

Drainage area.--41.9 sq mi.

Records available.--July 1952 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 2,069.93 ft above mean sea level, datum of 1929.

Average discharge.--8 years (1952-60), 1.66 cfs (1,200 acre-ft per year).

Extremes.--1952-60: Maximum discharge, 655 cfs July 5, 1956 (gage height, 13.88 ft); no flow for most of time in each year.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952	-	-	-	-	-	-	-	-	-	0.07	0.02	0	-
1953	0	0	0	0	0	0.03	0	0.09	0.01	0	.003	0	0.01
1954	0	0	0	†.006	.84	0	.30	.84	6.39	0	5.21	0	1.13
1955	.01	0	0	0	.56	2.36	0	0	1.10	8.97	.006	.02	1.10
1956	0	0	0	0	1.10	.57	0	0	6.21	10.0	4.17	0	1.85
1957	.19	0	0	0	0	0	.65	7.74	18.2	1.84	.04	5.52	2.84
1958	0	0	0	0	1.84	8.42	.97	.70	.06	26.7	0	0	3.27
1959	0	0	0	0	0	.003	0	1.53	3.55	1.25	.13	.007	.54
1960	.01	0	0	0	0	15.4	.12	12.3	.97	1.08	.06	.05	2.54

† Corrected.

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952	-	-	-	-	-	-	-	-	-	4.2	1.2	-	-
1953	0	0	0	0	0	1.8	0	5.4	0.8	0	.2	0	8.2
1954	0	0	0	.4	47	0	18	52	380	0	320	0	817
1955	.8	0	0	0	31	145	0	0	65	552	.4	1.2	795
1956	0	0	0	0	63	35	0	0	370	616	258	0	1,340
1957	12	0	0	0	0	0	38	476	1,090	113	2.6	328	2,060
1958	0	0	0	0	102	518	60	43	5.6	1,640	0	0	2,370
1959	0	0	0	0	0	0	0	94	211	77	7.7	.4	390
1960	.6	0	0	0	0	949	7.1	757	58	66	3.6	3.2	1,840

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950									
1951									
1952	1560	-	-	0	-	-	-	-	-
1953	1560	9.1	May 10, 1953	0	0.01	8.2	0.01	-	8.2
1954	1560	594	June 17, 1954	0	1.13	817	†1.13	†818	
1955	1560	302	July 13, 1955	0	1.10	795	1.10	795	
1956	1560	655	July 5, 1956	0	1.85	1,340	1.86	1,350	
1957	1560	499	June 16, 1957	0	2.84	2,060	2.82	2,050	
1958	1560	516	July 24, 1958	0	3.27	2,370	3.27	2,370	
1959	1630	180	June 30, 1959	0	.54	390	.54	391	
1960	1710	478	May 5, 1960	0	2.54	1,840	-	-	

† Corrected.

7845. Oak Creek near Dannebrog, Nebr.

Location (revised).--Lat 41°07'10", long 98°36'45", in NW<sup>1</sup>/<sub>4</sub> NW<sup>1</sup>/<sub>4</sub> sec. 8, T.13 N., R.11 W., on left bank 200 ft downstream from bridge on State Highways 58 and 60, 2 miles upstream from Dry Creek, and 3½ miles west of Dannebrog.

Drainage area.--122 sq mi.

Records available.--July 1949 to September 1957.

Gage.--Water-stage recorder. Datum of gage is 1,879.45 ft above mean sea level, unadjusted.

Average discharge.--8 years (1949-57), 8.05 cfs (5,830 acre-ft per year).

Extremes.--1949-57: Maximum discharge, 1,880 cfs June 17, 1954 (gage height, 17.23 ft); no flow during periods in 1949, 1952-57.

Remarks.--A few small diversions for irrigation above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	2.96	1.55	2.12	1.42	2.39	2.91	19.8	46.0	26.9	40.8	3.87	9.05	13.4
1952	1.69	2.01	1.21	2.80	5.03	11.4	4.33	3.78	.88	5.19	.37	.14	3.24
1953	.33	.94	.75	.98	1.32	3.21	2.19	27.0	3.98	.37	.07	.003	3.47
1954	.003	.58	.83	.51	5.24	1.45	.54	7.35	75.6	.31	23.6	.09	9.61
1955	.18	.50	.84	.98	2.51	5.00	.94	.70	8.66	13.8	.003	0	2.84
1956	0	0	0	0	.74	2.30	.53	.04	11.4	15.5	3.45	0	2.84
1957	.06	0	0	.13	.03	.65	8.65	26.7	61.6	4.70	1.87	31.0	11.2
1958													
1959													
1960													

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	182	92	130	87	133	179	1,180	2,630	1,600	2,510	238	538	9,700
1952	104	120	74	172	290	699	258	233	53	319	23	8.5	2,350
1953	20	56	46	60	73	198	130	1,660	237	23	4.6	.2	2,510
1954	.2	35	51	31	291	89	32	452	4,500	19	1,450	5.4	6,960
1955	11	30	52	54	139	307	58	43	515	851	.2	0	2,060
1956	0	0	0	0	43	142	32	2.6	680	951	212	0	2,060
1957	3.6	0	0	7.9	1.6	40	515	1,640	3,670	289	115	1,850	8,130
1958													
1959													
1960													

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	18.0	13,070
1951	1210	1,420	May 31, 1951	0.1	13.4	9,700	13.2	9,590
1952	1240	130	July 15, 1952	0	3.24	2,350	3.00	2,180
1953	1280	1,270	May 10, 1953	0	3.47	2,510	3.42	2,470
1954	1340	1,880	June 17, 1954	0	9.61	6,960	9.62	6,960
1955	1390	282	June 17, 1955	0	2.84	2,060	2.72	1,970
1956	1440	426	July 6, 1956	0	2.84	2,060	2.84	2,070
1957	1510	1,170	June 16, 1957	0	11.2	8,130	-	-
1958								
1959								
1960								

## 7850. Middle Loup River at St. Paul, Nebr.

Location.--Lat 41°11'55", long 98°26'50", in sec.10, T.14 N., R.10 W., on left bank at St. Paul, 450 ft upstream from bridge on U. S. Highway 281 and 6 miles upstream from confluence with North Loup River.

Drainage area.--7,720 sq mi, approximately, of which about 3,200 sq mi contributes directly to surface runoff.

Records available.--October 1894 to September 1915, August 1928 to September 1960. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 1,776.61 ft above mean sea level, datum of 1929. Prior to April 1899, staff gage at site 430 ft downstream at datum 2.06 ft higher. April to October 1899 and April to November 1903, staff gages at several sites 530 ft downstream at datum 1.87 ft higher. Aug. 15, 1928, to June 13, 1934, chain gage at site 430 ft downstream at datum 2.00 ft higher. June 14, 1934, to June 23, 1947, water-stage recorder at site 470 ft upstream at datum 2.00 ft higher. June 24 to July 25, 1947, staff gage at site 430 ft downstream at datum 9.81 ft lower. July 25, 1947, to Apr. 26, 1951, water-stage recorder at site 170 ft upstream and Apr. 27, 1951, to June 4, 1957, at site 30 ft downstream, at present datum.

Average discharge.--53 years (1894-1915, 1928-60), 1,255 cfs (908,600 acre-ft per year).

Extremes.--1894-99, 1902-3, 1928-60: Maximum discharge, 72,000 cfs June 23, 1947 (gage height, 12.69 ft, site then in use, present datum), from rating curve extended above 55,000 cfs; minimum daily since 1929, 100 cfs Nov. 28, 1955, Dec. 8, 1956.

Remarks.--Diversion above station for irrigation. Records of suspended sediment loads for the period April 1946 to June 1953 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1,197	988	911	920	1,382	1,257	1,385	1,986	1,652	1,368	1,134	1,298	1,288
1952	1,181	1,211	709	1,118	1,502	1,581	1,292	1,323	678	643	588	863	1,039
1953	947	1,041	836	978	1,379	1,393	1,099	1,527	964	596	478	619	965
1954	858	1,068	966	768	1,553	1,160	1,066	1,143	1,515	489	915	702	1,011
1955	914	958	1,061	936	860	1,707	1,048	850	1,182	590	330	584	919
1956	890	839	817	898	951	1,342	1,069	1,075	1,104	599	517	524	885
1957	854	944	899	828	1,090	1,177	1,218	2,011	1,955	736	618	1,195	1,108
1958	1,303	1,172	1,161	1,025	1,200	1,472	1,879	1,229	1,087	1,971	835	874	1,251
1959	1,009	1,042	810	766	1,092	1,802	1,230	1,228	863	760	571	819	999
1960	1,070	1,212	1,116	741	1,167	2,507	1,452	1,764	1,256	1,028	483	724	1,211

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	73,570	58,810	56,020	56,580	76,740	77,280	82,410	122,100	98,280	83,970	69,710	77,230	932,700
1952	72,800	72,030	43,610	88,720	86,420	97,190	76,890	81,370	40,340	39,550	36,180	39,450	754,300
1953	58,250	61,920	51,400	60,110	76,560	85,650	65,410	93,900	57,330	36,820	29,580	36,820	713,400
1954	52,730	63,420	59,390	47,100	86,230	71,300	83,420	70,280	90,160	30,070	56,240	41,780	732,100
1955	56,220	57,020	65,250	57,580	47,740	105,000	62,370	52,250	70,330	36,260	20,300	34,740	665,100
1956	54,710	49,930	50,210	55,210	54,730	82,510	63,630	66,110	65,720	36,840	31,800	31,150	642,600
1957	52,520	56,150	55,300	38,610	60,540	72,350	72,450	123,700	116,400	45,270	38,030	71,090	802,400
1958	80,140	69,740	71,390	63,010	66,640	90,490	99,910	75,300	64,700	121,200	51,370	51,980	905,900
1959	62,010	62,030	49,790	47,080	60,660	110,800	73,210	75,500	51,370	46,760	35,130	48,720	723,100
1960	65,820	72,100	68,630	45,590	67,120	154,200	86,400	108,500	74,740	63,210	29,710	43,060	879,100

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean
		Discharge	Date				
1950	-	-	-	-	-	-	1,185
1951	1210	8,600	May 31, 1951	214	1,288	932,700	1,288
1952	1240	3,720	May 27, 1952	155	1,039	754,300	1,016
1953	1280	6,180	May 10, 1953	257	985	713,400	991
1954	1340	20,100	June 17, 1954	180	1,011	732,100	1,015
1955	1390	35,630	June 24, 1955	246	919	665,100	886
1956	1440	3,540	July 5, 1956	100	885	642,600	898
1957	1510	17,800	June 17, 1957	100	1,108	802,400	1,187
1958	1560	11,600	July 20, 1958	240	1,251	905,900	1,186
1959	1630	8,050	June 30, 1959	130	999	723,100	1,044
1960	1710	13,500	Mar. 28, 1960	216	1,211	879,100	-

\* Not previously published.



7855. North Loup River at Brewster, Nebr.

Location--Lat 41°56'30", long 99°51'37". in NW<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub> sec.27, T.23 N., R.22 W., near right bank on downstream side of pier of bridge on State Highway 7 at the northeast limits of Brewster.

Drainage area--1,890 sq mi, of which about 140 sq mi contributes directly to surface runoff.

Records available--September 1945 to September 1951.

Gage--Staff gage. Datum of gage is 2,467.7 ft above mean sea level, datum of 1929.

Average discharge--6 years (1945-51), 378 cfs.

Extremes--1945-51: Maximum discharge observed, 1,600 cfs June 14, 1951 (gage height, 3.40 ft); maximum gage height observed, 4.20 ft Feb. 25, 26, 1950 (backwater from ice); minimum daily discharge, 100 cfs Jan. 26, 1948.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	375	380	365	338	418	402	407	570	748	478	493	530	458

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	23,060	22,610	22,450	20,760	23,230	24,710	24,230	35,070	44,530	29,380	30,310	31,510	331,800

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	392	283,600
1951	1210	†1,600	June 14, 1951	123	458	331,800	-	-

† Not previously published.

7860. North Loup River at Taylor, Nebr.

Location.--Lat 41°46'37", long 99°22'45", in NE<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub> sec. 22, T.21 N., R.18 W., on left bank 3 ft downstream from bridge on U. S. Highway 183 and 0.4 mile north of Taylor.

Drainage area.--2,210 sq mi, approximately, of which about 180 sq mi contributes directly to surface runoff.

Records available.--November 1936 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 2,248.21 ft above mean sea level, datum of 1929. Prior to Sept. 28, 1938, chain gage at same site and datum. Sept. 28, 1938, to July 16, 1958, water-stage recorder at site 450 ft upstream at same datum.

Average discharge.--23 years (1937-60), 454 cfs (328,700 acre-ft per year).

Extremes.--1936-60: Maximum discharge, 2,770 cfs June 14, 1951, but may have been greater during ice breakup Mar. 10, 1955; maximum gage height, 9.5 ft Feb. 25, 1957 (ice jam, from floodmark); minimum daily discharge, 45 cfs July 26, 1941.

Remarks.--North Loup Public Power and Irrigation District canal began diversion from river in November 1937 at a point 6 miles above station. Several smaller diversions above station for irrigation.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	467	453	472	411	579	475	527	672	861	572	523	665	555
1952	536	541	474	592	670	691	727	647	368	226	289	267	502
1953	419	474	605	539	599	816	543	544	439	326	268	267	486
1954	395	495	497	437	549	598	575	561	455	235	344	329	455
1955	409	477	502	482	512	758	503	365	580	258	182	314	443
1956	459	444	451	498	517	663	575	452	376	209	266	353	438
1957	463	463	452	377	485	536	666	709	520	342	297	432	478
1958	524	488	511	441	428	661	747	534	528	530	315	394	509
1959	488	542	542	509	580	704	608	491	401	326	282	376	487
1960	507	496	457	386	559	663	649	659	433	325	307	349	482

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	28,710	26,950	29,030	25,280	32,130	29,180	31,340	41,310	51,210	35,180	32,130	39,590	402,000
1952	32,980	32,180	29,140	36,420	39,520	42,530	43,280	39,790	21,950	13,910	17,740	15,900	364,300
1953	25,760	28,190	37,210	33,140	33,260	50,200	32,300	33,450	26,110	20,020	16,470	15,890	352,000
1954	24,300	29,460	30,540	26,870	30,510	36,790	34,200	34,520	27,070	14,460	21,160	19,590	329,500
1955	25,170	28,390	30,870	29,640	28,450	46,580	29,920	22,430	33,300	15,960	11,210	18,700	320,500
1956	28,200	26,450	27,700	30,610	29,730	40,780	34,190	27,780	22,360	12,830	16,350	21,010	318,000
1957	28,460	27,570	27,790	23,150	26,950	32,990	39,620	43,570	30,970	21,010	18,250	25,680	346,000
1958	32,200	29,010	31,410	27,120	23,800	40,640	44,440	32,840	31,420	32,570	19,380	23,460	368,300
1959	30,040	32,240	33,320	31,310	32,200	43,260	36,150	30,180	23,880	20,040	17,320	22,360	352,300
1960	31,200	29,510	28,120	23,720	32,150	40,780	38,630	40,530	25,740	19,950	18,880	20,770	350,000

† Corrected.

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	488	353,200
1951	1210	a2,770	June 14, 1951	128	555	402,000	569	411,600
1952	1240	1,420	Apr. 22, 1952	137	502	364,300	497	361,200
1953	1280	1,510	Mar. 12, 1953	166	486	352,000	477	345,100
1954	1340	1,180	Apr. 30, 1954	170	455	329,500	455	329,600
1955	1390	a2,710	June 18, 1955	147	443	320,500	440	318,400
1956	1440	*1,500	Aug. 3, 1956	80	438	318,000	440	319,500
1957	1510	*2,460	July 28, 1957	200	478	346,000	490	354,800
1958	1560	a1,240	May 26, 1958	225	509	368,300	513	371,300
1959	1630	1,200	Mar. 1, 1959	150	487	352,300	477	345,500
1960	1710	b1,700	Mar. 23, 1960	164	482	350,000	-	-

\* Revised.

a May have been greater during ice breakup.

b About.

7865. North Loup River at Burwell, Nebr.

Location.--Lat 41°47'10", long 99°09'20", in SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec.15, T.21 N., R.16 W., on left bank 50 ft downstream from bridge on county road, 1 mile west of Burwell, and 1.5 miles upstream from Calamus River.

Drainage area.--2,510 sq mi, approximately, of which about 400 sq mi contributes directly to surface runoff.

Records available.--October 1952 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 2,157.64 ft above mean sea level, datum of 1929, adjustment of 1953 (levels by Bureau of Reclamation).

Average discharge.--8 years (1952-60), 505 cfs (365,600 acre-ft per year).

Extremes.--1952-60: Maximum discharge, about 2,600 cfs Mar. 26, 1960; maximum gage height, 5.99 ft Feb. 25, 1957 (backwater from ice); minimum daily discharge, 80 cfs Nov. 28, 1955.

Remarks.--The Taylor-Ord Canal of the North Loup River Public Power and Irrigation District and numerous pumps divert water above station for irrigation.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952													
1953	445	515	618	602	645	846	564	641	498	339	295	296	525
1954	431	632	579	495	626	624	573	548	480	235	367	361	495
1955	445	501	442	448	476	757	553	381	582	267	182	334	447
1956	464	447	463	532	547	655	575	499	393	233	288	355	454
1957	459	513	482	355	583	551	683	725	586	347	331	449	504
1958	583	605	554	483	542	721	812	569	552	527	341	406	558
1959	506	560	527	531	554	738	624	581	454	367	298	397	511
1960	576	555	520	435	557	858	712	805	493	367	314	379	548

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952													
1953	27,350	30,650	37,990	37,040	35,820	52,030	33,550	39,430	29,660	20,840	18,110	17,610	380,100
1954	26,490	37,630	35,600	30,410	34,770	38,350	34,080	33,690	28,540	14,430	22,580	21,450	358,000
1955	27,380	29,840	27,200	27,570	26,430	46,580	32,880	23,430	34,610	16,420	11,210	19,840	323,400
1956	28,530	26,590	28,460	32,730	31,470	40,290	34,230	30,700	23,380	14,340	17,570	21,150	329,400
1957	28,220	30,550	29,660	21,850	32,380	33,890	40,640	44,600	34,890	21,340	20,350	26,730	365,100
1958	35,870	35,980	34,040	29,670	30,090	44,320	48,320	34,970	32,830	32,410	20,990	24,170	403,700
1959	31,090	33,310	32,410	32,640	30,780	45,380	37,130	35,750	27,020	22,570	18,340	23,630	370,000
1960	35,430	33,000	31,950	26,720	32,020	52,740	42,380	39,510	29,340	22,550	19,320	22,550	397,500

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950								
1951								
1952								
1953	1280	1,280	Mar. 9, 1953	200	525	380,100	530	383,800
1954	1340	1,340	June 29, 1954	147	495	358,000	473	342,700
1955	1390	2,350	Mar. 10, 1955	157	447	323,400	446	322,600
1956	1440	a2,380	Mar. 12, 1956	80	454	329,400	460	334,300
1957	1510	*1,710	July 28, 1957	150	504	365,100	528	382,600
1958	1560	b1,850	July 20, 1958	238	558	403,700	545	394,600
1959	1630	1,300	Mar. 2, 1959	180	511	370,000	516	373,600
1960	1710	c2,600	Mar. 26, 1960	150	548	397,500	-	-

\* Revised.

a Release of storage caused by ice jam upstream.

b May have been greater during ice period.

c About.

7875. Calamus River near Burwell, Nebr.

Location.--Lat 41°47'25", long 99°11'05", in NW $\frac{1}{4}$  sec.9, T.21 N., R.16 W., on left bank 300 ft downstream from highway bridge,  $1\frac{1}{2}$  miles upstream from mouth, and 3 miles north-west of Burwell.

Drainage area.--1,260 sq mi, approximately, of which about 110 sq mi contributes directly to surface runoff.

Records available.--October 1940 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 2,156.48 ft above mean sea level, datum of 1929, adjustment of 1953 (levels by Bureau of Reclamation). Prior to Apr. 20, 1945, staff gage at site 300 ft upstream at same datum.

Average discharge.--20 years (1940-60), 293 cfs (212,100 acre-ft per year).

Extremes.--1940-60: Maximum discharge, 1,060 cfs May 16, 1951 (gage height, 3.76 ft); maximum gage height, 5.19 ft Mar. 19, 1950 (backwater from ice); minimum daily discharge, 54 cfs Dec. 5, 1950.

Remarks.--Diversions for irrigation above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	304	301	267	290	298	305	335	429	366	318	372	393	333
1952	365	354	337	353	392	407	395	367	302	290	300	284	350
1953	299	301	339	366	352	382	330	385	316	318	324	286	333
1954	308	337	382	325	382	379	347	340	350	293	285	277	333
1955	309	309	300	298	316	344	318	264	294	259	245	278	294
1956	266	289	233	251	300	373	297	281	275	256	276	253	279
1957	272	284	276	258	297	317	348	377	333	278	270	302	301
1958	307	313	298	303	301	331	422	354	348	368	319	315	351
1959	302	332	298	304	330	363	347	331	270	305	294	274	312
1960	275	309	286	291	317	358	395	411	310	270	287	264	314

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	18,670	17,930	16,400	17,840	16,560	18,780	19,920	26,380	22,940	19,450	22,850	23,390	241,100
1952	22,440	21,060	20,740	23,550	22,560	25,000	23,520	23,810	17,990	17,810	18,460	16,870	253,800
1953	18,410	17,900	20,860	22,510	19,570	23,490	19,650	23,670	18,800	19,530	19,930	17,040	241,400
1954	18,930	20,070	23,480	20,000	21,240	23,280	20,660	20,930	20,810	18,030	17,520	16,480	241,400
1955	19,020	18,360	18,470	18,350	17,560	21,130	18,930	16,220	17,490	15,940	15,080	16,530	215,100
1956	16,370	17,210	14,330	15,430	17,280	22,920	17,680	17,260	16,380	15,750	16,970	15,070	202,600
1957	16,740	16,880	16,990	15,840	16,510	19,520	20,720	23,200	19,840	17,110	16,620	17,980	218,000
1958	18,910	18,610	18,330	18,650	16,710	20,320	25,090	21,790	20,730	22,630	19,370	18,650	239,800
1959	18,590	19,740	18,330	18,700	18,300	22,210	20,660	20,340	16,060	18,780	18,110	16,320	226,100
1960	16,910	18,380	17,560	17,920	18,250	22,040	23,480	25,250	18,470	16,610	17,620	15,730	228,200

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	305	220,600
1951	1210	1,060	May 16, 1951	54	333	241,100	349	252,400
1952	1240	a526	May 20, 1952	243	350	253,800	340	246,700
1953	1280	570	Mar. 14, 1953	230	333	241,400	341	246,700
1954	1340	b530	Dec. 26, 1953	160	333	241,400	324	234,800
1955	1390	a457	Mar. 11, 1955	228	294	215,100	283	205,100
1956	1440	505	May 29, 1956	80	279	202,600	283	205,400
1957	1510	500	May 19, 1957	200	301	218,000	308	223,200
1958	1560	822	July 19, 1958	240	331	239,800	332	240,600
1959	1630	505	July 17, 1959	168	312	226,100	307	222,300
1960	1710	730	Mar. 26, 1960	200	314	228,200	-	-

\* Not previously published.

a May have been greater during ice period.

b About.

7885. North Loup River at Ord, Nebr.

Location.--Lat 41°36'27", long 98°55'17", in SW $\frac{1}{4}$  NW $\frac{1}{4}$  sec.22, T.19 N., R.14 W., on right bank 150 ft downstream from bridge on State Highway 70 at Ord.

Records available.--November 1936 to September 1938 (published as "near Ord"), June 1952 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 2,012.14 ft above mean sea level, datum of 1929, adjustment of 1954. Nov. 25, 1936, to Sept. 30, 1938, chain gage at site 2 miles downstream at different datum.

Average discharge.--9 years (1937-38, 1952-60), 854 cfs (618,300 acre-ft per year).

Extremes.--1936-38, 1952-60: Maximum discharge, 4,430 cfs May 29, 1956 (gage height, 4.42 ft); maximum gage height, 4.94 ft Mar. 23, 1960 (backwater from ice); minimum daily discharge, 150 cfs Jan. 10, 1957.

Remarks.--Diversions above station for irrigation. Flow includes return water from North Loup Irrigation District.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	-	-	-	-	-	473	645	582	-
1952	-	-	-	-	-	-	-	-	-	-	-	-	-
1953	775	824	768	912	928	1,297	1,021	1,220	878	695	596	594	876
1954	756	1,040	928	635	1,061	1,086	961	1,054	852	446	655	639	841
1955	824	873	872	791	826	1,203	911	679	917	461	341	564	771
1956	792	876	799	928	1,002	1,155	973	906	755	433	505	681	816
1957	792	822	604	675	895	985	1,113	1,354	1,021	588	589	856	875
1958	1,067	1,035	945	790	880	1,108	1,387	985	955	926	647	778	958
1959	882	895	814	841	946	1,215	1,031	967	696	699	549	651	848
1960	851	855	888	796	1,007	1,410	1,246	1,370	863	675	557	595	926

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	-	-	-	-	-	29,100	39,680	34,640	-
1952	47,630	49,060	47,230	56,110	51,550	70,760	60,750	75,000	52,270	42,730	36,640	35,370	634,100
1953	46,460	61,880	57,060	39,020	58,940	66,800	57,160	64,820	50,700	27,440	40,300	38,010	608,600
1954	50,650	51,970	53,630	48,660	45,900	73,990	54,190	41,760	54,580	28,330	20,960	33,590	558,200
1955	48,710	52,100	49,100	57,040	57,660	71,010	57,900	55,690	44,900	26,640	31,060	40,510	592,300
1956	48,670	48,900	49,420	41,520	49,720	60,540	66,210	83,270	60,730	36,140	36,200	50,950	632,300
1957	65,630	61,570	58,140	48,580	48,890	67,990	82,510	60,560	56,690	56,960	39,780	46,280	693,600
1958	54,220	53,240	50,040	51,730	52,520	74,740	61,350	69,440	41,400	43,010	33,790	38,710	614,200
1959	52,320	50,880	54,590	48,960	57,910	86,710	74,140	84,240	51,330	41,470	34,260	35,410	672,200
1960	52,320	50,880	54,590	48,960	57,910	86,710	74,140	84,240	51,330	41,470	34,260	35,410	672,200

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30							Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date							
1950										
1951										
1952	1280	-	-	-	-	-	-	-	-	-
1953	1280	3,200	June 7, 1953	220	876	634,100	906	655,600		
1954	1340	2,420	June 29, 1954	288	841	608,600	828	599,400		
1955	1390	a3,120	June 18, 1955	287	771	558,200	762	551,900		
1956	1440	4,430	May 29, 1956	189	816	592,300	812	589,400		
1957	1510	*3,440	June 17, 1957*	150	875	632,300	926	670,600		
1958	1560	3,260	Apr. 5, 1958	510	958	693,600	920	665,700		
1959	1630	1,910	July 5, 1959	200	848	614,200	849	614,500		
1960	1710	3,360	Mar. 27, 1960	160	926	672,200	-	-		

\* Revised.

a May have been greater during ice period.

## 7890. North Loup River at Scotia, Nebr.

Location.--Lat 41°27'30", long 98°42'40", in SW $\frac{1}{4}$  sec.8, T.17 N., R.12 W., on right bank 30 ft downstream from trestle on Union Pacific Railroad spur, half a mile upstream from Wallace Creek, and 0.9 mile southwest of Scotia.

Drainage area.--4,100 sq mi, approximately, of which about 910 sq mi contributes directly to surface runoff.

Records available.--October 1936 to September 1960. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 1,893.13 ft above mean sea level, datum of 1929, adjustment of 1954. Prior to Oct. 1, 1938, chain gage at railroad trestle 30 ft upstream at same datum.

Average discharge.--24 years (1936-60), 838 cfs (606,700 acre-ft per year).

Extremes.--1936-60: Maximum gage height, 8.18 ft June 22, 1947 (discharge not determined); minimum daily discharge, 105 cfs Aug. 7, 1941.

Remarks.--Diversions above station for irrigation. Flow includes practically all return water from North Loup irrigation project.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	960	884	892	806	992	963	1,095	1,331	1,435	1,089	1,081	1,239	1,063
1952	1,059	891	822	996	1,364	1,147	1,240	1,236	623	410	542	580	915
1953	741	804	950	945	934	1,294	1,076	1,266	1,055	783	534	557	902
1954	777	1,018	935	768	1,198	1,087	962	987	880	364	644	711	859
1955	867	897	950	835	863	1,293	896	647	958	426	251	550	785
1956	826	750	880	864	950	1,160	1,017	933	688	365	419	589	786
1957	788	831	821	635	930	1,020	1,182	1,306	1,114	555	517	841	877
1958	1,039	1,097	965	751	877	1,313	1,555	998	976	987	559	710	986
1959	839	900	799	845	993	1,443	1,059	961	671	608	493	665	856
1960	897	950	917	804	1,031	1,514	1,302	1,438	957	642	596	674	976

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	59,020	52,610	54,870	49,490	55,070	59,210	65,130	81,830	85,390	66,950	66,450	73,720	769,700
1952	65,120	58,970	50,570	60,620	78,450	70,510	73,770	76,010	37,420	25,190	33,320	34,490	664,400
1953	45,540	47,860	52,270	58,110	51,860	79,550	64,120	77,860	62,800	46,940	32,860	33,150	652,900
1954	47,750	60,580	57,480	47,210	66,530	67,470	57,250	60,720	52,380	22,650	39,590	42,280	621,900
1955	53,280	53,390	58,430	51,320	47,950	79,520	53,290	39,790	56,910	26,210	15,440	32,760	568,300
1956	50,790	44,650	54,120	53,130	54,660	71,330	60,540	57,380	40,960	22,440	25,670	35,060	570,700
1957	48,470	49,480	50,450	39,040	51,640	62,700	70,350	80,320	66,280	34,120	31,790	50,030	634,700
1958	63,810	65,270	59,330	46,200	48,710	81,090	92,530	61,380	58,070	60,660	34,360	42,220	713,600
1959	51,580	53,550	49,120	51,940	55,150	88,840	63,040	59,100	39,920	37,390	30,320	39,570	619,500
1960	55,170	56,500	56,410	49,460	59,290	93,070	77,490	88,280	56,940	39,460	36,660	40,120	708,800

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	1,000	723,600	
1951	1210	4,920	Aug. 13, 1951	178	1,063	769,700	1,074	777,900	
1952	1240	2,520	May 17, 1952	175	915	684,400	875	635,400	
1953	1280	6,200	June 7, 1953	140	902	652,900	930	673,100	
1954	1340	2,380	June 29, 1954	227	859	621,900	858	621,200	
1955	1390	a3,270	June 19, 1955	212	785	568,300	763	522,800	
1956	1440	9,920	May 29, 1956	125	786	570,700	785	569,600	
1957	1510	5,640	June 17, 1957	220	877	634,700	932	674,700	
1958	1560	6,500	Apr. 5, 1958	408	713	603	939	679,500	
1959	1630	2,340	Mar. 26, 1959	250	856	619,500	875	633,400	
1960	1710	b6,000	Mar. 28, 1960	315	976	708,800	-	-	

a May have been greater during ice breakup.

b About.

7895. Davis Creek near Cotesfield, Nebr.

Location (revised).--Lat 41°23'50", long 98°41'00", in NE $\frac{1}{4}$ SW $\frac{1}{4}$  sec.34, T.17 N., R.12 W., on left bank  $1\frac{1}{4}$  miles upstream from mouth and 4 miles northwest of Cotesfield.

Records available.--May 1949 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 1,870.8 ft above mean sea level, datum of 1929 (levels by Bureau of Reclamation).

Average discharge.--9 years (1949-58), 5.63 cfs (4,080 acre-ft per year).

Extremes.--1949-58: Maximum discharge, 1,720 cfs July 9, 1958 (gage height, 12.73 ft); no flow at times in 1953-57.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	3.82	2.44	2.99	1.85	3.93	4.78	4.51	13.9	17.6	21.7	17.0	18.6	9.46
1952	2.93	3.16	2.89	3.33	2.07	13.7	4.00	3.31	1.81	2.20	.70	.44	3.40
1953	.81	1.30	1.43	1.38	2.09	2.20	3.43	10.1	2.51	3.75	.65	.23	2.50
1954	.61	1.18	1.51	.81	3.83	3.75	5.70	5.88	2.52	.61	10.9	.19	3.13
1955	1.67	1.16	1.36	1.44	3.69	7.75	1.91	5.92	7.87	10.7	4.34	.59	4.05
1956	.45	.68	.97	1.22	2.04	4.19	2.10	2.47	12.5	2.57	1.21	.12	2.53
1957	1.01	.75	1.11	.70	1.44	1.58	3.57	28.8	31.7	8.64	.89	9.94	7.49
1958	1.03	1.27	1.30	1.28	3.42	17.6	4.55	3.55	1.88	59.9	2.51	.98	8.38
1959													
1960													

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	235	145	184	114	218	294	268	857	1,050	1,330	1,050	1,110	6,860
1952	180	188	178	205	119	842	238	203	108	135	43	26	2,460
1953	50	78	88	85	116	135	204	619	149	231	40	14	1,810
1954	37	69	93	50	213	230	339	362	150	37	671	12	2,260
1955	103	69	84	89	205	478	114	364	468	656	267	35	2,930
1956	28	41	60	75	117	258	125	152	742	158	74	7.1	1,840
1957	62	45	68	43	80	97	212	1,770	1,890	531	42	591	5,430
1958	63	78	80	79	190	1,080	271	218	112	3,690	154	59	6,070
1959													
1960													

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	10.0	7,270
1951	1210	1,290	July 3, 1951	0.5	9.46	6,860	9.44	6,840
1952	1240	1,130	Mar. 12, 1952	.4	3.40	2,460	2.94	2,140
1953	1280	593	May 10, 1953	.1	2.50	1,810	2.48	1,790
1954	1340	596	Aug. 1, 1954	0	3.13	2,260	3.20	2,320
1955	1390	337	July 12, 1955	0	4.05	2,930	3.87	2,800
1956	1440	356	June 22, 1956	0	2.53	1,840	2.59	1,880
1957	1510	1,310	May 14, 1957	0	7.49	5,430	7.56	5,480
1958	1560	1,720	July 9, 1958	.3	8.38	6,070	-	-
1959								
1960								

† Not previously published.

## 7900. North Loup River near Cotesfield, Nebr.

Location.--Lat 41°22'10", long 98°36'50", on south line sec.7, T.16 N., R.11 W., near left bank on downstream side of bridge on county road, 1 mile east of Cotesfield and 4½ miles downstream from Davis Creek.

Records available.--July 1950 to September 1956.

Gage.--Wire-weight gage. Datum of gage is 1,839.0 ft above sea level, datum of 1929 (Bureau of Reclamation bench mark).

Average discharge.--6 years (1950-56), 903 cfs (653,700 acre-ft per year).

Extremes.--1950-56: Maximum discharge not determined; maximum gage height observed, 7.95 ft Mar. 15, 1952; minimum daily discharge, 120 cfs Nov. 29, 1955.

Remarks.--Natural flow affected by diversions, ground-water withdrawals for irrigation, and return flow from irrigated areas.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	978	934	886	809	993	977	1,086	1,353	1,441	1,146	1,260	1,216	1,090
1952	1,066	998	843	969	1,385	1,261	1,239	1,232	646	403	605	582	934
1953	807	901	852	999	1,031	1,338	1,112	1,319	986	770	551	578	936
1954	778	1,009	941	799	1,250	1,088	994	1,039	873	367	656	661	868
1955	885	918	964	831	863	1,367	945	646	977	445	257	542	802
1956	801	717	874	925	986	1,144	948	924	747	398	402	580	786
1957													
1958													
1959													
1960													

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	60,120	55,570	54,510	49,770	55,150	60,070	64,650	83,170	85,730	70,450	77,500	72,380	789,100
1952	65,580	59,380	51,850	59,590	79,680	77,550	73,710	75,750	38,470	24,750	37,180	34,620	678,100
1953	49,600	53,610	52,390	61,440	57,250	82,160	66,160	81,090	58,680	47,360	33,870	34,390	678,000
1954	47,720	60,060	57,840	49,130	69,420	66,780	59,130	63,870	51,970	22,590	40,320	39,330	628,200
1955	54,410	54,600	59,290	51,070	47,940	84,080	56,210	39,730	58,140	27,370	15,790	32,230	580,900
1956	49,250	42,660	53,740	56,860	56,700	70,330	56,420	56,800	44,460	24,480	24,720	34,510	570,900
1957													
1958													
1959													
1960													

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	-	-
1951	1210	5,350	Aug. 13, 1951	214	1,090	789,100	1,099	795,700
1952	1240	-	-	154	934	678,100	905	656,900
1953	1280	2,870	July 4, 1953	170	936	678,000	900	688,000
1954	1340	-	-	215	868	628,200	871	630,800
1955	1390	-	-	210	802	580,900	771	558,200
1956	1440	-	-	120	786	570,900	-	-
1957								
1958								
1959								
1960								



7905. North Loup River near St. Paul, Nebr.

Location.--Lat 41°15'35", long 98°26'50", in sec.22, T.15 N., R.10 W., on right bank 310 ft downstream from bridge on U. S. Highway 281, 3 miles north of St. Paul, and 4 miles upstream from confluence with Middle Loup River.

Drainage area.--4,460 sq mi approximately, of which about 1,270 sq mi contributes directly to surface runoff.

Records available.--October 1894 to September 1915, August 1928 to September 1960. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 1,759.39 ft above mean sea level, unadjusted. Prior to Aug. 16, 1928, staff gages at several sites within 2 miles of present site at various datums. Aug. 16, 1928, to Mar. 19, 1934, chain gage 110 ft upstream, Mar. 20, 1934, to Sept. 8, 1954, water-stage recorder at site 50 ft upstream, and Sept. 9-30, 1954, water-stage recorder at present site; all at datum 3.0 ft higher.

Average discharge.--53 years (1894-1915, 1928-60), 982 cfs (710,900 acre-ft per year).

Extremes.--1894-1915, 1928-60: Maximum discharge, 90,000 cfs (estimated) June 6, 1896 (gage height, 14.9 ft, from floodmark, datum then in use); minimum daily since 1931, 85 cfs Aug. 8, 1941.

Remarks.--Natural flow affected by diversions and ground-water withdrawals for irrigation and return flow from irrigated area. Records of suspended sediment loads for the period April 1946 to June 1953 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	999	954	893	777	1,037	1,068	1,100	1,387	1,405	1,223	1,382	1,321	1,129
1952	1,058	1,015	871	988	1,359	1,413	1,238	1,239	877	441	581		955
1953	795	879	939	1,033	1,008	1,402	1,105	1,261	953	778	545		936
1954	776	1,005	943	841	1,334	1,087	1,030	1,055	873	364	661	613	878
1955	843	897	937	797	866	1,344	975	632	1,022	472	230	526	794
1956	769	822	949	1,036	939	1,333	990	930	778	383	415	573	826
1957	808	895	895	620	973	990	1,229	1,424	1,360	570	532	943	934
1958	1,095	1,111	1,007	804	927	1,318	1,505	1,016	913	1,435	558	711	1,034
1959	879	986	841	861	1,023	1,685	1,137	1,061	738	675	450	721	919
1960	1,006	1,090	956	799	1,117	1,788	1,321	1,481	961	668	577	667	1,034

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	61,400	56,750	54,910	47,800	57,600	65,680	65,440	85,300	83,600	75,180	84,970	78,610	817,200
1952	65,060	60,390	53,570	60,750	78,150	86,910	73,690	76,170	40,270	27,120	35,750	35,250	693,100
1953	48,860	52,320	57,750	63,510	56,000	86,210	65,770	77,550	56,700	47,830	33,530	31,830	677,900
1954	47,700	59,830	58,010	51,730	74,060	66,830	61,270	64,900	51,930	22,360	40,620	36,450	635,700
1955	51,860	53,350	57,610	49,010	48,090	82,630	58,040	38,840	60,790	29,030	14,120	31,300	574,700
1956	47,300	48,940	58,330	63,680	54,020	81,980	58,900	57,180	46,320	23,550	25,540	34,110	599,800
1957	49,690	53,240	55,030	58,100	54,010	60,850	73,110	87,560	80,960	35,070	32,730	56,130	678,500
1958	87,350	86,150	81,900	49,410	51,490	81,060	89,550	62,490	54,330	98,230	34,900	42,310	748,500
1959	54,060	58,690	51,730	52,970	56,790	102,400	67,680	65,210	43,900	27,850	42,900		685,500
1960	61,860	64,880	57,580	49,140	64,250	109,900	78,600	91,060	57,190	41,080	35,500	39,680	750,700

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	1,032	747,400
1951	1210	5,470	Aug. 13, 1951	265	1,129	817,200	1,137	823,200
1952	1240	3,860	Mar. 13, 1952	131	955	693,100	927	673,000
1953	1280	9,030	May 10, 1953	140	938	677,900	945	684,500
1954	1340	2,260	June 30, 1954	195	878	635,700	874	633,000
1955	1390	2,990	June 19, 1955	186	794	574,700	782	566,400
1956	1440	8,660	May 29, 1956	107	826	599,800	831	603,200
1957	1510	10,300	June 16, 1957	140	934	676,500	996	713,900
1958	1560	7,820	July 24, 1958	270	1,034	748,500	991	717,600
1959	1630	3,250	July 6, 1959	233	919	665,500	947	685,400
1960	1710	9,190	Mar. 26, 1960	210	1,034	750,700	-	-

a May have been greater during ice breakup.

## PLATTE RIVER BASIN

7910. Spring Creek at Cushing, Nebr.

Location.--Lat 41°18'00", long 98°22'50", in SW $\frac{1}{4}$  sec. 5, T.15 N., R.9 W., on right bank half a mile northwest of Cushing and 2 $\frac{1}{2}$  miles upstream from mouth.

Drainage area.--164 sq mi.

Records available.--May 1949 to September 1953.

Gage.--Water-stage recorder. Altitude of gage is 1,770 ft (from topographic map).

Extremes.--1949-53: Maximum discharge, 5,350 cfs May 10, 1953 (gage height, 19.44 ft), from rating curve extended above 1,500 cfs on basis of slope-area measurement of peak flow; no flow May 23, June 5, 6, 1953.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	9.47	5.53	5.36	4.36	5.31	9.73	31.6	35.3	33.7	20.8	42.4	28.7	19.4
1952	9.13	7.08	5.17	7.59	15.5	13.6	10.1	15.9	8.09	6.63	2.96	2.23	8.56
1953	2.85	3.68	4.42	5.49	6.18	7.42	8.02	91.5	32.8	40.1	4.05	2.07	17.5

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	582	329	330	269	295	598	1,880	2,170	2,010	1,280	2,610	1,710	14,060
1952	500	421	318	467	889	639	600	977	481	408	182	133	6,220
1953	175	219	272	338	343	456	477	5,630	1,950	2,470	249	123	12,700

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	20.6	14,880
1951	1210	1,170	Apr. 27, 1951	2.6	19.4	14,060	19.4	14,060
1952	1240	280	June 27, 1952	1.4	8.56	6,220	7.77	5,640
1953	1280	5,350	May 10, 1953	0	17.5	12,700	-	-

## 7915. Cedar River near Spalding, Nebr.

Location.--Lat 41°43'20", long 98°27'45", in NW $\frac{1}{4}$  NW $\frac{1}{4}$  sec.5, T.20 N., R.10 W., on right bank 50 ft downstream from highway bridge and 10 $\frac{1}{2}$  miles northwest of Spalding.

Drainage area.--794 sq mi, of which about 50 sq mi contributes directly to surface runoff.

Records available.--October 1944 to September 1953, October 1957 to September 1960.  
Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Prior to Sept. 30, 1953, at site 10 ft upstream at same datum.

Average discharge.--12 years (1944-53, 1957-60), 151 cfs (109,300 acre-ft per year).

Extremes.--1944-53, 1957-60: Maximum discharge, 4,000 cfs June 23, 1947 (gage height, 7.50 ft), from rating curve extended above 640 cfs on basis of slope-area measurement of peak flow; minimum daily, 30 cfs Jan. 30, 1946.

Remarks.--Low and medium flow regulated by powerplant above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	196	133	135	129	141	192	223	352	215	185	255	261	202
1952	203	171	158	163	308	258	236	208	136	131	125	114	184
1953	116	117	123	135	125	183	155	301	183	130	114	114	150
1954													
1955													
1956													
1957													
1958	132	138	128	117	112	171	237	133	112	168	170	103	144
1959	105	111	102	107	125	151	164	142	110	113	108	106	120
1960	118	118	114	116	122	185	269	318	210	169	118	117	165

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	12,040	7,920	8,280	7,960	7,840	11,810	13,260	21,640	12,790	11,370	15,690	15,540	146,100
1952	12,470	10,160	9,720	10,030	17,750	15,840	14,040	12,820	8,060	8,080	7,700	6,810	133,500
1953	7,150	6,980	7,540	8,330	6,940	11,230	9,210	18,480	10,910	8,000	7,000	6,760	108,500
1954													
1955													
1956													
1957													
1958	8,100	8,200	7,880	7,210	6,190	10,500	14,100	8,180	6,690	10,350	10,460	6,110	104,000
1959	6,480	6,620	6,250	6,560	6,940	9,290	9,760	8,700	6,520	6,960	6,660	6,290	87,030
1960	7,250	7,020	7,030	7,140	7,040	11,360	15,980	19,570	12,500	10,360	7,280	6,970	119,500

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	175	126,800
1951	1210	1,190	July 17, 1951	78	202	146,100	208	150,200
1952	1240	539	Feb. 16, 1952	102	184	133,500	169	122,800
1953	1280	749	May 2, 1953	76	150	108,500	-	-
1954								
1955								
1956								
1957								
1958	1560	562	Apr. 8, 1958	60	144	104,000	137	99,140
1959	1630	335	Apr. 3, 1959	80	120	87,030	123	88,980
1960	1710	1,000	May 8, 1960	60	165	119,500	-	-

## 7917. Spalding power canal at Spalding, Nebr.

Location.--Lat 41°40'52", long 98°22'02", in NW¼NW¼ sec.28, T.20 N., R.9 W., on right tail-race wingwall 30 ft downstream from hydroelectric plant at south edge of Spalding. Records available.--October 1959 to September 1960.

Gage.--Water-stage recorder and rubble-masonry control. Datum of gage is 1,855.75 ft above mean sea level, datum of 1929.

Extremes.--1959-60: Maximum daily discharge, 151 cfs May 11; minimum daily, 5 cfs Mar. 28, 31, Apr. 1-3, June 20, 21.

Remarks.--Water taken from Cedar River 700 ft upstream and returned 0.6 mile downstream.

## Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1960	116	112	109	99.1	105	101	118	132	124	123	109	98.6	112

## Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1960	7,160	6,670	6,690	6,090	6,050	6,190	7,050	8,120	7,350	7,560	6,680	5,870	81,480

## 7917.5. Cedar River at Primrose, Nebr.

Location.--Lat 41°37'17", long 98°15'10", in NE¼SE¼NE¼ sec.17, T.19 N., R.8 W., on right bank at downstream side of highway bridge, three-quarters of a mile southwest of Primrose and 5 miles downstream from Freeman Creek.

Drainage area.--870 sq mi, approximately, of which about 130 sq mi contributes directly to surface runoff.

Records available.--May to September 1960.

Gage.--Water-stage recorder. Datum of gage is 1,805.61 ft above mean sea level, datum of 1929 (levels by Bureau of Reclamation).

Extremes.--May to September 1960: Maximum discharge, 4,190 cfs June 20, 1960 (gage height, 4.53 ft), from rating curve extended above 1,100 cfs by logarithmic plotting; minimum daily not determined.

Remarks.--Low and medium flow affected by power developments, ground-water withdrawals and diversions for irrigation, and return flow from irrigated areas.

## Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1960	-	-	-	-	-	-	-	430	360	231	155	158	-

## Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1960	-	-	-	-	-	-	-	26,430	21,410	14,220	9,560	9,400	-

## 7918. Cedar River at Belgrade, Nebr.

Location.--Lat 41°28'26", long 98°04'53", in SE¼NE¼ sec.2, T.17 N., R.7 W., near right bank on downstream side of pier of highway bridge, 0.6 mile west of Belgrade and 4½ miles upstream from Timber Creek.

Drainage area.--1,060 sq mi, approximately, of which about 320 sq mi contributes directly to surface runoff.

Records available.--October 1959 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 1,696.82 ft above mean sea level, datum of 1929 (levels by Bureau of Reclamation).

Extremes.--1959-60: Maximum discharge, 2,880 cfs June 20, 1960 (gage height, 5.94 ft); maximum gage height, 8.64 ft Mar. 28, 1960 (backwater from ice); minimum daily discharge, 93 cfs Dec. 29, 1959.

Remarks.--Low and medium flow affected by power developments, ground-water withdrawals and diversions for irrigation, and return flow from irrigated areas.

## Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1960	179	207	191	171	197	405	398	445	388	246	150	154	261

## Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1960	11,020	12,350	11,760	10,510	11,310	24,880	23,680	27,380	23,060	15,150	9,250	9,150	189,500

## 7920. Cedar River near Fullerton, Nebr.

Location.--Lat 41°23'45", long 98°00'15", on line between SE $\frac{1}{4}$  sec.33, T.17 N., R.6 W., and NE $\frac{1}{4}$  sec.4, T.16 N., R.6 W., near left bank on downstream side of pier of bridge on State Highway 52, 3 miles northwest of Fullerton and 5 $\frac{1}{2}$  miles upstream from mouth.

Drainage area.--1,220 sq mi, approximately, of which about 480 sq mi contributes directly to surface runoff.

Records available.--September 1931 to June 1932, October 1940 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 1,640.40 ft above mean sea level, datum of 1929 (tentative adjustment). Prior to Nov. 5, 1942, staff gage, Nov. 5, 1942, to June 23, 1947, water-stage recorder, and June 24, 1947, to Apr. 6, 1948, staff gage, all at present site and datum.

Average discharge.--20 years (1940-60), 240 cfs (173,800 acre-ft per year).

Extremes.--1931-32, 1940-60: Maximum discharge, 10,100 cfs July 19, 1950 (gage height, 9.64 ft); maximum gage height recorded, 11.75 ft Mar. 28, 1960 (backwater from ice); minimum daily discharge, 33 cfs Dec. 11, 1941.

Remarks.--Natural flow affected by power developments, ground-water withdrawals for irrigation, and return flow from irrigated areas.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	274	232	199	193	208	324	370	493	425	332	401	418	323
1952	285	272	212	248	461	428	331	321	217	185	195	173	277
1953	191	207	212	219	234	323	254	507	313	211	151	153	248
1954	173	215	186	160	309	256	231	305	206	122	166	144	205
1955	182	213	235	181	189	254	215	175	218	145	84.7	123	184
1956	158	187	144	173	209	300	215	256	221	123	178	128	191
1957	152	160	178	129	184	205	231	419	396	207	123	242	220
1958	227	202	185	146	185	362	360	236	203	507	241	164	252
1959	169	196	208	169	184	279	268	375	233	190	110	140	210
1960	184	222	191	178	200	482	426	501	418	231	150	156	278

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	16,820	13,830	12,210	11,890	11,560	19,910	22,040	30,300	25,280	20,410	24,660	24,900	233,800
1952	17,500	16,200	13,040	15,270	26,490	26,300	19,700	19,730	12,920	11,370	12,000	10,270	200,800
1953	11,750	12,340	13,050	15,460	13,020	19,880	15,110	31,200	18,620	12,960	9,260	9,110	179,800
1954	10,660	12,770	11,410	9,850	17,160	15,730	13,770	18,770	12,240	7,530	10,210	8,560	148,700
1955	11,160	12,670	14,450	11,150	10,470	15,610	12,790	10,780	12,990	8,890	5,210	7,320	133,500
1956	9,710	11,110	8,830	10,660	12,020	18,460	12,810	15,730	13,120	7,590	10,930	7,640	138,600
1957	9,320	10,690	10,920	7,950	10,200	12,600	13,770	25,780	23,580	12,710	7,540	14,420	159,500
1958	13,930	12,010	11,360	8,970	10,280	22,230	21,440	14,530	12,100	31,180	14,790	9,770	182,600
1959	10,390	11,640	12,810	10,420	10,220	17,130	15,960	23,050	13,860	11,680	6,740	8,350	152,200
1960	11,330	13,200	11,770	10,930	11,520	29,630	25,320	30,800	24,850	14,220	9,220	9,280	202,100

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	360	260,800
1951	1210,1710	2,800	Apr. 27, 1951	100	323	233,800	329	237,700
1952	1240,1710	1,970	Aug. 7, 1952	135	277	200,800	263	191,000
1953	1280,1710	6,050	May 11, 1953	90	248	179,800	245	177,500
1954	1340	863	Feb. 20, 1954	81	205	148,700	210	152,100
1955	1390,1710	2,090	July 5, 1955	58	184	133,500	172	124,900
1956	1440	2,190	Aug. 18, 1956	60	191	138,600	193	139,900
1957	1510	4,410	June 16, 1957	51	220	159,500	229	165,900
1958	1560	3,880	July 21, 1958	83	252	182,600	249	180,100
1959	1630	2,650	May 31, 1959	85	210	152,200	212	153,700
1960	1710	4,300	Mar. 28, 1960	103	278	202,100	-	-

## 7921. Fullerton power canal at Fullerton, Nebr.

Location.--Lat 41°22'30", long 97°57'40", in NE $\frac{1}{4}$  sec.11, T.16 N., R.6 W., at hydroelectric plant in Fullerton.

Records available.--October 1959 to September 1960.

Gage.--Water-stage recorders on headwater and tailwater and duplex gate-opening recorder on turbines.

Extremes.--1959-60: Maximum daily discharge, 444 cfs May 14, 1960, June 22, 1960; minimum daily, 44 cfs Nov. 14, 1960.

Remarks.--Records given herein are combined discharges through the two turbines of power-plant. The forebay is an on-river pond and the short tailrace carries occasional discharges from the sluice gate and skim gate not included in records for this station.

Monthly and yearly mean discharge, in cubic feet per second, of Fullerton power canal at Fullerton, Nebr.

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1960	165	142	175	165	197	204	334	322	291	231	137	144	209

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1960	10,120	8,430	10,760	10,160	11,320	12,530	19,890	19,790	17,290	14,210	8,440	8,580	151,500

7925. Loup River power canal near Genoa, Nebr.

Location.--Lat 41°25', long 97°46', in NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec.32, T.17 N., R.4 W., at skimming weir on downstream end of settling basin on left bank, 2 miles downstream from point of diversion and  $3\frac{1}{2}$  miles southwest of Genoa.

Records available.--December 1936 to September 1960.

Gage.--Water-stage recorder and concrete weir. Datum of gage is 1,566.26 ft above mean sea level, datum of 1929. Prior to Oct. 1, 1956, at datum 3.0 ft higher.

Extremes.--1936-60: Maximum daily discharge, 3,410 cfs Apr. 27, 1944; minimum daily, 10 cfs Nov. 29, 30, 1955.

Remarks.--Canal diverts from Loup River in sec.6, T.16 N., R.4 W. Water is used in power-plants near Monroe and Columbus and is returned to Platte River  $1\frac{1}{2}$  miles downstream from Loup River. Diversion began Dec. 2, 1936.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	2,160	1,410	1,240	1,520	1,440	1,160	2,290	2,470	2,580	2,300	2,220	2,640	1,950
1952	2,542	1,238	1,057	1,592	1,321	1,147	1,961	2,335	1,467	1,168	1,224	1,285	1,530
1953	1,832	1,805	675	796	1,450	2,011	2,342	2,249	1,853	1,323	1,036	1,135	1,540
1954	1,685	2,081	844	587	1,259	1,605	1,869	2,297	1,917	768	1,596	1,389	1,495
1955	2,015	2,040	633	756	1,577	1,537	2,056	1,589	2,259	1,132	502	1,043	1,421
1956	1,789	1,023	1,279	1,735	1,831	1,732	2,216	1,918	1,907	1,062	1,026	1,118	1,551
1957	1,606	1,621	1,606	818	1,536	2,296	2,644	2,767	2,255	1,540	1,207	1,968	1,821
1958	2,262	1,993	1,626	821	458	1,410	1,741	2,210	2,052	2,557	1,531	1,525	1,689
1959	1,842	1,810	1,340	1,173	1,553	2,344	2,540	2,458	1,596	1,503	922	1,435	1,709
1960	1,999	1,296	1,335	750	1,970	1,994	2,562	2,707	2,423	1,618	1,066	1,308	1,750

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	132,600	84,040	76,400	93,560	79,850	71,240	136,400	152,000	153,600	141,800	136,700	157,100	1,415,000
1952	156,300	73,840	64,960	97,900	75,960	70,530	116,700	143,600	87,283	71,830	75,280	76,460	1,110,000
1953	112,600	107,400	41,490	48,940	80,530	123,700	139,400	138,300	110,300	81,330	63,670	67,530	1,115,000
1954	103,600	123,800	51,880	36,090	69,900	98,680	117,200	139,400	114,100	47,250	98,150	82,650	1,083,000
1955	123,900	121,400	38,930	45,240	87,590	94,530	122,300	97,720	134,400	69,590	30,870	62,040	1,029,000
1956	110,000	60,870	78,620	106,700	105,300	106,500	131,800	117,900	113,500	65,310	63,100	66,550	1,126,000
1957	98,740	96,440	98,770	50,280	85,320	141,200	157,300	170,100	134,200	94,690	74,230	17,100	1,318,000
1958	139,100	118,600	99,970	50,490	24,540	86,700	103,600	135,900	122,100	157,200	94,140	90,760	1,223,000
1959	113,200	107,700	82,410	72,100	86,260	144,100	151,100	151,200	94,990	92,440	56,710	65,380	1,238,000
1960	122,900	77,120	62,110	46,150	113,300	122,600	152,400	166,500	144,200	99,470	65,570	77,820	1,270,000

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Maximum day		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	1,850	1,341,000
1951	1210	2,940	Aug. 25, 1951	13	1,950	1,415,000	1,957	1,417,000
1952	1240	2,900	Oct. 6, 1951	37	1,530	1,110,000	1,484	1,077,000
1953	1280	2,620	Apr. 25, 1953*	38	1,540	1,115,000	1,573	1,139,000
1954	1340	2,800	May 3, 1954	15	1,495	1,085,000	1,502	1,088,000
1955	1390	2,800	June 6, 1955	17	1,421	1,029,000	1,373	993,800
1956	1440	3,150	July 6, 1956	10	1,551	1,126,000	1,613	1,171,000
1957	1510	3,350	Apr. 24, 1957	50	1,821	1,318,000	1,909	1,382,000
1958	1560	3,320	(a)	35	1,689	1,223,000	1,614	1,169,000
1959	1630	3,300	May 22, 1959	45	1,709	1,238,000	1,680	1,216,000
1960	1710	3,240	May 8, 1960	12	1,750	1,270,000	-	-

\* Not previously published.  
a May 15, July 23, 1958.

## 7930. Loup River near Genoa, Nebr.

Location.--Lat 41°25'05", long 97°43'25", in SW¼ sec.25, T.17 N., R.4 W., near right bank on downstream side of pier of bridge on State Highway 39, with auxiliary gage on right bank upstream from bridge, 2 miles south of Genoa, 3 miles upstream from Beaver Creek, and 6 miles downstream from diversion dam of Loup River Public Power District.

Drainage area.--14,400 sq mi, approximately, of which only about 6,000 sq mi contributes directly to surface runoff.

Records available.--August 1928 to June 1932, October 1943 to September 1960 (October 1953 to April 1955, monthly discharge only).

Gage.--Water-stage recorders. Datum of gages is 1,540.13 ft above mean sea level, unadjusted. Aug. 17, 1928, to June 30, 1932, chain gage at datum 1.49 ft higher. Apr. 26 to Dec. 22, 1949, wire-weight gage at present datum. Since Aug. 8, 1957, auxiliary water-stage recorder 500 ft upstream.

Extremes.--1928-32, 1943-60: Maximum discharge, 90,000 cfs June 23, 1947 (gage height, 10.12 ft), from rating curve extended above 32,000 cfs by logarithmic plotting; no flow Aug. 20 to Sept. 30, 1956, Aug. 12, 1959.

Remarks.--Natural flow of stream affected by power developments, ground-water withdrawals, diversions for irrigation, and return flow from irrigated areas. Records do not include flow of Loup River power canal which diverts at point 6 miles upstream and returns to Platte River below mouth of Loup River; diversion began Dec. 2, 1936 (see preceding page).

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	367	725	705	294	1,081	1,741	674	1,576	1,209	571	511	266	809
1952	81.9	1,299	543	518	2,245	2,587	1,362	597	84.8	56.3	112	30.6	786
1953	14.3	41.1	830	1,881	1,011	1,074	207	1,298	416	136	61.1	42.4	585
1954	32.6	115	1,082	827	1,753	982	287	289	640	72.9	65.5	78.0	511
1955	39.6	108	1,655	1,000	72.4	1,568	222	89.2	176	45.7	10.4	15.7	*423
1956	36.2	799	177	76.5	150	1,020	98.4	174	117	45.8	1.90	0	225
1957	21.8	460	218	347	554	278	116	1,223	1,760	42.2	3.72	161	429
1958	87.2	258	454	1,046	2,180	1,940	1,749	201	76.2	1,381	35.7	72.6	781
1959	48.5	306	536	337	486	1,139	175	177	98.8	154	18.9	29.1	292
1960	48.4	980	881	965	407	3,113	958	1,268	332	69.7	5.24	51.5	760

\* Not previously published; estimated on basis of partial record, discharge measurements, weather records, and records for other Loup River stations.

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	22,580	43,120	43,350	18,080	60,030	107,000	40,010	96,920	71,940	35,100	31,440	15,820	585,400
1952	5,030	77,300	33,390	31,870	29,100	59,100	81,020	36,730	5,040	3,460	6,960	1,820	370,700
1953	876	2,440	51,060	15,600	56,170	66,050	12,320	79,820	24,770	8,370	3,780	2,520	423,800
1954	2,010	6,860	66,550	50,870	97,370	60,380	17,100	17,790	38,100	4,460	4,030	4,640	370,200
1955	2,430	6,420	101,800	61,460	4,020	96,420	13,190	5,480	10,470	2,690	638	932	306,000
1956	2,230	47,530	10,900	4,700	8,650	62,730	5,860	10,720	6,930	2,820	117	0	163,200
1957	1,340	27,360	13,420	21,330	30,770	17,080	6,910	75,200	104,700	2,590	229	9,610	310,500
1958	5,360	15,360	27,930	64,340	121,100	119,300	104,100	12,370	4,540	84,900	2,190	4,320	585,800
1959	2,980	18,190	32,990	20,690	26,980	70,080	10,440	10,870	5,880	9,480	1,160	1,730	211,400
1960	2,980	58,340	54,140	59,350	23,390	191,400	57,010	77,990	19,730	4,290	322	3,060	552,000

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	914	662,000	
1951	1210	9,370	May 31, 1951	34	809	585,400	818	592,100	
1952	1240	10,800	Mar. 26, 1952	14	786	570,700	702	509,400	
1953	1280	16,000	May 10, 1953	7.9	585	423,800	614	444,800	
1954	1340	11,400	June 18, 1954	18	511	370,200	560	405,400	
1955	1390	-	-	4.4	*423	306,000	354	256,000	
1956	1440	10,700	Nov. 22, 1955	0	225	163,200	199	144,600	
1957	1510	26,100	June 17, 1956	1.6	429	310,500	438	317,100	
1958	1560	10,900	July 19, 1957	7.7	781	565,800	789	571,300	
1959	1630	5,460	Dec. 3, 1958	0	292	211,400	377	272,800	
1960	1710	*45,000	Mar. 28, 1960	1.5	760	552,000	-	-	

\* Revised.

\* Not previously published; estimated on basis of partial record, discharge measurements, weather records, and records for other Loup River stations.

7935. Beaver Creek at Loretto, Nebr.

Location.--Lat 41°45'50", long 98°04'50", in E $\frac{1}{2}$  sec.26, T.21 N., R.7 W., on left bank just downstream from highway bridge at west edge of Loretto.

Drainage area.--311 sq mi, of which about 100 sq mi contributes directly to surface runoff.

Records available.--October 1944 to September 1953.

Gage.--Water-stage recorder. Datum of gage is 1,785.95 ft above mean sea level, datum of 1929. Prior to May 14, 1945, staff gage at bridge just upstream at same datum. May 15, 1945, to Aug. 16, 1946, water-stage recorder at site 60 ft upstream at same datum.

Average discharge.--9 years (1944-53), 81.5 cfs (59,000 acre-ft per year).

Extremes.--1944-53: Maximum discharge, 4,570 cfs June 2, 1950 (gage height, 11.74 ft); minimum daily, 22 cfs Aug. 2, 1946.

Remarks.--A few small diversions for irrigation above station. Records of suspended sediment loads for period June 1946 to November 1950 and water temperatures for period April 1948 to March 1949 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	80.8	59.1	58.6	47.7	61.7	188	151	174	101	104	152	113	108
1952	63.2	70.9	69.9	71.5	131	137	160	150	57.1	45.2	69.2	41.6	88.7
1953	45.8	53.1	54.6	71.9	87.7	128	93.4	209	195	51.2	40.5	40.1	88.9

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	4,970	3,510	3,610	2,940	3,430	11,590	9,000	10,710	6,020	6,410	9,340	6,720	78,250
1952	3,890	4,220	4,300	4,400	7,530	8,430	9,490	9,210	3,400	2,780	4,260	2,490	64,400
1953	2,820	3,160	3,360	4,420	4,870	7,770	5,560	12,870	11,490	3,150	2,490	2,380	64,340

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	108	78,390
1951	1210	1,750	July 18, 1951	31	108	78,250	109	78,570
1952	1240	551	May 28, 1952	37	88.7	64,400	84.5	61,330
1953	1280	1,490	May 10, 1953	34	88.9	64,340	-	-



7940. Beaver Creek at Genoa, Nebr.

Location.--Lat 41°26'30", long 97°44'00", in SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec.14, T.17 N., R.4 W., on left bank in city park at southwest corner of Genoa, 0.2 mile downstream from Union Pacific Railroad bridge, 0.2 mile upstream from bridge on State Highway 39, and 2 $\frac{1}{2}$  miles upstream from mouth.

Drainage area.--627 sq mi, of which about 410 sq mi contributes directly to surface runoff.

Records available.--October 1940 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 1,542.13 ft above mean sea level, unadjusted. October 1940 to Nov. 5, 1942, chain gage and Nov. 6, 1942, to Nov. 1, 1955, water-stage recorder, at site 0.4 mile upstream at datum 4.62 ft higher.

Average discharge.--20 years (1940-60), 128 cfs (92,670 acre-ft per year).

Extremes.--1940-60: Maximum discharge, 21,200 cfs July 19, 1950 (gage height, 18.70 ft, site and datum then in use), from rating curve extended above 8,500 cfs; minimum daily, 3.0 cfs July 29, 1956.

Remarks.--Natural flow affected slightly by ground-water and surface-water withdrawals for irrigation. Diurnal fluctuation at low flow caused by powerplants above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	115	91.2	89.2	89.3	91.1	397	249	257	200	167	328	215	192
1952	115	114	101	93.2	175	224	215	191	116	86.9	138	78.3	137
1953	73.2	84.5	76.3	97.2	131	160	133	335	259	91.2	58.3	54.8	129
1954	62.4	81.6	93.5	73.0	111	119	124	184	159	46.6	56.3	51.1	96.6
1955	71.9	78.9	88.9	85.7	76.6	107	110	94.3	142	95.6	24.8	35.8	84.3
1956	52.3	65.1	60.5	65.6	71.7	91.2	95.3	123	106	38.2	56.0	35.0	71.6
1957	49.9	61.9	65.3	48.0	59.3	90.7	112	142	286	105	32.6	79.5	94.2
1958	80.1	81.8	69.6	62.0	75.6	175	184	106	79.7	230	90.9	54.4	108
1959	59.2	66.3	68.4	56.6	63.8	141	161	207	131	72.1	44.4	52.4	93.7
1960	64.2	86.5	84.4	81.5	84.6	331	359	307	462	136	70.5	70.6	178

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	7,080	5,430	5,490	5,490	5,060	24,430	14,790	15,810	11,930	10,260	20,160	12,800	138,700
1952	7,040	6,780	6,190	5,730	10,080	13,800	12,810	11,730	6,890	5,350	8,470	4,860	99,530
1953	4,500	5,030	4,690	5,980	7,250	9,810	7,940	20,560	15,390	5,610	3,580	3,260	95,630
1954	3,840	4,860	5,750	4,490	6,180	7,340	7,370	11,330	9,440	2,860	3,460	3,040	69,960
1955	4,420	4,690	5,460	5,270	4,260	6,600	6,530	5,800	8,480	5,880	1,530	2,130	61,050
1956	3,220	3,860	3,720	4,040	4,130	5,610	5,670	7,540	6,310	2,350	3,440	2,080	51,990
1957	3,070	3,690	4,020	2,950	3,290	5,580	6,650	8,740	17,030	6,460	2,010	4,730	68,220
1958	4,920	4,870	4,280	3,810	4,200	10,760	10,950	6,540	4,740	14,210	5,590	3,240	78,040
1959	3,640	3,950	4,210	3,480	3,550	8,650	9,580	12,700	7,810	4,430	2,730	3,120	67,850
1960	3,950	5,150	5,190	5,010	4,860	20,330	21,360	18,860	27,470	8,360	4,340	4,200	129,100

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	254	183,700	
1951	1210	1,580	Mar. 24, 1951	42	192	158,700	194	140,700	
1952	1240	792	Aug. 25, 1952	58	137	99,530	129	93,740	
1953	1280	1,400	May 11, 1953	45	129	93,630	130	93,860	
1954	1340	2,610	June 15, 1954	28	96.6	69,960	96.8	70,080	
1955	1390	1,910	July 5, 1955	13	84.3	61,050	79.1	57,300	
1956	1440	865	May 30, 1956	3.0	71.6	51,990	71.5	51,950	
1957	1510	4,100	June 16, 1957	12	94.2	68,220	98.8	71,510	
1958	1560	2,600	July 24, 1958	30	108	78,040	105	75,770	
1959	1630	1,300	May 31, 1959	23	93.7	67,850	97.2	70,340	
1960	1710	3,700	June 21, 1960	40	178	129,100	-	-	

## 7945. Loup River at Columbus, Nebr.

Location.--Lat 41°24'50", long 97°22'00", in sec.30, T.17 N., R.1 E., on left bank 20 ft downstream from bridge on U. S. Highway 30 at Columbus, 3½ miles upstream from mouth, and 14 miles downstream from Looking-glass Creek.

Drainage area.--15,200 sq mi, approximately, of which about 6,530 sq mi contributes directly to surface runoff.

Records available.--October 1894 to September 1915 (published as "near Columbus" 1900-1901), March to September 1931, October 1933 to September 1960. Monthly discharge only for some periods, published in WSP 1810.

Gage.--Water-stage recorder. Datum of gage is 1,430.29 ft above mean sea level, unadjusted. Prior to Nov. 21, 1933, staff or chain gages at several sites within 2 miles of present site at various datums. Nov. 21, 1933, to June 2, 1935, water-stage recorder at site 1,500 ft downstream. June 3 to Dec. 3, 1935, chain gage at bridge 20 ft upstream. Dec. 4, 1935, to May 19, 1936, water-stage recorder at site 280 ft downstream. May 20, 1936, to Dec. 10, 1957, chain or wire-weight gage at bridge 20 ft upstream. All gages Mar. 9, 1931, to Aug. 27, 1950, at datum 2.00 ft higher than present datum.

Extremes.--1894-1915, 1931, 1933-60: Maximum discharge, 85,000 cfs June 23, 1947 (gage height, 12.0 ft, present datum, from floodmark), from rating curve extended above 30,000 cfs by logarithmic plotting; minimum daily, 11 cfs Aug. 28, 1955.

Remarks.--Natural flow of stream affected by power developments, ground-water withdrawals, diversions for irrigation, and return flow from irrigated areas. Records do not include flow of Loup River power canal which diverts at point 25 miles upstream and returns to Platte River below mouth of Loup River; diversion began Dec. 2, 1936 (see p.258).

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	425	839	828	382	1,589	2,259	1,053	1,695	1,649	824	1,022	683	1,085
1952	271	1,341	727	621	2,343	2,662	1,587	984	246	247	323	150	952
1953	121	158	1,287	1,507	1,569	1,345	545	1,885	908	355	173	116	829
1954	115	265	890	881	1,978	1,132	629	660	945	140	147	†136	649
1955	168	200	1,879	1,121	173	2,276	403	200	366	170	347	44.8	595
1956	89.1	1,027	364	193	291	1,125	249	332	225	87.4	101	32.6	343
1957	77.3	512	302	347	753	380	227	1,250	2,004	265	87.1	305	534
1958	184	370	624	1,252	2,572	2,428	2,375	339	172	2,031	201	146	1,049
1959	130	397	765	352	478	1,391	423	502	286	244	105	99.5	432
1960	138	902	850	976	520	3,890	1,645	1,999	745	272	130	145	1,022

† Corrected.

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	26,130	49,900	50,900	23,460	77,160	138,900	62,670	104,200	98,100	50,650	62,810	40,610	785,500
1952	16,670	79,820	44,690	38,170	134,900	163,700	94,410	60,490	14,650	15,190	19,630	8,930	691,400
1953	7,430	9,420	79,150	92,630	97,140	82,690	32,420	115,900	54,000	21,800	10,630	6,900	600,100
1954	7,100	15,790	54,720	52,970	109,800	69,620	37,450	40,570	56,240	8,620	9,040	8,080	470,000
1955	10,330	11,920	115,500	68,930	9,610	140,000	24,000	12,330	22,970	10,460	2,140	2,660	430,800
1956	5,480	61,090	22,350	11,840	16,710	69,190	14,800	20,390	13,410	5,370	6,180	1,940	248,800
1957	4,750	30,460	18,560	21,340	41,820	23,390	13,480	74,100	119,200	16,270	5,360	18,140	386,900
1958	11,320	21,990	38,360	76,970	142,800	149,300	141,300	20,840	10,240	124,900	12,390	8,690	759,100
1959	8,020	23,640	47,070	21,630	26,560	85,530	25,190	30,870	17,040	14,990	6,460	5,920	312,900
1960	8,510	53,680	52,270	60,040	29,920	239,200	97,900	122,900	44,340	16,740	8,020	8,640	742,200

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	1,185	857,600
1951	1210	11,500	May 31, 1951	110	1,085	785,500	1,105	799,700
1952	1240	7,790	Mar. 26, 1952	92	952	691,400	890	646,200
1953	1280	18,200	May 11, 1953	86	829	600,100	804	581,800
1954	1340	19,800	June 18, 1954	31	649	470,000	752	530,100
1955	1390	a12,300	Mar. 11, 1955	11	595	430,800	528	382,000
1956	1440	a7,500	Nov. 22, 1955	13	343	248,800	294	213,600
1957	1510	a26,000	June 17, 1957	28	534	386,900	559	404,800
1958	1560	a12,200	July 25, 1958	83	1,049	759,100	1,058	766,200
1959	1630	a5,100	Dec. 3, 1958	49	432	312,900	482	348,600
1960	1710	52,000	Mar. 28, 1960	54	1,022	742,200	-	-

a Observed.

7950. Shell Creek at Newman Grove, Nebr.

Location.--Lat 41°44'30", long 97°45'00", in NW $\frac{1}{4}$  sec. 2, T. 20 N., R. 4 W., on left bank just downstream from highway bridge, 1 mile east of Newman Grove and 5 miles downstream from North Branch.

Drainage area.--122 sq mi.

Records available.--July 1949 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 1,674.87 ft above mean sea level, datum of 1929 (preliminary). Prior to Aug. 15, 1949, wire-weight gage at same site and datum.

Average discharge.--11 years (1949-60), 13.2 cfs (9,560 acre-ft per year).

Extremes.--1949-60: Maximum discharge, 12,000 cfs July 18, 1950 (gage height, 20.20 ft), from rating curve extended above 2,000 cfs on basis of computation of peak flow through bridge and over road embankments; no flow for periods in 1953-60.

Remarks.--Natural flow of stream affected by diversions and ground-water withdrawals for irrigation.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1.88	1.39	1.22	0.73	1.40	70.5	3.87	2.62	7.98	39.4	75.2	27.7	19.7
1952	2.76	2.43	1.80	6.75	8.71	20.8	3.66	3.83	44.8	28.9	35.8	1.36	13.5
1953	1.17	1.27	1.77	1.62	2.57	3.21	6.19	48.3	71.3	8.00	1.57	.51	12.3
1954	.82	1.50	1.37	.97	3.85	2.33	1.65	1.85	2.90	.16	.34	.59	1.51
1955	1.89	.40	.65	.61	.51	1.46	.78	1.87	18.9	.37	.02	.01	2.27
1956	.05	.04	.01	.02	.10	2.65	.44	1.55	7.96	.14	15.0	0	2.35
1957	0	.03	.06	.03	.14	.89	1.23	7.01	29.2	8.02	.64	5.20	4.35
1958	1.42	.27	.11	.27	12.1	28.0	7.52	6.23	1.87	51.1	3.11	.19	9.41
1959	0	0	0	0	.04	1.27	1.20	25.8	3.30	.71	.38	.06	2.77
1960	0	0	.16	.21	.17	35.7	25.3	36.2	169	3.97	6.38	.80	23.0

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	116	83	75	45	78	4,330	230	161	475	2,420	4,620	1,650	14,280
1952	170	144	110	415	501	1,280	218	235	2,660	1,780	2,200	81	9,790
1953	72	75	109	99	145	198	368	2,970	4,240	492	96	30	8,890
1954	50	89	84	60	214	143	98	114	173	97	21	35	1,090
1955	116	24	40	37	28	90	47	115	1,120	23	1.2	.6	1,640
1956	3.4	2.6	.8	1.2	5.6	163	26	95	474	8.5	925	0	1,710
1957	0	1.8	3.6	1.6	7.7	55	73	431	1,740	493	39	309	3,150
1958	87	16	6.7	17	674	1,720	447	383	111	3,140	191	11	6,800
1959	0	0	0	0	2.0	78	71	1,590	196	44	23	34	2,010
1960	0	0	9.9	13	9.7	2,190	1,510	2,230	10,050	244	393	48	16,700

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	53.8	-	58,930
1951	1210	2,940	July 18, 1951	0.2	19.7	14,280	19.9	-	14,430
1952	1240	4,280	June 27, 1952	.1	13.5	9,790	13.3	-	9,630
1953	1280	1,950	May 10, 1953	0	12.3	8,890	12.2	-	8,860
1954	1340	87	June 2, 1954	0	1.51	1,090	1.45	-	1,050
1955	1390	532	June 24, 1955	0	2.27	1,640	2.03	-	1,470
1956	1440	734	Aug. 18, 1956	0	2.35	1,710	2.35	-	1,700
1957	1510	636	June 16, 1957	0	4.35	3,150	4.50	-	3,260
1958	1560	607	Apr. 5, 1958	0	9.41	6,800	9.25	-	6,690
1959	1630	1,080	May 31, 1959	0	2.77	2,010	2.78	-	2,020
1960	1710	4,800	June 20, 1960	0	23.0	16,700	-	-	-

7955. Shell Creek near Columbus, Nebr.

Location.--Lat 41°31'30", long 97°17'00", in NE¼NW¼ sec.23, T.18 N., R.1 E., on right bank 80 ft upstream from county road bridge, 1 mile upstream from Loseke Creek, and 7 miles northeast of Columbus.

Drainage area.--270 sq mi, approximately.

Records available.--August 1947 to September 1960.

Gage.--Water-stage recorder.

Average discharge.--13 years (1947-60), 42.6 cfs (30,840 acre-ft per year).

Extremes.--1947-60: Maximum discharge, 5,970 cfs June 3, 1950 (gage height, 21.38 ft); minimum daily, 0.4 cfs July 27, 1964.

Flood of June 2, 1947, reached a stage of 21.7 ft, from floodmark (discharge, 4,600 cfs).

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	13.5	13.1	13.2	12.2	10.5	125	62.3	29.5	54.0	58.7	202	71.3	55.9
1952	30.9	22.7	15.8	25.8	31.0	71.1	45.7	47.9	35.8	75.0	79.0	12.2	41.1
1953	9.75	12.6	13.0	17.2	29.0	41.1	48.6	95.4	95.1	15.4	14.6	5.80	33.1
1954	6.18	11.6	15.0	7.32	19.9	22.6	19.9	19.1	30.5	3.85	6.85	5.00	13.9
1955	6.75	5.81	10.3	10.1	12.4	23.2	19.4	16.2	89.0	14.0	3.03	3.46	17.7
1956	3.82	8.12	10.9	14.8	11.6	23.5	12.7	35.8	17.1	4.09	27.4	3.41	14.5
1957	7.52	5.32	7.10	6.03	8.09	18.4	15.3	24.3	184	44.1	6.25	19.1	28.6
1958	6.44	10.7	10.3	9.97	28.0	80.1	59.7	13.4	18.9	88.1	14.8	4.06	28.8
1959	2.90	5.21	8.62	6.46	7.44	25.3	26.0	75.4	96.8	32.5	78.0	4.98	31.0
1960	7.38	7.58	9.17	13.8	10.9	140	136	113	226	28.1	16.1	8.10	59.5

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	830	781	815	753	582	7,690	3,710	1,810	3,210	3,610	12,410	4,240	40,440
1952	1,900	1,350	847	1,590	1,780	4,370	2,720	2,940	2,130	4,610	4,850	728	29,820
1953	599	750	801	1,060	1,610	2,520	2,890	5,870	5,660	945	899	345	23,950
1954	380	688	924	450	1,100	1,390	1,180	1,180	1,810	237	421	298	10,060
1955	415	346	636	622	686	1,420	1,160	994	5,300	859	186	206	12,830
1956	235	483	673	910	667	1,440	754	2,200	1,020	251	1,680	203	10,520
1957	462	317	437	371	449	1,130	910	1,490	10,920	2,710	384	1,140	20,720
1958	396	639	636	613	1,560	4,930	3,550	822	1,120	5,410	912	242	20,830
1959	179	310	530	397	413	1,560	1,550	4,640	5,760	2,000	4,800	296	22,440
1960	454	451	564	846	629	8,610	8,110	6,950	13,420	1,730	990	482	43,240

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept., 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	-	-
1951	1210	1,300	Aug. 21, 1951	5.0	55.9	40,440	96.6	69,940
1952	1240	854	July 15, 1952	6.4	41.1	29,820	58.2	42,110
1953	1280	1,010	May 12, 1953	3.1	33.1	23,950	38.4	27,870
1954	1340	590	June 16, 1954	.4	13.9	10,060	32.9	23,790
1955	1390	1,040	June 25, 1955	.6	17.7	12,830	13.1	9,460
1956	1440	840	May 30, 1956	1.7	14.5	10,520	17.7	12,820
1957	1510	1,700	June 17, 1957	1.5	28.6	20,720	14.2	10,340
1958	1560	720	Apr. 6, 1958	3.2	28.8	20,830	29.3	21,200
1959	1630	1,800	Aug. 2, 1959	2.0	31.0	22,440	27.9	20,180
1960	1710	2,180	June 22, 1960	3.6	59.5	43,240	31.6	22,880

## 7960. Platte River at North Bend, Nebr.

Location.--Lat 41°27'10", long 96°45'50", in SE $\frac{1}{4}$  sec. 7, T.17 N., R.6 E., on left bank 30 ft upstream from bridge on State Highway 79, 1 mile south of North Bend, and 5 miles downstream from Shell Creek.

Drainage area.--77,800 sq mi, approximately.

Records available.--April 1949 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 1,264.32 ft above mean sea level, datum of 1929. Prior to Sept. 12, 1951, wire-weight gage at same site and datum.

Average discharge.--11 years (1949-60), 3,731 cfs (2,701,000 acre-ft per year).

Extremes.--1949-60: Maximum discharge, 112,000 cfs Mar. 29, 1960 (gage height, 8.04 ft, backwater from ice); maximum gage height, 8.17 ft Feb. 13, 1952 (backwater from ice); minimum daily discharge, 126 cfs Aug. 29, 1955.

Remarks.--Natural flow of stream affected by transmountain diversions, storage reservoirs, power developments, diversions and ground-water withdrawals for irrigation, and return flow from irrigated areas.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	4,298	3,942	4,149	3,956	5,186	6,716	6,015	7,444	8,866	5,612	4,764	5,836	5,562
1952	4,855	4,919	3,128	3,836	8,317	8,459	7,690	5,604	3,541	2,195	1,972	1,617	4,660
1953	2,558	3,439	3,078	3,692	6,561	6,645	5,284	6,382	3,344	1,861	1,332	1,259	3,768
1954	1,668	3,541	3,329	2,248	5,238	4,401	3,647	3,956	3,384	908	1,555	1,601	2,937
1955	2,471	2,836	2,763	2,525	2,972	5,151	3,530	1,952	3,989	1,510	442	936	2,525
1956	1,826	1,938	1,413	2,390	2,822	4,687	3,193	2,292	2,046	1,111	1,083	1,246	2,168
1957	1,626	2,049	1,896	1,206	3,430	3,685	4,178	6,345	8,270	2,534	1,307	2,697	3,256
1958	3,125	3,822	3,005	2,734	4,206	6,067	7,327	4,658	4,207	6,533	2,039	1,895	4,132
1959	2,300	3,008	2,690	1,947	2,899	7,272	5,494	5,494	2,439	2,156	1,989	1,669	3,284
1960	3,385	3,881	3,449	1,907	4,676	10,260	8,026	6,694	6,464	2,748	1,641	1,635	4,558

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	264,300	234,500	255,100	243,300	288,000	413,000	357,900	457,700	527,500	345,100	292,900	347,300	4,027,000
1952	298,500	292,700	192,400	235,900	478,400	520,100	457,600	344,600	210,700	134,900	121,200	96,240	3,383,000
1953	157,300	204,600	189,300	227,000	364,400	408,600	314,400	332,400	199,000	114,400	81,690	74,930	2,728,000
1954	102,500	210,700	204,700	138,200	290,900	270,600	217,000	243,300	201,300	55,820	95,590	95,250	2,126,000
1955	152,000	168,700	169,900	143,000	165,000	316,700	198,100	120,000	231,400	80,550	27,160	55,710	1,828,000
1956	112,300	115,300	86,910	147,000	162,300	288,200	190,000	140,900	121,700	68,310	66,610	74,140	1,574,000
1957	100,000	121,900	116,600	74,130	190,500	226,600	248,600	390,100	492,100	155,800	80,370	160,500	2,357,000
1958	192,200	227,400	184,800	168,100	233,600	373,000	436,000	286,400	250,300	401,700	125,400	112,800	2,992,000
1959	141,400	179,000	165,400	119,700	161,000	447,200	326,900	337,800	145,200	132,600	122,500	99,330	2,378,000
1960	208,100	231,000	212,100	117,200	268,900	630,500	477,600	411,600	384,700	169,000	100,900	97,280	3,309,000

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	4,336	3,139,000	
1951	1210	30,800	May 31, 1951	1,060	5,562	4,027,000	5,603	4,056,000	
1952	1240	18,000	Mar. 28, 1952	464	4,660	3,383,000	4,340	3,151,000	
1953	1280	20,900	May 11, 1953	672	3,768	2,728,000	3,723	2,695,000	
1954	1340	22,800	June 18, 1954	248	2,937	2,126,000	2,899	2,099,000	
1955	1390	12,700	Mar. 10, 1955	126	2,525	1,828,000	2,282	1,652,000	
1956	1440	17,000	Mar. 19, 1956	415	2,188	1,574,000	2,201	1,598,000	
1957	1510	44,200	June 17, 1957	451	3,256	2,357,000	3,623	2,623,000	
1958	1560	29,100	Feb. 26, 1958	1,000	4,132	2,992,000	3,969	2,873,000	
1959	1630	21,700	Aug. 2, 1959	575	3,284	2,378,000	3,513	2,543,000	
1960	1710	112,000	Mar. 29, 1960	685	4,558	3,309,000	-	-	

\* Not previously published.

## 7975. Elkhorn River at Ewing, Nebr.

Location.--Lat 42°16'10", long 98°20'20", in sec.35, T.27 N., R.9 W., on right bank 350 ft downstream from bridge on State Highway 108, three-quarters of a mile north of Ewing, and 1½ miles upstream from South Fork Elkhorn River.

Drainage area.--1,400 sq mi, approximately, of which about 740 sq mi contributes directly to surface runoff.

Records available.--August 1947 to September 1960.

Gage.--Water-stage recorder. Prior to Oct. 22, 1952, at site 300 ft upstream at same datum.

Average discharge.--13 years (1947-60), 217 cfs (157,100 acre-ft per year).

Extremes.--1947-60: Maximum discharge, 7,280 cfs Apr. 7, 1949 (gage height, 10.74 ft); minimum daily, 9.0 cfs Sept. 7, 9, 10, 18, 1955.  
Maximum stage known, 11.32 ft June 23, 24, 1947, from floodmark (discharge, 6,600 cfs).

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	275	96.8	83.5	77.3	96.9	430	738	1,519	1,271	697	402	473	515
1952	671	374	250	138	1,172	1,060	858	594	194	52.1	50.1	39.9	451
1953	42.5	55.7	62.0	70.4	87.9	393	377	988	248	65.1	58.5	38.2	208
1954	45.8	66.5	79.2	54.9	124	175	150	337	210	58.4	50.0	48.1	116
1955	55.5	65.5	70.7	63.1	49.8	154	103	68.9	112	50.9	27.4	20.7	70.3
1956	41.9	35.3	27.3	37.9	48.4	121	140	92.0	47.2	28.4	23.1	14.1	54.6
1957	24.8	43.9	44.2	23.4	40.4	90.7	161	446	313	76.8	44.5	39.6	113
1958	67.2	76.4	75.0	58.9	66.7	176	613	183	91.9	191	113	49.4	147
1959	42.5	59.9	64.7	48.6	43.2	202	187	131	69.1	44.3	31.7	31.4	81.5
1960	50.2	124	104	59.4	89.3	561	1,301	1,522	483	315	71.4	72.9	397

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	16,810	5,760	5,140	4,750	5,380	26,410	43,950	93,410	75,640	42,870	24,720	28,150	373,100
1952	41,250	22,240	15,400	8,460	67,420	65,150	51,050	36,550	11,560	3,200	3,080	2,370	327,700
1953	2,620	3,510	3,810	4,330	4,880	24,150	22,430	60,740	14,750	4,000	3,600	2,270	150,900
1954	2,820	3,960	4,870	3,380	6,860	10,730	8,910	20,710	12,510	3,590	3,070	2,660	84,270
1955	3,420	3,900	4,350	3,880	2,770	9,490	6,140	4,240	6,690	3,130	1,690	1,230	50,930
1956	2,570	2,100	1,680	2,330	2,790	7,410	8,310	5,650	2,810	1,750	1,420	839	39,660
1957	1,530	2,610	2,720	1,440	2,240	5,580	9,600	27,390	18,640	4,720	2,730	2,360	81,560
1958	4,130	4,540	4,610	3,620	3,700	10,800	36,500	11,270	5,470	11,720	6,960	2,940	106,300
1959	2,620	3,560	3,980	2,990	2,400	12,420	11,110	8,050	5,300	2,720	1,950	1,870	58,970
1960	3,090	7,370	6,390	3,650	5,140	34,490	77,430	93,560	28,760	19,400	4,390	4,340	288,000

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	265	192,100	
1951	1210	5,970	May 18, 1951	52	515	373,100	586	424,200	
1952	1240	2,990	Mar. 31, 1952	34	451	327,700	356	258,600	
1953	1280	2,760	May 5, 1953	33	208	150,900	211	152,800	
1954	1340	642	May 7, 1954	32	116	84,270	116	84,290	
1955	1390	442	June 24, 1955	9.0	70.3	50,930	63.0	45,610	
1956	1440	252	Apr. 7, 1956	11	54.6	39,660	55.3	40,170	
1957	1510	1,160	May 21, 1957	18	113	81,560	122	87,980	
1958	1560	1,400	Apr. 9, 1958	37	147	106,300	142	103,100	
1959	1630	593	Mar. 30, 1959	20	81.5	58,970	90.7	65,660	
1960	1710	6,440	Mar. 29, 1960	37	397	288,000	-	-	

7980. South Fork Elkhorn River at Ewing, Nebr.

Location.--Lat 42°15'10", long 98°20'20", on west line of sec.2, T.26 N., R.9 W., near left bank on downstream side of bridge on State Highway 108 at southeast limits of Ewing.

Drainage area.--320 sq mi, approximately, of which about 190 sq mi contributes directly to surface runoff.

Records available.--July 1947 to September 1953.

Gage.--Water-stage recorder. Prior to Nov. 10, 1948, staff gage at same site and datum.

Average discharge.--6 years (1947-53), 97.3 cfs (70,440 acre-ft per year).

Extremes.--1947-53: Maximum discharge, 1,760 cfs Apr. 5, 1949 (gage height, 5.02 ft); minimum daily, 11 cfs Jan. 15, 1953.  
Flood in June 1947 reached a stage of 7.22 ft, from floodmark.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	151	47.8	35.4	40.1	45.6	174	231	323	164	56.9	135	130	128
1952	203	86.6	60.9	47.1	306	315	170	132	46.9	37.8	34.1	29.9	122
1953	30.7	31.1	38.5	39.7	40.7	121	115	256	75.7	38.9	32.1	29.4	71.1

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	9,280	2,850	2,170	2,470	2,530	10,690	13,730	19,840	9,780	3,500	8,270	7,730	92,840
1952	12,480	5,150	3,740	2,900	17,620	19,390	10,140	8,100	2,790	2,330	2,100	1,780	88,500
1953	1,890	1,850	2,370	2,440	2,260	7,470	6,840	15,720	4,500	2,390	1,970	1,750	51,450

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30						Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	123	88,780	
1951	1210	1,220	May 20, 1951	22	128	92,840	138	99,890	
1952	1240	724	Oct. 6, 1951	27	122	88,500	101	73,260	
1953	1280	1,020	May 1, 1953	11	71.1	51,450	-	-	

## 7985. Elkhorn River at Neligh, Nebr.

Location.--Lat 42°07'20", long 98°01'40", in sec.20, T.25 N., R.6 W., on right bank 10 ft downstream from bridge on State Highway 14 at Neligh.

Drainage area.--2,200 sq mi, approximately, of which about 1,200 sq mi (revised) contributes directly to surface runoff.

Records available.--October 1930 to September 1958. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 1,713.88 ft above mean sea level, datum of 1929. Prior to Apr. 16, 1933, staff gage at site 30 ft downstream at present datum. Apr. 16, 1933, to Jan. 23, 1939, chain gage at bridge 10 ft upstream at present datum.

Average discharge.--28 years (1930-58), 288 cfs (208,500 acre-ft per year); median of yearly mean discharges, 199 cfs.

Extremes.--1931-58: Maximum discharge, about 12,000 cfs June 23, 1947 (gage height, 12.53 ft), from main channel rating curve extended above 4,900 cfs and field estimate of flow through break in highway fill; minimum daily, 12 cfs July 2, 1932.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	736	270	242	191	251	856	1,332	2,589	1,796	974	1,060	877	935
1952	1,189	616	479	324	1,617	1,582	1,335	989	384	135	159	116	740
1953	143	170	180	197	239	736	640	1,714	561	159	134	107	417
1954	122	173	192	141	320	350	325	724	623	157	138	134	283
1955	155	173	182	173	140	314	223	161	239	130	59.7	75.9	169
1956	144	103	95.2	117	128	289	312	221	133	96.9	66.6	55.9	147
1957	88.6	128	133	81.0	150	225	314	649	611	189	104	122	233
1958	164	200	209	179	178	466	1,060	352	209	498	276	123	326
1959													
1960													

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	45,250	16,090	14,880	11,730	13,950	52,610	79,250	159,200	106,900	59,910	65,150	52,160	677,100
1952	75,110	38,640	29,480	19,910	95,000	97,260	73,440	60,830	22,870	8,270	9,780	6,890	537,500
1953	8,770	10,090	11,060	12,110	13,280	45,230	38,070	105,400	33,390	9,750	8,240	6,380	301,800
1954	7,500	10,280	11,820	8,680	17,750	21,530	19,330	44,530	37,070	9,620	8,490	7,950	204,600
1955	9,550	10,270	11,200	10,640	7,800	19,310	13,300	9,930	14,210	8,020	3,670	4,510	122,400
1956	8,830	6,150	5,850	7,200	7,380	17,790	18,580	15,590	7,940	5,960	4,090	3,330	106,700
1957	5,450	7,610	8,160	4,980	8,340	13,830	18,660	39,890	36,330	11,630	6,390	7,240	168,500
1958	10,060	11,920	12,830	11,010	9,890	28,640	62,820	21,670	12,420	30,650	17,000	7,340	236,200
1959													
1960													

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	585	423,300
1951	1210	9,030	May 19, 1951	101	935	677,100	1,022	740,100
1952	1240	3,800	Apr. 1, 1952	100	740	537,500	590	428,200
1953	1280	4,900	May 5, 1953	91	417	301,800	416	301,400
1954	1340	1,900	May 2, 1954	91	283	204,600	285	206,000
1955	1390	664	June 24, 1955	49	169	122,400	155	112,200
1956	1440	532	Oct. 3, 1955	42	147	106,700	147	107,100
1957	1510	3,860	June 16, 1957	27	233	168,500	252	182,100
1958	1560	2,560	Apr. 7, 1958	99	326	236,200	-	-
1959								
1960								



7990. Elkhorn River near Norfolk, Nebr.

Location.--Lat 42°00'20", long 97°28'40", in SW $\frac{1}{4}$  sec.31, T.24 N., R.1 W., on left bank 75 ft downstream from bridge on county road, 3 $\frac{1}{2}$  miles west-southwest of Norfolk, and 7 miles upstream from North Fork Elkhorn River.

Drainage area.--2,790 sq mi, approximately, of which about 1,790 sq mi (revised) contributes directly to surface runoff.

Records available.--July 1896 to November 1903 (no winter records), October 1945 to September 1960. Gage-height records collected at site 3 $\frac{1}{2}$  miles downstream since May 1941 are contained in reports of U. S. Weather Bureau. Published as "at Norfolk" prior to October 1957.

Gage.--Water-stage recorder. Datum of gage is 1,522.83 ft above mean sea level, datum of 1929. July 1896 to November 1903 staff gage at site 3 $\frac{1}{2}$  miles downstream at different datum. Oct. 1, 1945, to Aug. 15, 1947, wire-weight gage, Aug. 16, 1947, to Mar. 5, 1949, water-stage recorder, and Mar. 6, 1949, to Aug. 29, 1958, wire-weight gage, at sites on or near bridge 3 $\frac{1}{2}$  miles downstream at datum 17.88 ft lower.

Average discharge.--15 years (1945-60), 570 cfs (412,700 acre-ft per year); median of yearly mean discharges, 510 cfs (369,000 acre-ft per year).

Extremes.--1945-60: Maximum discharge, 13,500 cfs Mar. 30, 1960; maximum gage height observed, 13.63 ft Mar. 11, 1949, site and datum then in use (backwater from ice); minimum daily discharge, 60 cfs Dec. 10, 11, 1945.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	829	363	345	307	473	1,740	1,570	2,682	1,963	1,197	1,398	1,323	1,188
1952	1,418	847	607	454	1,862	1,666	1,486	1,235	680	405	326	235	933
1953	245	245	289	321	497	695	777	1,929	891	263	219	165	545
1954	204	294	292	254	456	526	479	796	982	255	199	205	411
1955	248	277	250	284	232	515	374	246	350	204	91.3	118	266
1956	220	169	156	203	256	429	444	334	293	183	110	87.3	240
1957	140	202	207	158	213	320	420	784	880	301	149	174	329
1958	254	318	292	238	408	717	1,331	488	297	680	444	241	474
1959	206	244	261	237	243	682	832	653	354	245	185	152	358
1960	223	313	311	245	321	1,316	2,790	2,211	1,570	800	274	266	886

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	50,950	22,800	21,200	18,850	26,250	107,000	93,410	164,900	116,800	73,580	85,950	78,730	860,400
1952	87,210	50,390	37,320	27,890	107,100	103,700	88,430	75,940	40,480	24,890	20,020	13,970	677,300
1953	15,404	14,550	17,750	19,740	27,610	42,740	46,250	118,600	53,010	16,190	13,480	9,810	394,800
1954	12,510	17,460	17,930	15,620	25,350	32,350	28,510	48,920	58,450	15,700	12,230	12,210	297,200
1955	15,270	16,500	15,370	17,450	12,860	31,640	22,260	15,100	20,800	12,530	5,610	6,990	192,400
1956	13,510	10,080	9,620	12,500	14,700	26,370	26,430	20,550	17,450	11,230	6,780	5,190	174,400
1957	8,580	12,020	12,720	9,700	11,850	19,700	24,990	48,230	52,350	18,500	9,160	10,330	238,100
1958	15,610	18,920	17,340	14,180	22,650	44,110	79,220	30,010	17,670	41,810	27,310	14,360	343,200
1959	12,690	14,500	16,020	14,590	15,490	41,950	49,520	40,140	21,090	15,090	11,400	9,020	259,500
1960	13,710	18,600	19,150	15,030	18,490	80,940	166,100	136,000	93,400	49,190	16,870	15,850	643,300

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	791	572,800
1951	1210	8,410	May 20, 1951	200	1,188	860,400	1,299	940,400
1952	1240	a3,470	Feb. 15, 1952	195	933	677,300	757	549,800
1953	1280	a7,550	May 10, 1953	75	545	394,800	480	395,300
1954	1340	a4,100	June 21, 1954	145	411	297,200	410	296,500
1955	1390	a1,170	Mar. 11, 1955	74	266	192,400	246	178,500
1956	1440	1,440	June 26, 1956	65	240	174,400	240	174,500
1957	1510	3,410	June 17, 1957	97	329	238,100	355	256,700
1958	1560	3,370	July 30, 1958	130	474	343,200	452	334,500
1959	1630	2,480	May 6, 1959	120	358	259,500	370	267,800
1960	1710	13,500	Mar. 30, 1960	152	886	643,300	-	-

a Maximum observed.

7995. Logan Creek near Uehling, Nebr.

Location.--Lat 41°42'50", long 96°31'15", on south line of SE $\frac{1}{4}$  sec.9, T.20 N., R.8 E., near right bank on downstream side of bridge on county road, 2 miles southwest of Uehling and 8 miles upstream from mouth.

Drainage area.--1,030 sq mi, approximately.

Records available.--March 1941 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 1,210.73 ft above mean sea level, datum of 1929. Prior to Oct. 5, 1945, chain gage at same site and datum.

Average discharge.--19 years (1941-60), 173 cfs (125,200 acre-ft per year).

Extremes.--1941-60: Maximum discharge, 13,700 cfs June 11, 1944 (gage height, 17.65 ft, from floodmarks), from rating curve extended above 5,800 cfs on basis of velocity-area study; minimum daily, 14 cfs Dec. 28, 1941, Nov. 27, 1942.  
Flood of June 5, 1940, reached a stage of 18.6 ft, from floodmarks (discharge, 20,000 cfs, from rating curve extended above 5,800 cfs on basis of velocity-area study).

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	66.7	55.9	53.6	49.2	73.1	807	299	333	526	479	1,056	517	362
1952	286	162	120	118	501	651	401	615	327	275	148	103	309
1953	83.9	75.3	89.7	81.8	136	347	227	287	525	114	134	70.7	181
1954	66.3	76.5	51.6	53.0	184	294	141	254	1,245	138	101	100	224
1955	99.3	85.0	80.2	65.6	66.2	248	105	95.4	105	109	42.8	43.9	95.8
1956	46.7	45.0	37.7	42.5	48.6	75.7	46.1	141	219	104	37.4	35.6	73.3
1957	36.0	43.2	37.9	34.1	43.6	58.5	42.8	81.8	314	459	74.0	108	111
1958	68.6	102	89.1	62.2	417	274	190	93.0	80.7	301	239	65.3	164
1959	55.1	59.2	45.7	39.2	41.4	104	96.8	480	225	94.9	149	69.2	122
1960	61.5	69.0	70.8	43.6	56.9	371	1,377	466	301	153	268	119	279

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	4,100	3,330	3,300	3,030	4,060	49,600	17,780	20,450	31,310	29,430	64,900	30,780	262,100
1952	17,600	9,630	7,370	7,270	28,800	40,010	23,850	37,800	19,470	16,940	9,110	6,130	224,000
1953	5,160	4,480	5,510	5,030	7,560	21,310	13,490	17,670	31,220	8,990	8,220	4,210	130,800
1954	4,070	4,550	3,180	3,260	10,240	18,050	8,390	15,640	74,060	8,470	6,210	5,950	162,100
1955	6,110	5,060	4,930	4,040	3,680	15,230	6,250	5,870	6,240	6,690	2,630	2,610	69,340
1956	2,870	2,680	2,320	2,610	2,790	4,650	2,740	8,650	13,030	6,410	2,300	2,120	53,170
1957	2,210	2,570	2,330	2,100	2,420	3,600	2,540	5,030	18,710	28,250	4,550	6,400	80,710
1958	4,220	6,050	5,480	3,820	23,180	16,860	11,300	5,720	4,800	18,490	14,710	3,880	118,500
1959	3,390	3,520	2,810	2,410	2,300	6,390	5,760	29,510	13,410	5,840	9,190	4,120	88,650
1960	3,780	4,100	4,350	2,680	3,270	22,620	81,940	28,650	17,920	9,440	16,460	7,070	202,500

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	187	135,100	
1951	1210	8,820	Mar. 27, 1951	29	362	262,100	395	285,900	
1952	1240	7,280	May 23, 1952	70	309	224,000	282	204,500	
1953	1280	7,450	June 8, 1953	30	181	130,600	176	127,500	
1954	1340	8,220	June 21, 1954	28	224	162,100	230	166,400	
1955	1390	41,500	Mar. 3, 1955	35	95.8	69,340	84.4	61,110	
1956	1440	7,880	June 26, 1956	21	73.3	53,170	72.2	52,410	
1957	1510	7,660	July 15, 1957	27	111	80,710	123	89,350	
1958	1560	6,820	Feb. 17, 1958	38	164	118,500	155	112,500	
1959	1630	6,300	May 31, 1959	27	122	88,650	126	91,160	
1960	1710	9,400	Apr. 2, 1960	24	279	202,500	-	-	

\* Not previously published; release of temporary storage behind ice jam at gage.  
a About.

8000. Maple Creek near Nickerson, Nebr.

Location.--Lat 41°33', long 96°30', in NE $\frac{1}{4}$ SW $\frac{1}{4}$  sec.10, T.18 N., R.8 E., on right bank 120 ft upstream from bridge on U. S. Highways 77 and 275, 1 $\frac{1}{2}$  miles northwest of Nickerson, and 4 miles upstream from mouth.

Drainage area.--450 sq mi, approximately.

Records available.--October 1951 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 1,194.56 ft above mean sea level, datum of 1929. Prior to July 28, 1960, wire-weight gage and crest-stage gage at site 120 ft downstream at same datum.

Average discharge.--9 years (1951-60), 60.1 cfs (43,510 acre-ft per year).

Extremes.--1951-60: Maximum discharge, 10,800 cfs June 21, 1960 (gage height, 14.67 ft); minimum daily, 0.1 cfs Jan. 15, 16, 1956.

Maximum stage known, 16.28 ft June 11, 1944, from floodmarks (discharge, 35,000 cfs from indirect measurement of peak flow).

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952	46.4	31.4	27.0	21.5	94.9	80.4	103	100	56.5	51.5	57.3	29.5	58.1
1953	15.7	15.9	14.4	16.2	38.1	86.4	59.8	98.4	76.9	32.6	10.4	3.73	39.0
1954	2.92	5.80	6.65	3.86	11.7	14.5	22.3	16.7	10.8	2.29	7.19	1.75	8.84
1955	3.22	1.90	2.22	2.09	1.68	7.36	6.82	2.28	65.0	40.0	4.65	1.43	11.6
1956	1.35	1.58	1.04	.94	1.30	2.11	1.72	24.3	3.00	7.80	15.2	1.20	5.19
1957	2.24	1.61	2.10	1.71	1.33	1.36	1.27	2.17	276	236	14.1	33.0	47.8
1958	3.52	7.68	3.02	1.52	112	168	33.2	8.84	8.03	205	289	6.22	70.0
1959	2.31	2.79	1.34	1.49	1.73	20.1	54.3	199	303	71.4	362	50.6	89.8
1960	18.1	16.0	16.4	5.37	8.11	178	567	298	1,232	103	57.3	33.4	211

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952	2,850	1,870	1,660	1,320	5,460	4,940	6,140	6,160	3,360	3,160	3,520	1,760	42,200
1953	968	944	888	996	2,110	5,310	3,560	6,050	4,570	2,010	640	222	28,270
1954	179	345	409	237	652	891	1,330	1,030	644	141	442	104	6,400
1955	198	113	136	129	93	453	406	140	3,870	2,460	286	85	8,370
1956	83	94	64	58	75	130	103	1,500	179	479	934	72	3,770
1957	137	96	129	105	74	84	76	134	16,450	14,530	866	1,960	34,640
1958	216	457	186	93	6,200	10,330	1,970	544	478	12,600	17,220	370	50,660
1959	142	166	82	92	96	1,240	3,230	12,240	18,040	4,390	22,280	3,010	65,010
1960	1,110	952	1,010	330	466	10,960	33,720	18,340	74,470	6,310	3,520	1,990	153,200

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950									
1951									
1952	1240	480	June 28, 1952	9.4	58.1	42,200	53.2	38,620	
1953	1280	870	June 25, 1953	2.0	39.0	28,270	36.5	26,400	
1954	1340	757	Apr. 21, 1954	.7	8.84	6,400	8.17	5,920	
1955	1390	1,100	June 25, 1955	.9	11.6	8,370	11.3	8,160	
1956	1440	850	May 30, 1956	.1	5.19	3,770	5.35	3,890	
1957	1510	a2,300	(b)	.6	47.8	34,640	48.5	35,140	
1958	1560	a2,300	Feb. 28, 1958	.8	70.0	50,660	69.4	50,200	
1959	1630	5,450	Aug. 4, 1959	1.0	89.8	65,010	93.5	67,690	
1960	1710	10,800	June 21, 1960	2.5	211	153,200	-	-	

a About.

b June 18 or 19, 1957.

## 8005. Elkhorn River at Waterloo, Nebr.

Location.--Lat 41°17'25", long 96°17'05", in SW $\frac{1}{4}$  sec.3, T.15 N., R.10 E., on right bank 100 ft upstream from bridge at north edge of Waterloo and  $3\frac{1}{2}$  miles downstream from Rawhide Creek.

Drainage area.--6,900 sq mi, approximately, of which about 5,900 sq mi (revised) contributes directly to surface runoff.

Records available.--April 1899 to November 1903, May 1911 to September 1915, August 1928 to September 1960. Published as "at Arlington" 1899-1903, July 1913 to September 1915. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 1,109.73 ft above mean sea level, datum of 1929. Apr. 28, 1899, to Nov. 21, 1903, and July 20, 1913, to Sept. 30, 1915, staff gages at sites 10 miles upstream at different datums. May 19, 1911, to July 19, 1913, weight-tape gage at present site at different datum. Aug. 18, 1928, to Apr. 12, 1934, chain gage, Apr. 13, 1934, to June 8, 1940, water-stage recorder, and June 9 to July 1, 1940, chain gage, all at present site and datum. July 2, 1940, to July 3, 1951, water-stage recorder and July 4 to Oct. 25, 1951, wire-weight gage, at site  $3\frac{1}{2}$  miles upstream at different datum.

Average discharge.--40 years (1899-1903, 1911-15, 1928-60), 1,106 cfs (800,700 acre-ft per year); median of yearly mean discharges, 935 cfs (677,000 acre-ft per year).

Extremes.--1899-1903, 1911-15, 1928-60: Maximum discharge, 100,000 cfs June 12, 1944 (gage height, 16.6 ft, from floodmark in gage well, site and datum then in use), from rating curve extended above 22,000 cfs on basis of current-meter measurement of peak flow in main channel and velocity-area studies of overflow section; minimum observed, 50 cfs Nov. 12, 1940.

Stage and discharge of the flood of June 12, 1944, are the greatest known since at least 1880.

Remarks.--Some small diversions above station for irrigation.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1,244	769	611	569	804	5,347	3,365	4,379	4,145	3,548	4,755	2,705	2,703
1952	2,347	1,450	1,050	1,114	3,349	4,211	3,759	3,239	1,782	1,264	1,127	715	2,113
1953	580	587	663	680	1,054	2,368	1,862	3,637	2,425	746	561	369	1,298
1954	381	539	562	458	1,119	1,231	1,089	1,563	3,355	647	478	420	982
1955	544	549	517	442	424	1,084	816	510	938	777	197	177	582
1956	299	313	243	284	317	765	641	611	666	506	250	150	421
1957	185	296	276	257	333	630	696	1,047	2,469	1,928	362	587	756
1958	508	600	599	405	1,269	1,901	2,340	909	611	1,849	2,797	511	1,193
1959	394	441	396	353	395	1,134	1,396	3,026	2,149	962	1,499	449	1,054
1960	513	599	652	464	572	2,051	9,189	5,195	6,242	1,924	1,184	902	2,448

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	76,510	45,770	37,550	34,970	44,630	528,800	201,400	269,300	246,700	218,200	292,400	81,000	1,957,000
1952	144,300	86,280	64,530	68,490	192,600	258,900	223,700	199,100	106,000	77,730	69,320	42,530	1,533,000
1953	35,650	34,910	40,760	41,790	58,520	45,600	110,600	223,600	44,300	45,850	35,720	21,950	939,400
1954	23,420	32,080	34,570	28,160	62,130	75,670	64,820	96,080	99,700	39,770	29,420	25,010	710,800
1955	33,460	32,650	31,800	27,200	23,530	66,680	48,580	31,340	55,840	47,760	12,120	10,520	421,500
1956	18,410	18,610	14,920	17,460	18,260	47,020	38,150	37,560	39,630	31,130	15,370	8,930	305,400
1957	11,390	17,630	16,980	15,800	18,510	38,710	41,430	64,350	46,900	18,600	22,240	34,930	547,500
1958	31,260	35,720	36,860	24,900	70,460	16,600	39,300	55,910	36,350	13,700	72,000	30,430	863,500
1959	24,260	26,530	24,360	21,720	21,960	69,740	83,100	98,100	27,900	59,170	92,180	26,730	763,400
1960	31,540	35,650	40,070	28,520	32,910	26,100	546,800	319,400	371,400	116,300	72,790	53,650	1,777,000

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet		
		Discharge	Date							
1950	-	-	-	-	-	-	1,672	1,211,000	-	-
1951	1210	27,500	Mar. 27, 1951†	260	2,703	-	2,890	2,093,000	-	-
1952	1240	14,200	Mar. 13, 1952	415	2,113	1,957,000	1,533,000	1,859	1,350,000	-
1953	1280	14,300	June 9, 1953	171	1,298	939,400	1,268	918,200	-	-
1954	1340	15,400	June 22, 1954	303	982	710,800	993	718,700	-	-
1955	1390	6,440	July 14, 1955	121	582	421,500	519	375,500	-	-
1956	1440	6,960	June 26, 1956	116	421	305,400	413	299,500	-	-
1957	1510	13,000	June 17, 1957	116	756	547,500	836	605,300	-	-
1958	1560	20,300	Aug. 1, 1958	152	1,193	863,500	1,152	834,500	-	-
1959	1630	13,400	May 31, 1959	230	1,054	763,400	1,099	795,900	-	-
1960	1710	46,900	Apr. 2, 1960	212	2,448	1,777,000	-	-	-	-

† Corrected.

## 8010. Platte River near Ashland, Nebr.

Location.--Lat 41°03'30", long 96°19'30", on line between secs.29 and 32, T.13 N., R.10 E., near left bank on downstream side of pier of bridge on U. S. Highway 6, 100 ft above stream from Chicago, Burlington & Quincy Railroad bridge, 2 miles upstream from Salt Creek, and 3 miles northeast of Ashland.

Drainage area.--83,800 sq mi, approximately.

Records available.--August 1928 to May 1953.

Gage.--Water-stage recorder. Datum of gage is 1,052.51 ft above mean sea level, datum of 1929. Prior to Oct. 1, 1929, chain gage at former highway bridge half a mile upstream at datum 3.32 ft higher. Oct. 1, 1929, to Oct. 7, 1933, staff or chain gage at former bridge at datum 2.28 ft higher. Oct. 14, 1933, to Dec. 10, 1938, water-stage recorder at site 950 ft upstream from former bridge at datum 2.28 ft higher. Dec. 11, 1938, to June 16, 1948, water-stage recorder at site of former bridge half a mile upstream at datum 2.28 ft higher.

Extremes.--1928-53: Maximum discharge, 107,000 cfs June 12, 1944, includes overbank flow caused by breaking of dikes; minimum daily, 265 cfs Aug. 18, 1941.

Remarks.--Natural flow of stream affected by transmountain diversions, storage reservoirs, power developments, diversions and ground-water withdrawals for irrigation, and return flow from irrigated areas.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	5,021	4,062	4,477	4,430	5,611	11,480	9,497	12,290	15,120	8,959	9,249	8,371	8,224
1952	7,216	6,623	4,540	5,076	13,080	15,210	12,630	8,962	5,352	4,062	3,416	2,469	7,561
1953	2,742	3,795	3,375	4,131	6,976	8,755	6,920	-	-	-	-	-	-

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	508,700	241,700	275,300	272,400	311,600	705,900	565,100	755,800	899,600	550,900	568,700	498,100	5,954,000
1952	443,700	594,100	279,200	312,100	752,600	935,200	751,400	551,000	317,300	249,800	210,100	146,900	5,343,000
1953	168,600	225,800	207,600	254,000	587,500	538,300	411,800	-	-	-	-	-	-

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	6,104	4,419,000
1951	1210	49,900	June 1, 1951	1,060	8,224	5,954,000	8,626	6,245,000
1952	1240	31,800	Mar. 13, 1952	1,460	7,361	5,343,000	6,651	4,828,000
1953	1280	28,800	May. 11, 1953	-	-	-	-	-

a Maximum during period October 1952 to May 1953.

## 8013. Salt Creek subwatershed No. 3 near Sprague, Nebr.

Location.--Lat 40°37'20", long 96°43'40", in NW $\frac{1}{4}$ NE $\frac{1}{4}$  sec.34, T.8 N., R.6 E., on right bank about 1,000 ft upstream from confluence with Olive Branch, half a mile east of Sprague, and 0.9 mile below Linn Creek detention dam.

Drainage area.--4.20 sq mi.

Records available.--November 1954 to September 1959.

Gage.--Water-stage recorder. Altitude of gage is 1,245 ft (from topographic map).

Extremes.--1954-59: Maximum discharge, 244 cfs July 2, 1956 (gage height, 6.24 ft); minimum daily, 0.06 cfs Sept. 29, 30, 1956.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1955	-	-	0.377	0.339	1.45	0.621	0.376	0.260	0.374	0.252	0.343	0.488	-
1956	0.171	0.241	.300	.261	.186	1.01	.485	.558	.624	5.81	5.25	.391	1.29
1957	.158	.267	.403	.265	.428	.423	.706	.700	1.68	.357	.364	.449	1.521
1958	3.54	.440	.302	.361	2.59	2.13	.558	.488	.398	3.59	.108	.964	1.25
1959	.292	.367	.380	.365	.706	1.57	.697	7.17	2.07	1.36	.368	.376	1.32

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1955	-	-	23	21	81	38	22	16	22	15	21	29	286
1956	10	14	18	16	11	62	29	34	37	357	322	23	933
1957	9.7	17	24	16	24	26	42	43	100	27	22	27	378
1958	218	26	18	22	144	131	33	30	24	221	6.6	57	931
1959	18	22	23	22	39	97	41	441	123	84	23	22	955

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1955	1560	115	Sept. 20, 1955	0.13	-	288	0.427	307
1956	1560	244	July 2, 1956	.06	1.29	933	1.30	942
1957	1560	66	June 17, 1957	-	.521	378	.813	589
1958	1560	158	July 11, 1958	.07	1.28	931	1.01	732
1959	1630	126	May 18, 1959	.24	1.32	955		

## 8014. Salt Creek subwatershed No. 1 near Roca, Nebr.

Location.--Lat 40°38'30", long 96°39'00", in SE $\frac{1}{4}$  sec.20, T.8 N., R.7 E., on right bank at upstream side of U. S. Soil Conservation Service channel stabilizing structure, 800 ft downstream from county road and  $1\frac{1}{2}$  miles southeast of Roca.

Drainage area.--1.46 sq mi.

Records available.--December 1954 to September 1960.

Gage.--Water-stage recorder and concrete control. Datum of gage is 1,232.2 ft above mean sea level, datum of 1929.

Average discharge.--5 years (1955-60), 0.272 cfs (197 acre-ft per year).

Extremes.--1954-60: Maximum discharge, 610 cfs July 2, 1956 (gage height, 3.12 ft); no flow for most days in each year.

Remarks.--Natural flow of stream affected by detention storage in reservoirs upstream.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952													
1953													
1954													
1955	-	-	0	0	0.071	0.001	0.002	0	0.162	0	0	0.005	-
1956	0	0	0	0	0	0	0	.013	.005	1.53	1.06	.006	0.221
1957	0	0	0	0	0	0	.012	.048	.078	.329	0	.015	.041
1958	0	.276	0	0	.855	.057	.006	0	.002	3.58	.026	.020	.403
1959	0	0	0	0	0	.516	.050	2.82	.966	.121	.004	.020	.362
1960	.050	.009	.011	.014	.062	2.34	.512	.256	.183	.087	.418	.027	.334

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952													
1953													
1954													
1955	-	-	0	0	4.0	0.04	0.10	0	9.6	0	0	0.32	-
1956	0	0	0	0	0	0	.80	.30	94	65	.34	160	
1957	0	0	0	0	0	0	.73	2.9	4.6	20	0	.91	29
1958	17	0	0	0	47	3.5	.34	0	.10	220	1.6	1.2	291
1959	0	0	0	0	0	19	3.0	173	58	7.4	.26	1.2	262
1960	3.1	.56	.65	.85	3.6	144	30	16	11	5.4	26	1.6	243

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean
		Discharge	Date				
1950							
1951							
1952							
1953							
1954							
1955	1560	a70.8	June 24, 1955	0	-	-	-
1956	1560	610	July 2, 1956	0	0.221	160	0.221
1957	1560	96.8	July 1, 1957	0	.041	29	.064
1958	1560	400	July 10, 1958	0	.403	291	.379
1959	1630	250	May 18, 1959	0	.362	262	.368
1960	1710	46.4	Mar. 27, 1960	0	.334	243	-

a Maximum during period December to September.

8015. Salt Creek subwatershed No. 12 at Roca, Nebr.

Location--Lat 40°39'20", long 96°38'40", in SW $\frac{1}{4}$  sec.16, T.8 N., R.7 E., on left bank 10 ft upstream from bridge on east-west county road and three-quarters of a mile east of Roca.

Drainage area--1.12 sq mi.

Records available--July 1954 to September 1960.

Gage--Water-stage recorder and artificial control. Altitude of gage is 1,258 ft (from topographic map).

Average discharge--6 years (1954-60), 0.248 cfs (180 acre-ft per year).

Extremes--1954-60: Maximum discharge, 528 cfs July 10, 1958 (gage height, 7.95 ft); no flow at times in each year.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952													
1953													
1954													
1955	0.007	0.003	0	0.001	0.125	0.006	0.009	0	0.598	0	0.400	0.004	0.065
1956	0	0	0	0	0	0	0	0	.012	1.27	.561	.014	.157
1957	0	0	0	0	0	.0003	.005	.044	.154	.926	.001	.001	.096
1958	.164	0	0	0	.179	.152	.082	.027	.003	3.77	.028	.056	.377
1959	.006	.011	.010	0	0	.185	.106	3.24	.863	.049	.001	.058	.382
1960	.043	.010	.014	.019	.088	3.23	.630	.322	.220	.115	.161	.020	.410

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952													
1953													
1954	-									0	24	0.22	-
1955	0.44	0.18	0	0.06	7.0	0.38	0.56	0	36	0	0	2.8	47
1956	0	0	0	0	0	0	0	0	.69	78	35	.83	115
1957	0	0	0	0	0	.02	.28	2.7	9.2	57	.04	3.04	69
1958	10	0	0	0	9.9	9.4	4.9	1.6	51	232	1.7	3.4	273
1959	.58	.63	.61	0	0	11	6.3	199	51	3.0	.04	3.5	275
1960	2.7	.61	.85	1.2	5.0	199	37	20	13	7.1	9.9	1.2	298

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950								
1951								
1952								
1953								
1954	1560	246	Aug. 22, 1954	0	-	-	-	-
1955	1560	189	June 24, 1955	0	0.065	47	0.064	47
1956	1560	448	July 2, 1956	0	.157	115	.157	†114
1957	1560	389	July 1, 1957	0	.096	69	.110	79
1958	1560	528	July 10, 1958	0	.377	273	.365	265
1959	1630	452	May 18, 1959	0	.382	275	.385	278
1960	1710	245	Mar. 27, 1960	0	.410	298	-	-

† Corrected.

a Maximum during period August to September.

8025. Salt Creek subwatershed No. 34 near Roca, Nebr.

Location--Lat 40°38'20", long 96°39'42", in SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec.20, T.8 N., R.7 E., on left bank 50 ft downstream from trestle of Missouri Pacific Railroad and  $1\frac{1}{4}$  miles south of Roca.

Drainage area--5.72 sq mi.

Records available--July 1954 to September 1960.

Gage--Water-stage recorder. Altitude of gage is 1,230 ft (from topographic map).

Average discharge--6 years (1954-60), 1.74 cfs (1,260 acre-ft per year).

Extremes--1954-60: Maximum discharge, 2,600 cfs Aug. 18, 1956 (gage height, 9.89 ft); no flow for many days in each year.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952													
1953													
1954													
1955	0.084	0.083	0.075	0.096	3.92	0.214	0.192	0.057	1.62	0	8.16	0.007	0.519
										0	0	.222	
1956	0	0	0	0	0	0	.001	.855	1.03	7.19	9.22	.071	1.55
1957	0	0	0	0	0	0	.583	.913	2.43	3.77	0	1.11	.449
1958	4.01	0	0	0	11.5	.843	.423	.196	.140	18.3	.067	1.13	3.01
1959	.0006	.040	.025	.032	.448	2.28	.537	16.0	2.12	2.08	.071	.458	2.03
1960	.419	.086	.215	.130	.629	24.4	2.47	1.19	1.67	.371	2.10	.234	2.86

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952													
1953													
1954													
1955	5.1	4.9	4.6	5.9	218	13	11	3.5	96	0	502	13.40	375
										0	0		
1956	0	0	0	0	0	0	.06	53	61	442	567	4.2	1,130
1957	0	0	0	0	0	0	35	56	144	23	0	66	324
1958	246	0	0	0	639	52	25	12	8.4	1,130	4.1	67	2,180
1959	.04	2.4	1.5	2.0	25	140	32	983	126	128	4.3	27	1,470
1960	26	5.1	13	8.0	36	1,500	147	73	99	23	129	14	2,070

Yearly discharge, in cubic feet per second

Year	MSP	Water year ending Sept. 30				Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean
		Discharge	Date				
1950							
1951							
1952							
1953							
1954	1560	a250	Aug. 23, 1954	0	-	-	-
1955	1560	152	June 24, 1955	0	0.519	375	0.499
1956	1560	2,600	Aug. 18, 1956	0	1.55	1,130	1.55
1957	1560	222	June 17, 1957	0	.449	324	.789
1958	1560	1,160	July 11, 1958	0	3.01	2,180	2.68
1959	1630	910	May 4, 1959	0	2.03	1,470	2.09
1960	1710	1,800	Mar. 27, 1960	0	2.86	2,070	-

a Maximum during period July to September.



8030. Salt Creek at Roca, Nebr.

Location.--Lat 40°39'33", long 96°39'39", in SW $\frac{1}{4}$  sec.17, T.8 N., R.7 E., on left bank 15 ft downstream from highway bridge at west edge of Roca.

Drainage area.--174 sq mi.

Records available.--May 1951 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 1,192.50 ft above mean sea level, datum of 1929, Kansas City supplementary adjustment of 1943. Prior to May 16, 1956, wire-weight gage at same site and datum.

Average discharge.--9 years (1951-60), 50.4 cfs (36,490 acre-ft per year).

Extremes.--1951-60: Maximum discharge, 16,700 cfs July 10, 1958 (gage height, 22.70 ft); minimum daily, 0.2 cfs July 23, 1955.

Flood of May 8, 1950, reached a stage of 26.0 ft, from floodmark established by Corps of Engineers (discharge, 67,000 cfs), but may have been exceeded by flood of July 5, 1908.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	-	-	-	*147	72.7	87.6	185	145	-
1952	29.5	20.8	11.9	29.3	24.3	235	248	72.4	195	307	77.1	6.69	105
1953	5.24	8.59	11.5	17.3	48.0	22.8	15.9	33.9	19.7	5.89	4.23	1.94	16.0
1954	2.07	4.59	8.23	3.25	9.21	6.24	14.5	95.5	201	13.0	496	7.46	72.4
1955	9.08	6.53	7.52	6.87	79.0	16.2	9.14	5.23	26.8	2.19	1.18	2.74	13.9
1956	1.36	3.11	3.95	4.79	5.37	5.59	5.23	12.8	21.3	184	149	4.20	33.8
1957	2.69	4.54	4.91	3.78	6.00	7.39	22.3	22.9	115	46.3	2.47	12.3	20.8
1958	68.0	11.8	10.2	8.58	180	48.7	20.0	15.9	10.8	412	15.2	64.0	71.7
1959	5.04	5.69	6.44	6.58	34.5	70.4	28.3	420	74.8	70.8	5.51	11.9	62.2
1960	12.9	5.74	9.15	8.16	26.2	320	102	65.1	38.3	61.6	33.3	9.64	58.1

\* Not previously published; estimated on basis of weather records and station at Lincoln.

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	-	-	-	*9,060	43,270	5,390	11,390	8,630	-
1952	1,820	1,240	730	1,800	1,400	14,420	14,760	4,450	11,590	18,870	4,740	398	76,220
1953	322	511	709	1,060	2,670	1,400	944	2,090	1,170	362	260	115	11,610
1954	128	273	508	200	512	384	865	5,870	11,970	802	30,470	444	52,420
1955	558	388	462	422	4,390	997	544	321	1,590	135	73	163	10,040
1956	84	185	243	295	309	344	311	785	1,280	11,330	9,140	250	24,540
1957	166	270	302	232	333	455	1,330	1,410	6,830	2,850	152	734	15,060
1958	4,180	701	627	528	9,980	3,000	1,190	977	641	25,340	936	3,810	51,910
1959	310	339	396	405	1,920	4,330	1,680	25,800	4,450	4,350	339	711	45,030
1960	791	341	563	502	1,510	19,680	6,090	4,000	2,280	3,790	2,050	574	42,170

\* Not previously published; estimated on basis of weather records and station at Lincoln.

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950								
1951	1210	a9,300	June 2, 1951	15	-	-	-	-
1952	1240	7,410	July 14, 1952	3.5	105	76,220	102	73,970
1953	1280	a542	June 8, 1953	1.6	16.0	11,610	15.2	10,980
1954	1340	a5,380	Aug. 23, 1954	.5	72.4	52,420	73.1	52,920
1955	1390	870	June 24, 1955	.2	13.9	10,040	12.6	9,150
1956	1440	5,700	July 2, 1956	1.2	33.8	24,540	34.1	24,760
1957	1510	1,670	June 18, 1957	1.4	20.8	15,060	27.4	19,830
1958	1560	16,700	July 10, 1958	1.7	71.7	51,910	65.5	47,450
1959	1630	7,100	May 5, 1959	1.6	62.2	45,030	63.1	45,680
1960	1710	5,900	Mar. 27, 1960	2.5	58.1	42,170	-	-

a observed.

## 8034. Antelope Creek at Lincoln, Nebr.

Location.--Lat 40°49'30", long 96°41'40", SE  $\frac{1}{4}$  NW  $\frac{1}{4}$  sec. 24, T.10 N., R.6 E., on right bank 40 ft downstream from 17th Street bridge in Lincoln and 3,600 ft upstream from mouth.

Drainage area.--12.5 sq mi.

Records available.--July 1958 to September 1960.

Gage.--Water-stage recorder and concrete control. Datum of gage is 1,130.97 ft above mean sea level, datum of 1929. Supplemental wire-weight gage and crest-stage gage  $\frac{1}{2}$  miles upstream from base gage on downstream side of bridge at 27th Street.

Extremes.--1958-60: Maximum discharge, 2,800 cfs July 10, 1958; maximum gage height, 11.99 ft July 10, 1958 (backwater from Salt Creek); no flow Nov. 9, Dec. 7, 21, 1958.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1958	-	-	-	-	-	-	-	-	-	37.9	3.55	13.1	-
1959	0.30	0.71	0.25	0.35	2.68	5.76	3.26	25.9	7.85	1.81	2.35	3.19	4.56
1960	1.91	.42	.90	.76	1.42	16.50	5.21	6.44	7.37	4.92	9.90	3.06	4.93

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1958	-	-	-	-	-	-	-	-	-	2,330	218	777	-
1959	19	42	16	22	149	354	194	1,590	467	111	145	190	3,300
1960	118	25	56	46	82	1,020	310	396	438	302	609	182	3,580

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1958	1560	2,800	July 10, 1958	0	-	-	-	-
1959	1630	1,880	May 18, 1959	0	4.56	3,300	4.73	3,420
1960	1710	1,120	July 17, 1960	.06	4.93	3,580	-	-

## 8035. Salt Creek at Lincoln, Nebr.

Location.--Lat 40°50'50", long 96°40'50", in SW $\frac{1}{4}$  sec. 7, T.10 N., R.7 E., near center of channel on downstream side of pier of bridge on North 27th Street at north edge of Lincoln, 1 mile downstream from Oak Creek.

Drainage area.--710 sq mi, approximately.

Records available.--October 1949 to September 1960.

Gage.--Water-stage recorder for stages above 6.2 ft. Wire-weight gage. Datum of gage is 1,113.9 ft above mean sea level, datum of 1929.

Average discharge.--11 years (1949-60), 222 cfs (160,700 acre-ft per year).

Extremes.--1949-60: Maximum discharge, 28,200 cfs June 2, 1951 (gage height, 26.15 ft); minimum daily, 22 cfs Mar. 15, 1957.

Flood of June 2, 1951, may have been equaled or exceeded in discharge by flood of July 6, 1908, which reached a stage of 33.6 ft. Channel changes since 1908 have materially altered the stage-discharge relation.

Remarks.--Records of water temperatures for the period May to September 1951 and suspended sediment loads for the periods March to September 1951 and March 1952 to September 1954 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	180	49.9	51.5	48.2	154	199	327	463	3,061	248	397	270	451
1952	124	99.6	74.4	137	96.4	472	638	307	765	528	191	72.4	292
1953	56.6	69.5	74.3	86.5	146	109	108	152	76.6	80.9	62.9	47.0	89.0
1954	35.5	56.8	54.8	41.0	67.3	53.5	63.8	215	585	136	58	55.8	162
1955	91.7	53.1	49.6	49.4	211	86.2	95.8	49.9	260	48.8	44.6	77.8	91.9
1956	35.2	36.3	34.9	35.5	44.8	53.1	52.6	72.9	203	353	288	165	115
1957	39.1	41.3	30.6	33.6	39.9	45.5	115	92.7	671	549	180	97.8	162
1958	188	61.6	44.1	51.4	577	264	101	67.6	58.8	1,713	239	346	309
1959	42.8	53.9	56.9	48.0	140	216	123	1,429	371	201	93.2	93.7	241
1960	82.4	83.9	65.8	70.6	105	1,259	432	760	610	259	460	106	360

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	11,070	2,970	3,160	2,960	8,570	12,260	19,450	28,440	182,200	15,250	24,410	16,060	326,800
1952	7,630	5,930	4,570	8,410	5,540	29,030	37,940	18,900	45,520	32,490	11,740	4,310	212,000
1953	3,480	4,140	4,570	5,320	6,240	6,730	6,400	9,370	4,560	4,980	3,670	2,800	64,460
1954	2,180	3,380	3,370	2,520	3,740	3,290	3,800	13,240	34,810	8,370	34,920	3,320	116,900
1955	5,640	3,160	3,050	3,040	11,740	5,300	5,700	3,070	15,460	3,000	2,740	4,630	66,550
1956	2,160	2,160	2,150	2,180	2,570	3,260	3,130	4,480	12,100	21,700	17,730	9,810	83,430
1957	2,410	2,460	1,880	2,070	2,210	2,790	6,850	5,700	59,920	33,770	11,090	5,820	117,000
1958	11,580	3,660	2,710	3,160	32,040	16,220	5,990	4,180	3,500	105,300	14,690	20,600	223,600
1959	2,630	3,210	3,500	2,950	7,780	13,280	7,330	87,870	22,060	12,360	5,730	5,570	174,300
1960	5,060	4,990	4,040	4,340	6,050	77,420	25,700	46,700	36,300	15,920	28,290	6,330	261,200

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean
		Discharge	Date				
1950	-	-	-	-	-	-	172
1951	1210	28,200	June 2, 1951	33	451	326,800	453
1952	1240	15,600	June 27, 1952	50	292	212,000	284
1953	1280	1,660	July 21, 1953	29	89.0	64,460	84.5
1954	1340	11,800	July 17, 1954	26	162	116,900	166
1955	1390	6,060	June 24, 1955	25	91.9	66,550	84.5
1956	1440	5,960	Sept. 5, 1956	23	115	83,430	115
1957	1510	14,400	July 1, 1957	22	162	117,000	177
1958	1560	21,700	July 10, 1958	31	309	223,600	297
1959	1630	11,300	May 6, 1959	23	241	174,300	247
1960	1710	17,200	Mar. 27, 1960	53	360	261,200	-

## 8035.5. Dee Creek at Greenwood, Nebr.

Location.--Lat 40°57'05", long 96°27'00", in NE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 6, T.11 N., R.9 E., on left bank 1,700 ft upstream from bridge on U. S. Highway 6, half a mile southwest of Greenwood, and 1 mile upstream from mouth.

Drainage area.--14.3 sq mi.

Records available.--February to September 1960.

Gage.--Water-stage recorder with tipping-bucket rain gage attachment, and concrete-and-timber control. Datum of gage is 1,082.2 ft above mean sea level, datum of 1929, supplementary adjustment of 1954. Supplemental gage is crest-stage gage 1,700 ft downstream at bridge on U. S. Highway 6.

Extremes.--Maximum discharge during 1960 water year, 1,080 cfs June 20 (gage height, 8.11 ft); minimum daily during period February to September, 0.62 cfs Sept. 16.

Monthly and yearly mean discharge, in cubic feet per second, of Dee Creek at Greenwood, Nebr.

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1960	-	-	-	-	1.52	25.2	6.44	6.53	14.8	9.95	16.4	1.30	-

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1960	-	-	-	-	88	1,550	383	401	882	612	1,010	77	-

8040. Wahoo Creek at Ithaca, Nebr.

Location.--Lat 41°09'50", long 96°32'30", in northeast corner sec.29, T.14 N., R.8 E., on downstream side of county highway bridge at northwest edge of Ithaca.

Drainage area.--270 sq mi, approximately; at site used prior to Oct. 28, 1959, 272 sq mi.

Records available.--October 1949 to September 1960.

Gage.--Wire-weight gage. Datum of gage is 1,118.69 ft above mean sea level, datum of 1929. Prior to Aug. 8, 1950, chain gage and Aug. 8, 1950, to Oct. 27, 1959, wire-weight gage, at site  $\frac{1}{2}$  miles downstream at datum 8.21 ft lower.

Average discharge.--11 years (1949-60), 70.6 cfs (51,110 acre-ft per year).

Extremes.--1949-60: Maximum discharge, 45,300 cfs Aug. 2, 1959 (gage height, 23.22 ft, from floodmark, site and datum then in use), from rating curve extended above 19,000 cfs on basis of logarithmic plotting; minimum daily, 3.3 cfs June 11, 1955. Maximum stage known since about 1910, that of Aug. 2, 1959.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	25.6	20.4	19.2	18.0	55.4	129	63.2	279	699	84.7	131	62.3	132
1952	53.8	38.6	31.2	33.6	73.7	85.5	82.1	76.8	189	60.8	118	40.5	73.5
1953	28.9	29.3	29.6	30.7	51.8	46.5	45.6	48.8	36.0	28.6	23.4	14.9	34.4
1954	17.5	22.0	26.1	17.2	39.8	24.5	23.0	52.2	21.3	25.9	25.1	12.9	25.6
1955	23.9	16.8	17.9	17.0	27.2	28.1	24.4	16.3	150	21.8	9.98	8.71	50.0
1956	8.39	11.3	12.5	12.1	14.7	19.3	19.6	36.8	21.7	10.6	9.27	6.95	15.3
1957	9.31	12.4	12.8	10.7	13.2	16.6	24.6	45.5	277	151	84.4	72.9	61.1
1958	21.1	20.3	19.5	16.8	179	84.7	69.3	22.6	22.3	196	259	83.2	82.3
1959	17.9	17.8	18.2	16.0	41.2	47.3	51.3	286	135	115	640	37.0	120
1960	44.8	34.9	29.3	26.9	32.6	317	209	353	306	88.4	154	60.9	139

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1,580	1,210	1,180	1,100	3,070	7,920	3,760	17,150	41,590	5,210	8,060	3,710	95,540
1952	3,310	2,300	1,920	2,070	4,240	5,260	4,890	4,720	11,250	3,740	7,250	2,410	53,560
1953	1,780	1,740	1,820	1,890	2,870	2,860	2,720	3,000	2,140	1,760	1,440	889	24,910
1954	1,080	1,310	1,600	1,060	2,210	1,500	1,370	3,210	1,270	1,590	1,540	770	18,510
1955	1,470	998	1,100	1,050	1,510	1,730	1,450	1,000	8,910	1,340	614	518	21,690
1956	516	673	771	746	844	1,180	1,160	2,260	1,290	650	570	414	11,070
1957	572	735	789	658	734	1,020	1,460	2,800	16,490	9,290	5,190	4,480	44,220
1958	1,300	1,210	1,200	1,040	9,950	5,210	4,120	1,390	1,320	12,040	15,910	4,950	59,620
1959	1,100	1,060	1,120	984	2,250	2,910	3,060	17,600	8,060	7,070	59,360	2,200	86,800
1960	2,760	2,080	1,800	1,650	1,870	19,510	12,440	21,730	18,230	5,450	9,480	3,630	100,600

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	61.0	44,150
1951	1210	18,900	May 31, 1951	15	132	95,540	137	99,100
1952	1240	4,900	June 27, 1952	422	73.5	53,360	70.5	51,170
1953	1260	423	July 27, 1953	13	34.4	24,910	32.5	25,580
1954	1340	1,040	July 2, 1954	12	25.6	18,510	25.0	18,090
1955	1390	4,070	June 25, 1955	3.3	30.0	21,690	27.7	20,080
1956	1440	1,620	May 13, 1956	3.5	15.3	11,070	15.5	11,210
1957	1510	4,380	June 17, 1957	4.6	61.1	44,220	63.3	45,830
1958	1560	8,160	Aug. 6, 1958	11	82.3	59,620	81.8	59,190
1959	1630	45,300	Aug. 2, 1959	13	120	86,800	125	90,160
1960	1710	7,000	June 20, 1960	19	139	100,600	-	-

† Not previously published.

## 8045. Silver Creek at Ithaca, Nebr.

Location.--Lat 41°09'50", long 96°31'25", in NE $\frac{1}{4}$  sec.28, T.14 N., R.8 E., near center of span on downstream side of bridge on county road, half a mile east of Ithaca.

Drainage area.--72 sq mi, approximately.

Records available.--October 1949 to September 1958, water year 1958-60 (annual maximum).

Gage.--Wire-weight gage and crest-stage gage. Datum of gages is 1,120.96 ft above mean sea level (levels by Corps of Engineers). Prior to Aug. 8, 1950, staff gage at same site and datum.

Average discharge.--9 years (1949-58), 9.66 cfs (6,990 acre-ft per year).

Extremes.--1949-60: Maximum discharge, 21,600 cfs Aug. 2, 1959 (gage height, 16.92 ft), from slope-area measurement.

1949-58: No flow May 4, 1956 (caused by construction half a mile upstream).

Flood of Aug. 2, 1959, is highest known since at least 1900, from information by local residents.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	5.79	4.34	4.19	4.52	14.1	34.1	11.3	35.2	62.5	14.7	18.1	11.2	18.3
1952	8.52	7.66	6.18	6.73	9.24	14.0	13.3	11.6	19.1	11.4	18.6	8.96	11.3
1953	7.35	7.60	7.66	7.69	9.00	8.88	8.88	7.74	7.01	5.85	5.91	4.63	7.36
1954	4.72	5.84	6.11	4.74	5.92	5.59	5.12	8.34	5.25	4.39	4.90	3.86	5.40
1955	4.89	4.55	4.55	3.86	5.70	5.38	4.67	4.08	16.1	4.35	3.20	3.10	5.35
1956	2.96	2.99	3.38	4.53	3.64	3.65	3.25	9.67	3.13	2.24	3.76	4.16	3.95
1957	1.87	2.47	2.66	2.79	2.51	3.04	3.86	4.01	35.3	9.10	13.59	15.4	7.18
1958	3.55	3.54	3.23	3.33	29.4	11.8	15.0	3.86	3.64	22.8	81.4	7.69	15.8
1959													
1960													

† Corrected.

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	356	258	258	278	780	2,100	671	2,170	3,720	904	1,110	669	13,270
1952	524	456	380	414	532	862	791	714	1,140	702	1,140	533	8,190
1953	452	452	483	473	500	546	529	476	417	360	364	275	5,330
1954	290	348	376	291	329	344	305	513	313	270	301	230	3,910
1955	301	271	279	237	316	331	278	251	957	268	197	185	3,870
1956	182	178	208	278	209	224	193	594	166	138	231	248	2,870
1957	115	147	164	172	139	187	230	247	2,100	559	221	918	5,200
1958	219	211	198	205	1,630	727	894	237	217	1,400	5,010	458	11,410
1959													
1960													

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30						Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet		Mean		Acre-feet	
		Discharge	Date								
1950	-	-	-	-	-	-	-	11.5	-	8,340	-
1951	1210	2,450	May 31, 1951	3.5	18.3	13,270		19.0		13,760	
1952	1240	471	June 27, 1952	4.7	11.3	8,190		11.3		8,220	
1953	1280	a13	Feb. 11, 1953	3.9	7.36	5,330		6.84		4,950	
1954	1340	210	May 23, 1954	2.2	5.40	3,910		5.17		3,750	
1955	1390	312	June 24, 1955	2.6	5.35	3,870		4.96		3,590	
1956	1440	231	May 13, 1956	0	3.95	2,870		3.76		2,730	
1957	1510	626	Sept. 2, 1957	1.4	7.18	5,200		7.46		5,400	
1958	1560	*3,500	Aug. 6, 1958	1.5	15.8	11,410		-		-	
1959	1710	21,600	Aug. 2, 1959	-	-	-		-		-	
1960	1710	2,150	June 10, 1960	-	-	-		-		-	

\* Revised.  
a Observed.

8050. Salt Creek near Ashland, Nebr.

Location.--Lat 41°02'50", long 96°20'30", in SW $\frac{1}{4}$  sec.31, T.13 N., R.10 E., near center of channel on downstream side of pier of bridge on U. S. Highway 6, 1 mile east of Ashland and 2 $\frac{1}{2}$  miles upstream from mouth.

Drainage area.--1,640 sq mi, approximately.

Records available.--October 1947 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 1,047.04 ft above mean sea level, datum of 1929. Sept. 7, 1947, to Mar. 3, 1949, water-stage recorder and Mar. 4, 1949, to Aug. 6, 1956, wire-weight gage, at same site and datum.

Average discharge.--13 years (1947-60), 477 cfs (345,300 acre-ft per year).

Extremes.--1947-60: Maximum discharge, 46,200 cfs June 2, 1951 (gage height, 14.72 ft); minimum daily, 21 cfs Jan. 10, 1957.  
Flood of June 13, 1947, reached a stage of 15.13 ft, from floodmark (discharge, 21,000 cfs).

Remarks.--Some overflow from Platte River may enter Salt Creek above station when Platte River is in flood.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	361	123	102	110	332	*653	589	815	5,484	1,010	933	493	912
1952	279	205	161	276	306	944	1,312	662	1,255	815	582	183	581
1953	143	162	212	214	325	240	253	271	204	157	122	73.7	197
1954	91.9	120	120	111	168	128	125	425	*733	*199	*737	114	*258
1955	162	99.5	94.0	106	*318	196	196	111	758	102	63.5	92.7	*190
1956	55.0	68.1	81.8	85.9	89.8	98.0	75.5	141	*236	469	381	231	*168
1957	54.8	63.6	85.1	66.8	99.6	126	219	242	1,415	1,168	605	271	369
1958	281	159	121	137	1,017	629	278	137	111	2,539	1,153	756	611
1959	148	128	104	100	312	462	330	2,827	546	466	1,024	205	542
1960	204	217	193	156	213	2,329	1,126	1,471	1,595	588	1,008	266	785

\* Revised; revised daily discharge for the periods thus affected are available and will be published in a future water-supply paper.

† Corrected.

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	22,180	7,320	6,260	6,740	18,440	39,070	35,020	50,080	326,300	62,130	57,380	29,320	660,200
1952	17,130	12,180	9,900	17,000	17,600	58,070	78,080	40,700	74,660	50,080	35,770	10,890	422,100
1953	8,790	9,680	13,030	13,160	18,040	14,780	15,070	16,640	12,110	9,670	7,490	4,590	142,800
1954	5,650	7,120	7,400	6,850	10,420	7,840	7,450	26,110	*43,610	*12,220	*45,290	6,780	*156,700
1955	9,970	5,920	5,780	6,520	*17,650	12,050	11,650	6,850	45,110	6,270	3,910	5,520	*137,200
1956	3,380	4,050	5,030	5,280	5,160	6,020	4,490	8,680	*14,050	28,830	23,400	13,720	*122,100
1957	3,370	3,790	5,230	4,110	5,530	7,740	13,020	14,910	84,230	71,800	37,220	16,140	267,100
1958	17,910	9,480	7,470	8,400	56,480	38,680	16,570	8,450	6,580	56,100	70,870	44,990	442,000
1959	9,070	7,500	6,370	6,180	17,340	28,400	19,610	61,500	32,470	28,660	62,960	12,200	392,300
1960	12,510	12,900	11,880	9,600	13,110	43,200	67,030	90,430	94,920	36,180	61,970	15,840	569,600

\* Revised; see footnote to preceding table.

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	301	217,700
1951	1210	46,200	June 2, 1951	57	912	660,200	917	663,700
1952	1240	18,900	June 27, 1952	78	581	422,100	571	414,300
1953	1280	a1,550	(b)	40	197	142,800	182	131,500
1954	1340	*15,200	June 17, 1954	64	*258	*186,700	*260	*188,200
1955	1590	15,600	June 24, 1955	43	*190	*137,200	*177	*128,000
1956	1440	c8,530	July 2, 1956	39	*168	*122,100	*168	*122,000
1957	1510	19,500	July 2, 1957	21	369	267,100	400	289,600
1958	1560	21,600	July 11, 1958	54	611	442,000	594	430,100
1959	1630	19,500	May 5, 1959	67	542	392,300	562	406,600
1960	1710	23,100	Mar. 29, 1960	116	785	569,600	-	-

\* Revised.

a About.

b July 21 or 22, 1953.

c Observed.

## 8055. Platte River at Louisville, Nebr.

Location.--Lat 41°00'50", long 96°09'20", in NW¼ sec. 14, T. 12 N., R. 11 E., near right bank on downstream side of bridge on State Highway 50, three-quarters of a mile north of Louisville.

Drainage area.--85,500 sq mi, approximately.

Records available.--May 1953 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 1,007.10 ft above mean sea level, datum of 1929. Oct. 5, 1956, to Apr. 3, 1960, at site 50 ft upstream at same datum.

Average discharge.--7 years (1953-60), 5,029 cfs (3,641,000 acre-ft per year).

Extremes.--1953-60: Maximum discharge, 124,000 cfs Mar. 30, 1960 (gage height, 12.45 ft); minimum daily, 240 cfs Sept. 3, 1955.  
Maximum discharge known since at least 1881, that of Mar. 30, 1960.

Remarks.--Natural flow of stream affected by storage reservoirs, power developments, diversions and ground-water withdrawals for irrigation, and return flow from irrigated areas.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	-	-	-	-	-	-	-	-	-
1952	-	-	-	-	-	-	-	-	-	-	-	-	-
1953	-	-	-	-	-	-	-	-	6,540	2,595	1,997	1,594	-
1954	2,028	4,093	4,629	2,264	7,917	6,023	5,526	6,819	8,410	1,793	3,149	1,845	4,509
1955	2,872	3,577	3,520	2,767	3,237	7,317	5,048	2,548	5,459	2,262	519	975	3,338
1956	2,192	2,234	1,456	3,126	3,493	6,409	4,327	3,418	3,300	2,031	1,498	1,161	2,885
1957	1,604	2,615	2,308	1,822	3,572	4,698	5,120	7,757	13,543	6,518	2,215	3,514	4,615
1958	3,926	4,591	4,440	3,417	6,918	9,145	10,540	6,070	5,232	10,332	7,199	3,241	6,253
1959	2,485	3,530	2,810	2,461	3,481	9,412	8,240	12,842	5,922	4,438	5,805	2,175	5,319
1960	3,596	4,417	4,354	2,766	6,106	13,710	21,130	14,630	15,940	6,093	4,012	2,898	8,286

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	-	-	-	-	-	-	-	-	-
1952	-	-	-	-	-	-	-	-	-	-	-	-	-
1953	-	-	-	-	-	-	-	-	389,100	159,600	122,800	94,830	-
1954	124,700	243,600	284,600	139,200	439,700	370,300	328,800	419,300	500,400	110,200	193,600	109,800	3,264,000
1955	176,600	212,800	216,400	170,100	179,800	449,900	300,400	156,700	324,800	139,100	31,930	57,990	2,417,000
1956	134,800	133,000	89,530	192,200	200,900	594,100	257,500	210,200	196,400	124,900	92,130	69,070	2,095,000
1957	98,640	155,600	141,900	112,000	198,400	301,200	304,600	476,900	805,800	400,800	136,200	209,100	3,341,000
1958	241,400	273,200	273,000	210,100	584,200	562,300	627,200	373,200	311,300	635,300	442,700	192,900	4,527,000
1959	152,800	210,100	172,800	151,300	193,300	578,700	490,300	789,600	352,400	272,900	356,900	129,400	3,850,000
1960	221,100	262,800	267,700	170,100	551,200	843,200	1,258,000	899,400	948,200	374,700	246,700	172,500	6,016,000

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950								
1951								
1952								
1953		a33,300	May 12, 1953	1,240	-	-	-	-
1954	1280	25,800	June 19, 1954	756	4,509	3,264,000	4,444	3,217,000
1955	1390	28,100	Mar. 11, 1955	240	3,338	2,417,000	2,995	2,168,000
1956	1440	10,900	May 31, 1956	388	2,885	2,095,000	2,939	2,134,000
1957	1510	71,000	June 17, 1957	300	4,615	3,341,000	5,156	3,733,000
1958	1560	54,700	Feb. 28, 1958	1,210	6,253	4,527,000	5,905	4,275,000
1959	1630	51,500	Aug. 3, 1959	922	5,319	3,850,000	5,617	4,066,000
1960	1710	124,000	Mar. 30, 1960	760	8,286	6,016,000	-	-

a Maximum during period May to September.

## WAUBONSIE CREEK BASIN

8060. Waubonsie Creek near Bartlett, Iowa

Location.--Lat 40°53'05", long 95°44'45", in NE 1/4 sec. 11, T. 70 N., R. 43 W., on left pier on downstream side of highway bridge, 2.5 miles east of Bartlett and 3.5 miles west of Tabor.

Drainage area.--30.4 sq mi (revised).

Records available.--January 1946 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 936.96 ft above mean sea level, datum of 1929. Prior to June 16, 1951, wire-weight gage and Jan. 10, 1946, to May 8, 1950, supplementary high-stage water-stage recorder, at same site and datum.

Average discharge.--14 years (1946-60), 11.7 cfs (8,470 acre-ft per year).

Extremes.--1946-60: Maximum discharge, 14,500 cfs May 8, 1950 (gage height, 37.8 ft, from floodmark), from rating curve extended above 800 cfs on basis of slope-area measurements at gage heights 32.8 and 37.8 ft; no flow at times in 1954-59.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	9.59	5.11	3.21	3.16	16.6	22.2	13.0	16.6	23.8	22.9	18.4	11.2	13.8
1952	12.3	7.47	7.09	11.4	8.33	18.9	19.1	12.5	12.6	5.89	23.9	5.75	12.1
1953	4.19	5.74	7.27	6.96	7.92	8.31	7.42	6.38	14.1	6.77	3.42	1.52	6.65
1954	1.98	3.23	3.75	1.72	9.34	4.01	4.42	19.3	13.7	.71	52.2	3.70	9.89
1955	3.69	2.86	3.24	3.31	4.42	24.6	3.75	3.33	4.24	.29	.07	22.3	6.33
1956	.74	1.15	.53	1.01	1.86	5.76	2.63	1.87	3.53	39.9	26.6	1.75	7.37
1957	.06	.63	.80	.23	1.58	3.30	3.85	10.6	43.3	9.79	1.57	4.70	6.67
1958	1.79	1.99	1.93	1.55	4.71	4.45	5.24	2.06	.55	54.2	12.3	19.5	9.25
1959	3.36	2.79	1.48	1.33	12.1	13.3	5.09	42.6	4.99	11.9	19.3	11.3	10.8
1960	6.46	3.53	3.40	5.73	4.50	15.7	16.4	11.5	11.6	7.72	40.2	20.7	12.3

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	590	304	197	194	924	1,360	774	1,020	1,420	1,410	1,130	666	9,990
1952	756	444	436	702	479	1,150	1,130	769	750	362	1,470	342	8,800
1953	257	341	447	428	440	511	442	392	837	417	210	90	4,810
1954	122	192	231	106	519	247	263	1,180	817	44	3,210	220	7,150
1955	227	170	199	204	245	1,510	223	206	252	18	4.4	1,320	4,580
1956	46	68	32	62	107	354	156	115	210	2,450	640	104	5,340
1957	3.6	38	49	14	88	203	229	650	2,580	602	97	280	4,850
1958	110	116	119	95	262	274	312	127	33	3,350	755	1,160	6,700
1959	207	166	91	82	671	821	305	2,620	297	731	1,180	671	7,840
1960	397	210	209	352	259	963	974	707	686	475	470	1,230	8,930

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30							Calendar year			
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff		
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet	
1950	-	-	-	-	-	-	-	-	27.3	12.20	-	19,770
1951	1210	2,840	July 3, 1951	1.0	13.8	0.454	6.16	9,990	14.5	6.50	-	10,530
1952	1240	2,200	Aug. 8, 1952	2.7	12.1	.398	5.43	8,800	11.3	5.07	-	8,210
1953	1280	1,270	June 27, 1953	.8	6.65	.219	2.98	4,810	5.96	2.67	-	4,310
1954	1340	3,560	Aug. 23, 1954	0	9.89	.325	4.42	7,150	9.96	4.44	-	7,200
1955	1390	1,860	Sept. 29, 1955	0	6.33	.208	2.83	4,580	5.71	2.56	-	4,130
1956	1440	5,200	July 15, 1956	0	7.37	.242	3.30	5,340	7.29	3.26	-	5,290
1957	1510	2,430	June 7, 1957	0	6.67	.219	2.97	4,850	7.02	3.13	-	5,090
1958	1560	2,360	July 19, 1958	0	9.25	.304	4.14	6,700	9.42	4.22	-	6,810
1959	1630	3,760	May 18, 1959	0	10.8	.355	4.84	7,840	11.3	5.05	-	8,190
1960	1710	2,040	Aug. 18, 1960	.9	12.3	.405	5.50	8,930	-	-	-	-



8065. Weeping Water Creek at Union, Nebr.

Location.--Lat 40°47'35", long 95°54'40", in NW¼ sec.36, T.10 N., R.13 E., near left bank on downstream side of pier of bridge on U. S. Highways 73 and 75, 1½ miles southeast of Union and 2½ miles downstream from South Branch Weeping Water Creek.

Drainage area.--238 sq mi.

Records available.--Februray 1950 to September 1960.

Gage.--Water-stage recorder for stages above 7.9 ft; wire-weight gage. Datum of gage is 929.72 ft above mean sea level, datum of 1929. Prior to May 14, 1951, chain or wire-weight gage at site 2 miles upstream at different datum.

Average discharge.--10 years (1950-60), 75.9 cfs (54,950 acre-ft per year).

Extremes.--1950-60: Maximum discharge, 60,300 cfs May 9, 1950 (gage height, 26.80 ft, from floodmark, present site and datum), from rating curve extended above 12,000 cfs on basis of measurement of peak flow through bridges and over highway embankment; minimum daily, 0.1 cfs Sept. 10-12, 14, 15, 17, 18, 1955.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	110	23.5	18.6	15.5	77.8	112	187	444	751	467	255	152	218
1952	83.6	58.3	45.7	81.9	57.0	142	209	149	107	108	150	40.2	103
1953	31.4	34.5	55.9	52.8	68.0	49.5	48.8	39.6	25.2	17.3	11.1	2.25	36.2
1954	3.22	9.78	9.27	5.15	26.5	13.8	14.9	118	22.7	1.49	0.02	11.3	36.8
1955	33.1	10.8	20.3	13.7	23.0	37.1	23.2	12.7	103	9.46	.703	16.0	25.2
1956	1.19	1.63	3.14	2.20	4.26	7.57	4.60	3.15	2.39	37.8	131	37.1	19.9
1957	.55	1.26	2.09	2.01	4.16	7.79	23.8	46.6	164	116	32.6	12.4	34.5
1958	14.8	14.3	13.6	24.7	55.0	52.0	35.7	19.9	7.82	146	283	160	69.1
1959	68.7	24.4	22.5	19.3	162	95.2	60.5	541	103	48.8	46.1	38.5	103
1960	42.5	32.3	29.4	34.7	51.3	282	278	126	174	85.1	155	62.3	113

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	6,770	1,400	1,150	955	4,320	6,900	11,140	27,310	44,660	28,680	15,660	9,070	158,000
1952	5,140	3,470	2,810	5,040	3,280	8,710	12,420	9,170	6,360	6,650	9,250	2,390	74,700
1953	1,930	2,050	3,440	3,250	3,780	3,040	2,910	2,440	1,500	1,070	684	134	26,230
1954	198	582	570	317	1,470	847	889	7,290	1,350	91	12,390	674	26,670
1955	2,040	645	1,250	845	1,280	2,280	1,380	783	6,150	582	43	949	18,230
1956	73	97	193	135	245	465	274	194	142	2,310	8,080	†2,210	14,420
1957	34	75	129	124	231	479	1,420	2,670	9,760	7,120	2,000	735	24,980
1958	908	853	836	1,520	3,050	3,200	2,130	1,220	466	8,950	17,380	9,540	50,050
1959	4,220	1,450	1,360	1,190	9,020	5,850	3,600	33,250	6,150	3,000	2,630	2,290	74,230
1960	2,610	1,920	1,810	2,130	2,950	17,320	16,540	7,740	10,360	5,230	9,540	3,710	81,860

† Corrected.

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	-	-
1951	1210	20,600	June 2, 1951	8.5	218	158,000	221	160,100
1952	1240	3,130	Aug. 14, 1952	27	103	74,700	97.4	79,700
1953	1280	203	July 4, 1953	1.4	36.2	26,230	27.8	20,160
1954	1340	9,000	May 16, 1954	.7	36.8	26,670	40.4	29,250
1955	1390	2,660	June 25, 1955	.1	25.2	18,230	20.2	†14,660
1956	1440	3,260	Aug. 18, 1956	.4	19.9	14,420	19.7	14,290
1957	1510	3,760	June 17, 1957	.2	34.5	24,980	37.7	27,340
1958	1560	5,400	Aug. 6, 1958	1.2	69.1	50,050	75.3	54,510
1959	1650	5,520	May 18, 1959	14	103	74,230	102	73,520
1960	1710	4,200	Mar. 29, 1960	18	113	81,860	-	-

† Corrected.

## 8070. Missouri River at Nebraska City, Nebr.

Location.--Lat 40°40'30", long 95°50'10", in NW $\frac{1}{4}$ SW $\frac{1}{4}$  sec.10, T.8 N., R.14 E., on downstream side of pier near center of Waubensie Highway Bridge at Nebraska City.

Drainage area.--414,400 sq mi, approximately.

Records available.--August 1929 to September 1960. Gage-height records collected in this vicinity August 1878 to December 1899 are contained in reports of Missouri River Commission.

Gage.--Water-stage recorder. Datum of gage is 903.94 ft above mean sea level, datum of 1929. Aug. 1, 1878, to Oct. 30, 1888, staff gage 0.5 mile downstream and Oct. 31, 1888, to Dec. 31, 1899, cable gage on railroad bridge 50 ft downstream, at datum 491.80 ft lower (St. Louis directrix). Aug. 12, 1929, to June 26, 1930, chain gage on railroad bridge and June 27, 1930, to Oct. 21, 1931, wire-weight gage, at present site and datum.

Average discharge.--31 years (1929-60), 33,880 cfs (24,530,000 acre-ft per year).

Extremes.--1929-60: Maximum discharge, 414,000 cfs Apr. 19, 1952; maximum gage height, 27.66 ft Apr. 18, 1952; minimum discharge, 1,600 cfs Dec. 31, 1946 (discharge measurement); minimum gage height observed, 0.75 ft Jan. 11, 1957, result of freezeup.

Remarks.--Flow partly regulated by upstream main stem reservoirs. Records of chemical analyses for the period January 1951 to September 1960 and water temperatures for the period May 1951 to September 1960 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	39,660	34,040	14,220	20,880	21,440	47,070	98,150	63,780	89,920	70,660	63,270	63,200	52,230
1952	53,860	47,550	21,450	21,400	44,520	48,960	199,600	76,060	68,950	48,510	36,260	33,910	58,180
1953	34,300	30,260	15,000	19,090	25,160	50,990	41,710	54,770	80,160	46,640	36,910	35,030	39,370
1954	34,920	24,640	18,830	12,070	24,140	33,940	35,330	37,530	53,090	34,990	35,890	34,150	31,630
1955	36,080	18,880	16,400	12,170	14,800	29,950	32,540	32,470	35,930	33,800	29,870	35,660	27,450
1956	35,360	17,350	10,510	12,090	14,110	29,490	34,010	34,040	33,780	33,220	35,450	34,830	27,060
1957	30,370	16,250	10,560	10,160	12,780	15,310	21,850	35,450	45,820	37,920	34,120	33,200	25,370
1958	34,670	19,370	14,200	12,690	15,920	22,360	35,590	32,980	33,530	40,930	38,030	32,560	27,810
1959	32,280	17,640	12,050	13,250	17,270	23,070	33,040	43,970	37,970	33,260	37,390	33,930	27,980
1960	33,010	19,230	14,520	11,610	16,080	23,960	81,660	46,640	43,000	35,150	37,660	34,260	33,030

Monthly and yearly discharge, in thousands of acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	2,439	2,025	874	1,284	1,191	2,854	5,841	3,922	5,351	4,345	3,890	3,760	37,820
1952	3,312	2,830	1,319	1,316	2,561	5,011	11,880	4,677	4,103	2,983	2,229	2,018	42,240
1953	2,109	1,801	922	1,174	1,397	3,135	2,482	3,368	4,770	2,991	2,269	2,085	28,500
1954	2,147	1,466	1,158	742	1,341	2,087	2,102	2,308	3,159	2,151	2,207	2,032	22,900
1955	2,218	1,123	1,008	748	822	1,842	1,936	1,997	2,138	2,078	1,837	2,122	19,870
1956	2,174	1,033	646	743	811	1,813	2,024	2,093	2,010	2,043	2,180	2,073	19,640
1957	1,867	967	649	624	709	941	1,500	2,180	2,726	2,325	2,098	1,976	18,360
1958	2,132	1,153	872	780	884	1,375	2,118	2,028	1,995	2,517	2,339	1,937	20,130
1959	1,985	1,049	740	814	959	1,418	1,966	2,704	2,259	2,045	2,299	2,019	20,260
1960	2,030	1,144	893	713	924	1,473	4,859	2,868	2,558	2,161	2,318	2,038	23,980

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	45,940	33,260,000
1951	1210	163,000	Mar. 29, 1951	5,800	52,230	37,820,000	55,170	39,940,000
1952	1240	414,000	Apr. 19, 1952	7,500	58,180	42,240,000	54,560	39,610,000
1953	1280	121,000	June 27, 1953	11,400	39,370	28,500,000	39,290	28,440,000
1954	1340	123,000	June 21, 1954	6,600	31,630	22,900,000	31,050	22,480,000
1955	1390	65,000	Mar. 14, 1955	8,250	27,450	19,870,000	26,760	19,370,000
1956	1440	54,000	Mar. 19, 1956	4,900	27,060	19,640,000	26,550	19,270,000
1957	1510	116,000	June 18, 1957	4,320	25,370	18,360,000	26,300	19,040,000
1958	1560	85,000	Aug. 6, 1958	7,240	27,810	20,130,000	27,280	19,750,000
1959	1630	83,400	Aug. 3, 1959	6,000	27,980	20,260,000	28,390	20,550,000
1960	1710	178,000	Apr. 5, 1960	5,520	33,030	23,980,000	-	-

## 8074.1. West Nishnabotna River at Hancock, Iowa

Location.--Lat 41°23'28", long 95°22'10", in NE $\frac{1}{4}$  sec.18, T.76 N., R.39 W., on downstream side of bridge on County Highway C, 0.3 mile west of Hancock school and 2.0 miles downstream from Jim Creek.

Drainage area.--609 sq mi.

Records available.--October 1959 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 1,085.94 ft above mean sea level, datum of 1929.

Extremes.--1959-60: Maximum discharge, 9,320 cfs Mar. 29, 1960 (gage height, 13.64 ft), from rating curve extended above 6,000 cfs by logarithmic plotting; minimum daily, 23 cfs Jan. 6, 1960.

## Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1960	43.3	59.5	64.5	39.2	44.1	439	627	466	213	290	437	176	242

## Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1960	2,660	3,540	3,960	2,410	2,540	26,980	37,320	28,660	12,700	17,840	26,870	10,470	176,000

## 8080. Mule Creek near Malvern, Iowa

Location.--Lat 40°56'40", long 95°35'40", in NW $\frac{1}{4}$  sec.20, T.71 N., R.41 W., on left bank 10 ft downstream from highway bridge, 1.8 miles upstream from mouth, and 4.4 miles south of Malvern.

Drainage area.--10.6 sq mi.

Records available.--June 1954 to September 1960.

Gage.--Water-stage recorder and concrete control. Datum of gage is 974.20 ft above mean sea level (levels by Soil Conservation Service).

Average discharge.--6 years (1954-60), 3.70 cfs (2,680 acre-ft per year).

Extremes.--1954-60: Maximum discharge, 2,070 cfs Aug. 21, 1954 (gage height, 15.84 ft), from rating curve extended above 510 cfs on basis of slope-area measurement of peak flow; no flow Jan. 20-25, 1956.

Remarks.--Records of suspended sediment loads for the period July 1954 to September 1960 and water temperatures for the period October 1958 to September 1960 are published in reports of Geological Survey.

## Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952													
1953													
1954										0.710	16.2	2.17	-
1955	2.41	2.07	1.26	0.968	4.92	6.94	2.15	1.26	0.941	.156	.157	1.55	2.05
1956	.140	.198	.121	.139	.385	.929	.277	.238	.101	13.3	7.14	.427	1.97
1957	.286	.891	.523	.271	.385	1.29	1.56	9.64	12.2	5.42	.731	1.12	2.87
1958	1.47	1.64	.949	.828	1.35	2.13	2.10	1.08	.679	17.2	3.17	5.25	3.18
1959	1.47	1.23	1.00	.917	4.93	5.96	3.61	27.3	4.68	2.54	5.53	4.96	5.37
1960	3.56	2.84	2.62	3.09	3.75	8.05	12.7	8.35	8.99	4.72	12.3	10.1	6.75

## Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952													
1953													
1954										44	999	129	-
1955	148	123	78	60	273	427	128	78	56	9.6	9.7	92	1,480
1956	8.6	12	7.5	8.5	22	57	16	15	6.0	815	439	25	1,430
1957	18	53	32	17	21	79	93	593	726	333	45	66	2,080
1958	90	98	58	51	75	131	125	66	40	1,060	195	313	2,300
1959	90	73	62	56	274	367	215	1,680	278	156	340	295	3,690
1960	219	169	161	190	216	495	757	513	535	290	753	602	4,900

## Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30						Calendar year			
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff	
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet
1950											
1951											
1952											
1953											
1954	1440	2,070	Aug. 21, 1954	-	-	-	-	-	-	-	-
1955	1440	411	Mar. 1, 1955	0.08	2.05	0.193	2.64	1,480	1.60	2.07	1,160
1956	1440	1,990	July 15, 1956	0	1.97	.186	2.55	1,430	2.06	2.68	1,510
1957	1510	1,310	May 29, 1957	.10	2.87	.271	3.67	2,080	3.07	3.92	2,220
1958	1560	1,180	July 30, 1958	.14	3.18	.300	4.05	2,300	3.15	4.02	2,280
1959	1630	1,180	May 18, 1959	.80	5.37	.507	6.87	3,890	5.81	7.44	4,210
1960	1710	565	Aug. 28, 1960	1.6	6.75	.637	8.67	4,900	-	-	-

a Maximum during period June to September.

## 8082. Spring Valley Creek near Tabor, Iowa

Location.--Lat 40°54'35", long 95°36'00", in SW  $\frac{1}{4}$  NE  $\frac{1}{4}$  sec.31, T.71 N., R.41 W., on left bank 20 ft downstream from highway bridge, 1.5 miles upstream from mouth, and 4.0 miles northeast of Tabor.

Drainage area.--7.65 sq mi.

Records available.--October 1955 to September 1960.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 975 ft (from topographic map).

Average discharge.--5 years (1955-60), 2.62 cfs (1,900 acre-ft per year).

Extremes.--1955-60: Maximum discharge, 4,150 cfs July 30, 1958 (gage height, 15.48 ft), from rating curve extended above 210 cfs on basis of slope-area measurement at gage height 13.5 ft; no flow at times in 1955-58.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1956	0.23	0.25	0.11	0.27	0.74	1.21	0.59	0.40	0.13	5.64	2.35	0.20	1.02
1957	.15	.49	.30	.14	.28	.98	1.18	5.12	5.06	1.88	.31	.62	1.38
1958	.80	.77	.77	.78	.69	1.32	.94	.69	.34	12.8	2.61	2.60	2.12
1959	.90	.89	.82	.74	3.91	4.58	3.28	12.4	3.44	2.83	3.92	3.25	3.42
1960	3.35	2.59	2.41	2.70	2.66	6.94	10.6	5.45	5.83	3.63	8.80	5.18	5.01

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1956	14	15	6.5	16	43	74	35	25	7.7	347	145	12	740
1957	9.1	29	19	8.7	15	60	69	315	301	115	19	37	997
1958	49	46	47	48	38	81	56	43	20	788	160	155	1,530
1959	55	53	50	45	217	282	195	762	205	174	241	193	2,470
1960	206	154	148	166	153	426	631	335	347	223	541	308	3,640

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30						Calendar year					
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff			
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet		
1956	1510	2,310	July 15, 1956	0	1.02	0.133	1.82	740	1.04	1.86	762		
1957	1510	1,480	May 29, 1957	0	1.38	.180	2.45	997	1.50	2.66	1,080		
1958	1560	4,150	July 30, 1958	0	2.12	.277	3.75	1,530	2.14	3.79	1,550		
1959	1630	1,730	May 18, 1959	.4	3.42	.447	6.06	2,470	3.90	6.91	2,820		
1960	1710	1,570	Aug. 28, 1960	1.3	5.01	.655	8.93	3,640	-	-	-		

## 8085. West Nishnabotna River at Randolph, Iowa

Location.--Lat 40°52'25", long 95°34'40", in NE $\frac{1}{4}$  sec.17, T.70 N., R.41 W., on downstream side of bridge on State Highway 184, 0.3 mile downstream from Deer Creek, 0.5 mile west of Randolph, and 16.2 miles upstream from confluence with East Nishnabotna River.

Drainage area.--1,386 sq mi (revised).

Records available.--June 1948 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 932.99 ft above mean sea level, unadjusted. Prior to Aug. 26, 1955, wire-weight gage and June 30, 1949, to Aug. 25, 1955, supplementary water-stage recorder, operating above gage height 8.4 ft at same site and datum.

Average discharge.--12 years (1948-60), 490 cfs (354,700 acre-ft per year).

Extremes.--1948-60: Maximum discharge, 29,600 cfs May 9, 1950 (gage height, 21.93 ft); maximum gage height, 24.8 ft Mar. 5, 1949, from graph based on gage readings (ice jam); minimum daily discharge, 10 cfs Dec. 17-21, 1955.

Flood in June 1947 reached a stage of about 24 ft, from information by local residents (discharge not determined).

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	263	145	84.5	79.5	313	1,309	1,495	2,785	2,44	1,918	1,279	601	1,130
1952	570	357	211	365	570	1,129	1,173	931	1,952	1,043	1,390	701	866
1953	341	280	253	253	846	761	743	853	822	387	208	94.3	484
1954	86.5	116	82.7	31.5	210	142	162	230	377	71.2	177	164	204
1955	229	114	128	96.8	247	867	551	135	165	411	30.1	41.0	235
1956	27.1	33.6	20.6	17.4	19.4	67.8	42.7	217	65.6	519	300	388	144
1957	65.5	89.4	35.0	18.9	83.8	110	127	245	1,344	204	105	143	213
1958	111	180	180	130	688	365	260	152	145	1,576	840	710	444
1959	201	172	117	70.5	485	697	424	1,874	856	568	377	181	503
1960	171	161	159	181	181	1,192	1,489	986	802	694	2,158	741	659

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	16,170	8,640	5,200	4,890	17,400	80,480	88,940	171,200	193,100	117,900	78,680	35,740	818,300
1952	35,020	21,270	12,950	22,430	32,770	69,410	69,780	57,280	116,200	64,140	85,440	41,710	628,400
1953	20,980	16,640	15,550	15,580	46,960	46,800	44,240	52,450	48,910	23,820	12,790	5,610	350,300
1954	5,320	6,870	5,090	1,940	11,640	8,740	9,860	14,180	22,440	4,380	47,770	9,740	147,800
1955	14,080	6,760	7,880	5,950	13,730	53,320	20,900	8,280	9,830	25,290	1,850	2,440	170,300
1956	1,670	2,000	1,270	1,070	1,110	4,170	2,540	13,320	3,900	31,940	18,440	23,090	104,500
1957	4,030	5,320	2,150	1,160	4,660	6,770	7,550	15,060	80,000	12,540	6,450	8,510	154,200
1958	6,840	10,710	11,060	8,010	38,220	22,420	15,450	9,560	8,650	96,910	51,640	42,250	321,500
1959	12,350	10,260	7,200	4,330	26,940	42,840	25,250	115,200	50,910	34,920	23,180	10,760	364,100
1960	10,510	9,580	9,790	11,110	10,410	73,300	88,610	60,600	47,710	42,670	69,970	44,080	478,300

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30							Calendar year			
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff Inches	Acre-feet	Mean	Runoff		
		Discharge	Date							Inches	Acre-feet	
1950	-	-	-	-	-	-	-	-	476	4.86	345,000	
1951	1210	29,400	July 3, 1951	60	1,130	0.852	11.58	818,300	1,185	12.14	857,600	
1952	1240	25,500	June 22, 1952	120	866	.653	8.89	628,400	843	8.67	612,300	
1953	1230	4,980	June 28, 1953	64	484	.365	4.96	350,300	434	4.45	314,400	
1954	1340	13,400	Aug. 23, 1954	21	204	.154	2.10	147,800	220	2.26	159,200	
1955	1390	13,900	July 9, 1955	11	235	.177	2.41	170,300	202	2.07	146,500	
1956	1440	17,900	July 8, 1956	10	144	.109	1.50	104,500	153	1.60	111,100	
1957	1510	15,600	June 16, 1957	12	213	.161	2.20	154,200	237	2.44	171,300	
1958	1560	17,900	Sept. 6, 1958	50	444	.335	4.55	321,500	446	4.56	322,700	
1959	1630	16,200	May 29, 1959	60	503	.379	5.15	364,100	503	5.16	364,200	
1960	1710	20,600	Mar. 30, 1960	95	659	.497	6.77	478,300	-	-	-	

8090. Davids Creek near Hamlin, Iowa

Location.--Lat 41°40'25", long 94°48'20", in NE<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub> sec.9, T.79 N., R.34 W., on left bank 20 ft downstream from bridge on State Highway 64, 5.2 miles east of Hamlin, and 8 miles upstream from mouth and East Nishnabotna River.

Drainage area.--26.0 sq mi.

Records available.--June 1952 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 1,266.54 ft above mean sea level, datum of 1929.

Average discharge.--8 years (1952-60), 9.36 cfs (6,780 acre-ft per year).

Extremes.--1952-60: Maximum discharge, 22,700 cfs July 2, 1958 (gage height, 19.35 ft), from rating curve extended above 500 cfs on basis of slope-area measurement of peak flow; no flow for many days in 1952-56.

Remarks.--Records of suspended sediment loads for the period July 1952 to September 1960 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	-	-	-	-	-	30.9	33.3	12.3	-
1952	5.57	5.09	7.77	3.35	32.2	18.5	17.5	14.8	23.7	4.81	1.41	.033	11.0
1953	.25	.46	.32	.12	.74	.85	.96	1.59	4.29	.13	5.63	.55	1.33
1954	2.66	1.17	.48	.35	5.27	20.2	10.0	2.78	2.08	1.00	.02	.03	3.85
1955	.089	.099	.020	.009	.0003	.185	.123	.552	3.77	5.80	16.0	18.1	3.73
1956	2.56	7.49	2.28	.784	1.45	3.88	10.0	6.89	30.6	4.48	1.16	2.35	6.13
1957	6.55	9.52	11.3	6.18	14.5	16.8	10.9	5.28	4.94	112	15.8	17.8	19.4
1958	5.04	4.98	2.29	1.08	4.64	29.1	15.2	33.3	19.3	9.16	2.65	2.87	10.9
1960	2.32	2.79	2.60	4.52	5.12	30.3	59.2	39.1	22.1	18.8	27.6	8.03	18.6

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	-	-	-	-	-	1,900	2,050	733	-
1952	342	303	478	206	1,790	1,140	1,040	909	1,410	296	86	2.0	8,000
1953	15	27	20	7.5	41	52	57	98	255	12	346	33	964
1954	164	70	30	21	293	1,240	596	171	124	62	1.0	1.8	2,770
1955	5.5	5.9	1.2	.5	0	11	7.3	34	224	357	982	1,080	2,710
1956	158	446	140	48	80	239	595	423	1,820	275	71	140	4,440
1957	403	566	694	380	803	1,030	648	324	294	6,860	973	1,060	14,040
1958	310	296	141	87	258	1,790	908	2,050	1,150	583	163	171	7,860
1960	143	166	160	278	295	1,870	3,520	2,410	1,320	1,150	1,690	478	13,480

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30							Calendar year		
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff	
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet
1950											
1951											
1952	1240	8860	Aug. 15, 1952	6.1	-	-	-	-	-	-	-
1953	1280	558	June 10, 1953	0	11.0	0.423	5.77	8,000	9.58	5.00	6,940
1954	1340	199	Aug. 23, 1954	0	1.33	.051	.68	964	1.61	.83	1,170
1955	1390	378	Apr. 23, 1955	0	3.83	.147	1.99	2,770	3.48	1.81	2,520
1956	1440	574	Sept. 4, 1956	0	3.73	.143	1.95	2,710	4.73	2.47	3,440
1957	1510	1,160	June 16, 1957	.50	6.13	.236	3.19	4,440	7.40	3.86	5,350
1958	1580	22,700	July 2, 1958	.83	19.4	.748	10.11	14,040	18.1	9.44	13,120
1959	1628	240	May 29, 1959	.79	10.9	.419	5.87	7,860	10.5	5.48	7,590
1960	1708	5600	Mar. 29, 1960	.70	18.6	.715	9.72	13,480	-	-	-

a Maximum during period June to September.

b About.

8095. East Nishnabotna River at Red Oak, Iowa

Location.--Lat 41°00'55", long 95°14'15", in NW¼NE¼ sec.29, T.72 N., R.38 W., on right bank 10 ft downstream from bridge on U. S. Highway 34, 0.5 mile west of Red Oak, and 0.9 mile upstream from Red Oak Creek.

Drainage area.--894 sq mi (revised).

Records available.--May 1918 to July 1925, May 1936 to September 1960. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 1,010.45 ft above mean sea level, unadjusted. Prior to July 5, 1925, chain gage 0.5 mile downstream at datum 0.40 ft lower. May 29, 1936, to Nov. 13, 1952, wire-weight gage at present site and datum with supplementary water-stage recorder in operation above 3.2 ft gage height July 30, 1939, to Nov. 13, 1952.

Average discharge.--30 years (1918-24, 1936-60), 348 cfs (251,900 acre-ft per year).

Extremes.--1918-25, 1936-60: Maximum discharge, 36,200 cfs June 13, 1947 (gage height, 23.23 ft), from rating curve extended above 14,000 cfs on basis of an overflow profile and extended channel rating; minimum daily, 6 cfs Aug. 18, 1936.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	119	43.6	31.7	22.1	258	1,002	934	1,577	1,503	775	574	388	604
1952	199	170	112	217	313	999	895	581	1,600	709	713	350	571
1953	170	167	145	130	653	506	468	473	1,458	175	73.5	38.9	287
1954	37.6	49.1	39.8	21.2	71.8	54.1	70.3	78.9	195	29.2	838	72.8	131
1955	254	77.0	59.3	52.0	156	592	279	114	161	165	35.2	33.0	167
1956	26.3	30.5	24.9	28.2	26.7	51.4	30.4	71.0	77.3	201	265	382	101
1957	67.2	155	55.2	27.8	74.5	69.8	228	458	1,165	179	79.6	139	226
1958	114	175	240	151	588	414	236	137	139	2,519	566	1,465	562
1959	213	137	98.3	66.0	369	713	451	1,837	696	371	205	110	440
1960	102	108	107	141	134	1,134	1,159	836	448	412	576	333	459

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	7,290	2,600	1,950	1,360	14,350	61,630	55,560	96,950	89,410	47,640	35,280	23,080	437,100
1952	12,270	10,110	6,860	13,350	18,020	61,410	53,240	35,720	95,180	43,580	43,860	20,850	414,400
1953	10,480	9,910	8,900	8,020	36,280	31,100	29,020	29,110	27,280	10,760	4,520	2,200	207,600
1954	2,310	2,920	2,450	1,300	3,990	3,330	4,180	4,910	11,600	1,800	51,550	4,330	94,670
1955	15,610	4,580	3,640	3,200	8,650	36,380	16,610	6,990	10,780	10,160	2,170	1,970	120,700
1956	1,610	1,810	1,530	1,730	1,540	3,160	1,810	4,370	4,600	12,340	16,270	22,740	73,510
1957	4,130	9,220	3,590	1,710	4,140	5,520	13,540	28,190	69,340	10,890	4,900	8,500	163,400
1958	7,010	10,420	14,780	9,260	32,670	25,440	14,050	8,410	8,300	154,900	34,780	87,180	407,200
1959	13,080	8,160	6,040	4,060	20,480	43,940	28,820	113,000	41,400	22,840	12,580	6,550	318,900
1960	6,280	6,400	6,560	8,670	7,730	69,730	68,980	51,380	26,630	25,330	35,430	19,830	333,000

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30										Calendar year		
		Momentary maximum				Runoff						Runoff		
		Discharge	Date	Minimum day	Mean	Per square mile	Inches	Acre-feet	Mean	Inches	Acre-feet	Mean	Inches	Acre-feet
1950	-	-	-	-	-	-	-	-	229	3.46	165,700	-	-	-
1951	1210	15,200	May 1, 1951	20	604	0.676	9.16	437,100	628	9.53	454,500	-	-	-
1952	1240	12,600	June 22, 1952	80	571	.639	8.70	414,400	571	8.71	414,500	-	-	-
1953	1280	3,250	June 10, 1953	30	287	.321	4.36	207,600	257	3.90	186,000	-	-	-
1954	1340	10,400	Aug. 23, 1954	14	131	.147	1.98	94,670	153	2.33	110,800	-	-	-
1955	1390	8,640	Mar. 3, 1955	21	167	.167	2.56	120,700	141	2.14	101,900	-	-	-
1956	1440	7,630	Sept. 5, 1956	14	101	.113	1.55	73,510	117	1.80	65,300	-	-	-
1957	1510	11,800	June 17, 1957	15	226	.253	3.42	163,400	247	3.75	178,800	-	-	-
1958	1560	35,600	July 3, 1958	49	562	.629	8.54	407,200	556	8.43	402,200	-	-	-
1959	1630	12,700	May 29, 1959	60	440	.492	6.69	318,900	429	6.52	310,800	-	-	-
1960	1710	15,100	Mar. 30, 1960	60	459	.513	6.98	333,000	-	-	-	-	-	-

## 8100. Nishnabotna River above Hamburg, Iowa

Location.--Lat 40°38'00", long 95°37'35", in SW<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub> sec.11, T.67 N., R.42 W., on left bank 1,200 ft downstream from Chicago, Burlington & Quincy Railroad bridge, 1.6 miles downstream from confluence of East Nishnabotna and West Nishnabotna Rivers, and 2 miles northeast of Hamburg.

Drainage area.--2,806 sq mi (revised).

Records available.--March 1922 to September 1923, October 1928 to September 1960. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 894.17 ft above mean sea level, datum of 1929. Prior to Oct. 1, 1923, chain gage at site 6 miles downstream at different datum. Oct. 5, 1928, to Sept. 6, 1929, chain gage at site 1,000 ft upstream at datum 0.42 ft higher. Sept. 7, 1929, to Feb. 11, 1935, chain gage and Feb. 12, 1935, to June 5, 1947, wire-weight gage, at present site and datum. June 6 to July 22, 1947, staff gage at site 1,000 ft upstream at different datum. July 23, 1947, to Nov. 16, 1950, staff gage at present site and datum.

Average discharge.--33 years (1922-23, 1928-60), 930 cfs (673,300 acre-ft per year).

Extremes.--1922-23, 1928-60: Maximum discharge, 55,500 cfs June 24, 1947 (gage height, 26.03 ft, present site and datum, from floodmark); minimum daily, 4.5 cfs Aug. 30, 1934.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	666	301	205	162	696	2,606	2,624	5,286	6,079	3,174	1,24	1,301	2,108
1952	962	798	470	726	1,045	2,298	2,335	1,788	3,614	2,198	919	1,206	1,812
1953	500	503	491	467	1,612	1,494	1,469	1,533	1,353	652	346	151	878
1954	141	195	126	64.4	341	211	286	349	793	128	618	356	384
1955	539	258	208	177	455	1,918	764	402	459	588	83.2	81.6	496
1956	56.9	68.3	41.3	52.4	54.3	127	89.7	215	151	735	602	650	238
1957	144	239	107	51.3	187	209	426	721	2,987	457	191	321	501
1958	290	438	447	307	1,132	1,132	622	405	323	4,756	2,006	2,302	1,177
1959	596	397	242	179	889	1,615	1,095	4,485	2,421	1,262	1,032	509	1,231
1960	524	400	411	529	605	2,304	4,617	2,196	1,573	1,420	1,848	1,359	1,482

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	40,920	17,930	12,590	9,960	38,630	160,200	156,200	325,100	361,700	195,100	130,600	77,390	1,526,000
1952	59,130	47,510	28,870	44,630	60,130	141,300	138,900	109,900	215,100	135,100	118,000	71,750	1,170,000
1953	30,760	29,940	30,180	28,700	89,510	91,850	87,410	94,270	82,880	40,080	21,260	8,990	635,800
1954	8,660	11,600	7,740	3,960	18,920	12,990	17,050	21,480	47,170	7,750	99,470	21,160	278,000
1955	33,120	15,360	12,810	10,870	25,250	118,000	45,450	24,720	27,280	36,170	5,110	4,860	359,000
1956	3,500	4,060	2,540	3,220	3,120	7,830	5,340	13,200	9,000	45,200	37,000	38,660	172,700
1957	8,840	14,220	6,560	3,150	10,390	12,860	25,330	44,320	177,800	28,080	11,770	19,110	362,400
1958	17,810	26,040	27,460	18,890	58,610	69,600	37,030	24,900	19,220	232,400	123,400	137,000	852,400
1959	36,860	23,650	14,910	11,020	49,390	99,290	65,140	275,800	144,000	77,610	63,440	30,280	891,200
1960	32,220	23,790	25,290	32,530	34,810	41,700	274,800	135,000	93,600	87,310	113,600	80,880	1,076,000

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30						Calendar year			
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff	
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet
1950	-	-	-	-	-	-	-	-	864	4.17	625,600
1951	1210	23,800	May 2, 1951	150	2,108	0.751	10.19	1,526,000	2,197	10.63	1,590,000
1952	1240	12,800	June 23, 1952	230	1,612	0.574	7.82	1,170,000	1,551	7.52	1,126,000
1953	1280	5,440	June 3, 1953	110	878	0.313	4.24	655,800	791	3.82	573,000
1954	1340	12,800	Aug. 23, 1954	45	384	0.137	1.86	278,000	430	2.08	311,200
1955	1390	12,000	Apr. 24, 1955	36	496	0.177	2.39	359,000	425	2.05	307,800
1956	1440	13,500	July 8, 1956	23	238	0.085	1.16	172,700	265	1.29	192,200
1957	1510	a20,400	June 16, 1957	27	501	0.179	2.44	362,400	558	2.71	404,100
1958	1560	14,600	July 6, 1958	108	1,177	0.419	5.70	852,400	1,183	5.73	855,300
1959	1630	15,400	May 29, 1959	100	1,231	0.439	5.94	891,200	1,239	5.99	897,300
1960	1710	23,900	Mar. 31, 1960	200	1,482	0.528	7.20	1,076,000	-	-	-

a About.



## 8105. Little Nemaha River near Syracuse, Nebr.

Location--Lat 40°38', long 96°11', in NW $\frac{1}{4}$ SW $\frac{1}{4}$  sec.27, T.8 N., R.11 E., on left bank 300 ft downstream from bridge on State Highway 50, 1.1 miles south of Syracuse, and 3 $\frac{1}{4}$  miles downstream from Owl Creek.

Drainage area--218 sq mi.

Records available--May 1951 to September 1960.

Gage--Water-stage recorder for stages above 2.0 ft; wire-weight gage. Datum of gage is 997.87 ft above mean sea level, datum of 1929. Prior to Aug. 28, 1951, wire-weight gage at bridge 300 ft upstream at same datum.

Average discharge--9 years (1951-60), 67.0 cfs (49,510 acre-ft per year).

Extremes--1951-60: Maximum discharge, 28,600 cfs June 2, 1951 (gage height, 28.0 ft, from graph based on gage readings); no flow Aug. 27, 28, 1956, Oct. 3, 23, 25, 1957. Flood of May 9, 1950, reached a stage of 36.7 ft, from floodmark, at bridge 300 ft upstream (discharge, 225,000 cfs, by computation of peak flow through bridge and culvert openings and over highway embankments).

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	-	-	-	-	928	170	167	123	-
1952	59.9	47.2	26.9	49.1	51.4	209	260	94.2	172	217	92.8	23.1	109
1953	20.6	19.8	47.8	51.7	78.2	36.8	38.2	32.1	15.3	6.67	3.51	1.44	29.1
1954	2.05	4.99	5.24	1.93	13.4	7.61	13.8	48.9	141	3.16	201	6.88	37.7
1955	14.0	7.45	9.03	5.84	93.4	24.5	15.6	5.46	255	5.73	1.21	16.5	36.9
1956	1.62	2.02	2.49	1.69	5.76	6.11	2.51	2.65	9.49	72.3	125	5.40	20.0
1957	1.33	1.59	1.77	1.86	7.11	7.58	25.5	24.4	82.9	123	29.6	13.7	26.6
1958	28.9	12.8	8.41	15.6	84.7	71.7	56.9	21.6	10.8	844	117	98.7	115
1959	14.9	14.6	14.0	12.6	86.8	130	49.3	755	116	47.4	18.6	26.9	108
1960	45.7	18.1	24.9	25.2	44.8	563	164	121	97.5	121	186	36.0	121

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	-	-	-	-	55,210	10,440	10,240	7,300	-
1952	3,680	2,810	1,660	3,020	2,960	12,840	15,490	5,790	10,250	13,330	5,710	1,370	78,910
1953	1,270	1,180	2,940	3,180	4,340	2,270	2,270	1,970	912	410	216	86	21,040
1954	126	297	322	118	745	468	821	3,010	8,400	195	12,380	410	27,290
1955	863	444	555	359	5,190	1,510	927	336	15,140	352	75	983	26,730
1956	100	120	153	104	331	376	149	163	565	4,450	7,690	321	14,520
1957	20	95	109	53	395	467	1,520	1,500	4,950	7,560	1,820	814	19,280
1958	1,780	764	517	960	4,700	4,410	3,390	1,330	644	51,890	7,190	5,880	83,460
1959	914	869	859	777	4,820	7,970	2,930	46,440	6,920	2,920	1,140	1,600	78,160
1960	2,810	1,080	1,530	1,550	2,580	34,590	9,750	7,440	5,800	7,420	11,440	2,140	88,130

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950								
1951	1210	28,600	June 2, 1951	-	-	-	-	-
1952	1240	6,570	July 14, 1952	9.0	109	78,910	105	76,150
1953	1280	379	Apr. 30, 1953	.5	29.1	21,040	22.7	16,400
1954	1340	5,150	Aug. 23, 1954	.6	37.7	27,290	39.2	28,410
1955	1390	18,800	June 24, 1955	.3	36.9	26,730	34.9	25,240
1956	1440	5,940	Aug. 18, 1956	0	20.0	14,520	19.8	14,370
1957	1510	4,820	July 1, 1957	0	26.6	19,280	30.6	22,120
1958	1560	25,300	July 10, 1958	1.0	115	83,460	115	83,040
1959	1630	12,200	May 5, 1959	5.5	108	78,160	112	80,940
1960	1710	8,270	Mar. 28, 1960	11	121	88,130	-	-

## LITTLE NEMAHA RIVER BASIN

8115. Little Nemaha River at Auburn, Nebr.

Location.--Lat 40°23'30", long 95°48'40", in NW¼ sec.23, T.5 N., R.14 E., near left bank on downstream side of pier of bridge on State Highway 3, 1 mile downstream from Longs Creek and 1 mile east of Auburn.

Drainage area.--801 sq mi.

Records available.--August 1949 to September 1960.

Gage.--Water-stage recorder for stages above 4.4 ft; wire-weight gage. Prior to Oct. 24, 1958, water-stage recorder for stages above 6.98 ft. Datum of gage is 889.87 ft above mean sea level, datum of 1929, supplementary adjustment of 1954.

Average discharge.--11 years (1949-60), 319 cfs (230,900 acre-ft per year).

Extremes.--1949-60: Maximum discharge, 164,000 cfs May 9, 1950 (gage height, 27.65 ft, from floodmark), from rating curve extended above 49,000 cfs on basis of computations of peak flow through bridge and culvert openings and over highway and railway embankments at gage heights 24.96 and 27.65 ft; minimum daily, 4.2 cfs Aug. 7, 1956.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	795	102	80.1	63.6	197	336	763	1,118	3,524	2,109	757	495	863
1952	246	184	124	245	200	734	825	375	789	846	787	150	460
1953	102	106	151	150	234	175	148	145	99.5	56.3	65.4	27.8	121
1954	28.1	45.1	45.3	30.9	84.9	51.5	61.0	250	961	35.1	551	49.0	183
1955	273	57.3	55.3	61.2	211	113	94.0	45.5	505	40.6	14.0	58.9	126
1956	27.4	25.7	24.3	21.3	28.4	51.4	30.6	29.9	71.5	394	255	29.0	63.1
1957	50.1	28.9	23.4	19.7	32.0	49.1	187	251	493	236	100	94.0	130
1958	172	69.6	56.6	64.7	277	298	146	135	67.6	427	856	903	459
1959	106	97.8	93.4	72.1	347	458	201	1,333	445	250	142	142	308
1960	398	125	118	241	298	1,789	628	321	300	276	444	218	432

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	46,910	6,090	4,920	3,910	10,960	20,660	45,420	68,740	209,700	129,700	46,540	29,470	625,000
1952	15,160	10,960	7,840	15,050	11,490	45,110	49,100	23,040	46,920	52,050	48,360	8,950	333,800
1953	6,260	6,320	9,260	9,240	12,990	10,750	8,820	8,900	5,920	3,460	4,020	1,650	87,590
1954	1,750	2,690	2,780	1,900	4,720	3,170	3,650	15,370	57,190	2,160	33,890	2,910	132,100
1955	16,780	3,410	3,400	3,760	11,700	6,950	5,590	2,800	30,040	2,500	861	3,500	91,290
1956	1,680	1,530	1,500	1,310	1,630	3,160	1,820	1,640	4,260	24,220	15,690	1,720	60,360
1957	3,060	1,720	1,440	1,210	1,780	3,020	11,100	15,460	29,350	14,510	6,170	5,590	94,430
1958	10,590	4,140	3,480	3,960	15,360	18,340	8,710	8,300	4,020	149,200	52,660	53,750	332,500
1959	6,520	5,820	5,740	4,430	19,270	28,160	11,970	81,970	26,460	15,390	8,750	8,420	222,900
1960	24,470	7,450	7,250	14,840	17,120	10,000	37,360	19,750	17,630	16,960	27,290	12,960	313,300

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	410	-	296,700
1951	1210	56,800	June 2, 1951	54	863	625,000	827	598,900	
1952	1240	21,500	June 27, 1952	63	460	333,800	443	321,900	
1953	1280	680	Apr. 30, 1953	20	121	87,590	101	72,950	
1954	1340	34,600	June 17, 1954	19	183	132,100	205	148,500	
1955	1390	19,900	June 24, 1955	7.4	126	91,290	100	72,410	
1956	1440	12,400	July 2, 1956	4.2	63.1	60,360	85.2	61,890	
1957	1510	15,100	June 17, 1957	10	130	94,430	147	106,400	
1958	1560	49,200	July 10, 1958	22	459	332,500	459	332,400	
1959	1630	12,300	May 18, 1959	40	308	222,900	337	244,000	
1960	1710	48,000	Mar. 27, 1960	66	432	313,300	-	-	

## 8118.4. Tarkio River at Stanton, Iowa

Location.--Lat 40°58'55", long 95°06'35", in NW<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub> sec.4, T.71 N., R.37 W., on right bank 10 ft downstream from highway bridge and half a mile west of Stanton.

Drainage area.--49.3 sq mi.

Records available.--Water years 1952-57 (annual maximum), October 1957 to September 1960.

Gage.--Water-stage recorder and concrete control. Nov. 14, 1951, to Sept. 30, 1957, crest-stage gage at site 10 ft upstream at same datum.

Extremes.--1952-60: Maximum discharge, 4,650 cfs Sept. 18, 1960 (gage height, 16.61 ft), from rating curve extended above 1,500 cfs on basis of slope-area measurement at gage height 15.37 ft.

1957-60: No flow Oct. 1-5, 1958.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1958	5.47	7.41	9.06	5.10	31.8	22.2	11.1	7.17	4.55	71.0	38.6	24.3	19.8
1959	6.17	4.45	1.24	1.24	28.4	29.5	112	45.2	35.0	11.9	18.7	8.55	25.2
1960	10.6	6.39	8.73	37.9	17.2	116	67.1	35.7	58.9	27.5	56.6	78.1	43.4

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1958	336	441	557	314	1,770	1,360	660	441	271	4,370	2,370	1,440	14,330
1959	380	265	76	76	1,580	1,810	2,690	6,860	2,080	733	1,150	509	18,210
1960	649	380	537	2,330	992	7,110	3,990	2,200	3,510	1,690	3,480	4,650	31,520

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30							Calendar year		
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff	
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet
1950	-	-	-	-	-	-	-	-	-	-	-
1951	-	-	-	-	-	-	-	-	-	-	-
1952	-	3,740	June 22, 1952	-	-	-	-	-	-	-	-
1953	-	(a)	-	-	-	-	-	-	-	-	-
1954	-	249	Aug. 23, 1954	-	-	-	-	-	-	-	-
1955	-	1,790	Mar. 2, 1955	-	-	-	-	-	-	-	-
1956	-	3,450	July 15, 1956	-	-	-	-	-	-	-	-
1957	-	(a)	-	-	-	-	-	-	-	-	-
1958	1560	2,750	July 30, 1958	0	19.8	0.402	5.45	14,330	18.9	5.21	13,720
1959	1630	2,500	May 29, 1959	.2	25.2	.511	6.92	18,210	26.3	7.24	19,050
1960	1710	4,650	Sept. 18, 1960	3.0	43.4	.860	11.99	31,520	-	-	-

a Discharge not determined; less than 1,080 cfs.

## 8130. Tarkio River at Fairfax, Mo.

Location.--Lat 40°20'20", long 95°24'20", in SW<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub> sec.22, T.64 N., R.40 W., on downstream side of left pier of bridge, 0.5 mile west of Fairfax and 2 miles downstream from unnamed creek.

Drainage area.--508 sq mi.

Records available.--March 1922 to September 1960.

Gage.--Water-stage recorder and wire-weight gage. Datum of gage is 867.66 ft above mean sea level, datum of 1929. Prior to Oct. 1, 1931, chain gage at site 50 ft downstream at datum 2.0 ft higher. Oct. 1, 1931, to Dec. 8, 1934, chain gage and Dec. 9, 1934, to Oct. 22, 1953, wire-weight gage, at site 50 ft downstream at same datum.

Average discharge.--38 years (1922-60), 178 cfs (128,900 acre-ft per year).

Extremes.--1922-60: Maximum discharge, 16,300 cfs June 20, 1942, from rating curve extended above 11,000 cfs; maximum gage height, 22.33 ft July 7, 1929, from floodmark; no flow for several days in July and August 1934.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	324	88.6	61.1	53.8	277	447	810	1,304	1,410	588	489	348	517
1952	176	160	113	160	148	572	568	484	612	404	260	87.2	312
1953	55.0	178	102	96.0	213	229	216	170	218	73.4	58.2	17.3	135
1954	13.6	22.8	20.0	8.4	36.5	24.3	44.3	51.2	172	8.48	66.0	9.62	39.6
1955	72.9	10.1	13.7	16.3	482	275	129	54.4	182	54.4	6.51	10.3	106
1956	6.92	4.25	5.5	4.6	15.6	17.5	4.44	6.17	12.7	218	103	6.47	34.1
1957	21.4	39.9	8.97	4.42	28.6	24.0	123	116	490	35.3	10.5	19.4	76.2
1958	46.7	42.0	55.0	43.3	163	157	78.0	147	45.6	1,432	449	391	256
1959	124	92.9	73.9	48.3	308	325	314	888	403	301	326	281	290
1960	333	191	147	612	301	922	623	525	548	303	535	303	446

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	19,930	5,270	3,750	3,310	15,380	27,460	48,170	80,200	83,910	56,130	30,040	20,710	374,300
1952	10,840	9,500	6,980	9,810	8,530	35,170	33,770	29,780	36,430	24,820	16,010	5,190	226,800
1953	3,380	10,620	6,280	5,900	11,830	14,060	12,870	10,460	12,980	4,510	3,580	1,030	97,500
1954	835	1,360	1,230	518	2,030	1,500	2,630	3,150	10,250	521	4,060	572	28,680
1955	4,480	601	841	1,000	26,780	16,910	7,680	3,340	10,820	3,340	400	615	76,810
1956	425	253	337	284	899	1,070	264	379	756	13,400	6,310	385	24,760
1957	1,310	2,380	552	272	1,590	1,470	7,300	7,120	29,190	2,170	643	1,150	55,150
1958	2,870	2,500	3,380	2,660	9,040	9,650	4,640	9,050	2,710	88,030	27,610	23,280	185,400
1959	7,600	5,530	4,540	2,970	17,090	20,000	18,680	54,600	24,000	18,500	20,050	16,710	210,300
1960	20,460	11,380	9,020	37,660	17,310	56,690	37,060	32,290	32,610	18,610	32,890	18,050	324,000

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30							Calendar year			
		Momentary maximum		Minimum	Mean	Per square mile	Runoff		Mean	Runoff		
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet	
1950	-	-	-	-	-	-	-	-	170	4.53	123,100	-
1951	1210	12,700	May 1, 1951	32	517	1.02	13.81	374,300	515	13.75	372,600	-
1952	1240	8,360	July 14, 1952	57	312	.614	8.37	226,800	303	8.10	219,800	-
1953	1280	2,120	June 9, 1953	14	135	.266	3.61	97,500	111	3.00	80,640	-
1954	1340	2,660	June 9, 1954	1.8	39.6	.078	1.07	28,680	43.0	1.16	31,150	-
1955	1390	5,000	Feb. 18, 1955	.2	106	.209	2.82	76,810	99.3	2.64	71,900	-
1956	1440	4,630	July 8, 1956	.1	34.1	.067	.90	24,760	38.6	1.02	27,990	-
1957	1510	10,400	June 18, 1957	.1	76.2	.150	2.03	55,150	82.4	2.19	59,660	-
1958	1560	14,200	July 19, 1958	4	256	.504	6.84	185,400	268	7.17	194,300	-
1959	1630	9,990	May 30, 1959	30	290	.571	7.77	210,300	322	8.63	233,500	-
1960	1710	12,000	Jan. 13, 1960	94	446	.878	11.96	324,000	-	-	-	-

## 8135. Missouri River at Rulo, Nebr.

Location.--Lat 40°03'15", long 95°25'15", in NW<sup>1</sup>/<sub>4</sub> NW<sup>1</sup>/<sub>4</sub> sec.17, T.1 N., R.18 E., on downstream side of middle pier of bridge on U. S. Highway 159 at Rulo, 3.2 miles upstream from Nemaha River.

Drainage area.--418,905 sq mi.

Records available.--October 1949 to September 1960 in reports of Geological Survey. Gage-height record collected at site 80 ft upstream January 1886 to December 1899 published in reports of Missouri River Commission; September 1929 to September 1950 in files of Kansas City Office of Corps of Engineers.

Gage.--Water-stage recorder. Datum of gage is 837.23 ft above mean sea level, datum of 1929. Prior to Sept. 13, 1950, wire-weight gage at site 80 ft upstream at same datum.

Average discharge.--11 years (1949-60), 37,870 cfs (27,420,000 acre-ft per year).

Extremes.--1949-60: Maximum discharge, 358,000 cfs Apr. 22, 1952 (gage height, 25.60 ft); minimum daily, 4,420 cfs Jan. 13, 1957; minimum gage height observed, 1.15 ft Jan. 14, 1957 (ice jam upstream).

Flood in 1881 reached a stage of 22.9 ft, from floodmark.

Remarks.--Flow partly regulated by upstream main stem reservoirs.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	42,820	35,460	14,520	21,720	21,880	48,810	100,100	75,050	101,100	74,380	70,030	71,920	56,540
1952	59,350	51,770	20,940	22,590	47,730	52,420	205,400	83,780	75,090	54,560	42,800	37,990	62,630
1953	36,370	34,370	16,650	18,660	27,270	50,050	42,770	52,800	78,470	48,850	36,040	35,830	39,860
1954	34,560	24,810	19,430	12,300	24,310	32,010	34,340	37,020	53,500	36,060	39,890	35,390	31,980
1955	37,580	19,630	16,770	12,430	15,660	30,640	33,370	34,060	37,640	34,750	29,820	35,400	28,210
1956	35,080	18,620	9,953	12,730	14,120	29,370	34,310	33,790	33,710	34,660	35,850	35,480	27,430
1957	30,730	17,480	11,460	10,800	13,220	15,380	21,820	36,740	48,910	39,140	34,990	34,660	26,340
1958	36,400	21,250	15,270	13,090	17,640	24,370	36,150	34,040	34,830	48,900	40,900	38,230	30,180
1959	34,180	19,320	12,760	12,610	17,610	25,390	35,070	49,980	42,560	37,140	39,400	36,150	30,250
1960	35,470	20,890	15,920	14,440	17,130	22,750	91,760	51,070	46,350	37,360	39,430	36,610	35,720

Monthly and yearly discharge, in thousands of acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	2,633	2,110	893	1,335	1,215	3,001	5,958	4,615	6,015	4,574	4,306	4,280	40,940
1952	3,649	3,081	1,288	1,389	2,746	5,223	12,220	5,152	4,468	3,355	2,632	2,261	45,460
1953	2,236	2,045	1,023	1,147	1,514	5,078	2,545	3,247	4,669	3,004	2,216	2,132	28,860
1954	2,125	1,476	1,195	756	51,350	1,968	2,043	2,276	3,184	2,217	2,453	2,106	23,150
1955	2,311	1,168	1,031	764	4	869	1,884	1,986	2,094	2,240	2,137	1,834	20,420
1956	2,157	1,108	612	782	7	812	21,806	2,042	2,077	2,006	2,131	2,266	19,910
1957	1,889	1,040	704	664	0	734	5	945	1,299	2,259	2,910	2,406	119,070
1958	2,238	1,264	939	804	8	979	61,511	2,151	2,093	2,073	3,007	2,515	21,850
1959	2,102	1,149	784	775	3	977	91,561	2,087	3,073	2,532	2,283	2,423	21,900
1960	2,181	1,243	979	887	9	985	81,399	5,460	3,140	2,758	2,297	2,425	25,930

† Corrected.

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	48,560	35,150,000
1951	1210	175,000	June 3, 1951	6,000	56,540	40,940,000	59,830	43,320,000
1952	1240	358,000	Apr. 22, 1952	6,000	62,630	45,460,000	58,890	42,750,000
1953	1280	117,000	June 28, 1953	12,000	39,860	28,860,000	39,160	28,350,000
1954	1340	122,000	June 22, 1954	6,800	31,980	23,150,000	31,580	22,860,000
1955	1390	59,500	Mar. 14, 1955	8,300	28,210	20,420,000	27,340	19,790,000
1956	1440	54,000	Aug. 19, 1956	5,000	27,430	19,910,000	27,090	19,670,000
1957	1510	117,000	June 18, 1957	4,420	26,340	19,070,000	27,450	19,870,000
1958	1560	899,000	July 11, 1958	6,800	30,180	21,850,000	29,620	21,440,000
1959	1630	109,000	May 30, 1959	5,520	30,250	21,900,000	30,760	22,270,000
1960	1710	181,000	Apr. 6, 1960	6,840	35,720	25,930,000	-	-

† Corrected.

a About.

8140. Turkey Creek near Seneca, Kans.

Location.--Lat 39°57', long 96°06', on west line of sec.20, T.1 S., R.12 E., at downstream side of highway bridge, 2 miles downstream from Clear Creek, 5 miles upstream from Nemaha River, and 8 miles northwest of Seneca.

Drainage area.--276 sq mi.

Records available.--October 1948 to September 1960. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Altitude of gage is 1,160 ft (from topographic map). Prior to Oct. 19, 1956, water-stage recorder (occasional operation only) and wire-weight gage on former channel 400 ft south of present site at present datum. Oct. 19, 1956, to June 15, 1957, wire-weight gage at highway bridge 1.2 miles upstream at different datum. June 16, 1957, to Mar. 27, 1958, wire-weight gage at present site and datum.

Average discharge.--12 years (1948-60), 153 cfs (110,800 acre-ft per year).

Extremes.--1948-60: Maximum discharge, 18,000 cfs Sept. 4, 1958 (gage height, 24.20 ft); no flow at times in 1956-57.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	563	34.6	23.0	19.7	56.4	134	238	838	2,067	1,021	497	709	518
1952	109	120	45.4	67.2	56.5	487	493	402	78.1	182	373	70.7	208
1953	13.8	38.4	49.2	63.2	81.0	124	92.2	103	31.1	22.3	21.2	1.72	53.3
1954	41	1.89	7.68	2.03	19.7	4.68	3.66	80.4	665	10.8	914	23.3	145
1955	16.7	9.90	10.2	12.0	328	56.2	37.2	17.0	155	16.0	2.23	.42	52.9
1956	.27	.28	1.15	.99	1.88	1.06	.28	2.99	9.25	16.6	3.93	0	3.24
1957	0	0	0	0	.02	.06	32.1	24.4	42.2	3.12	3.58	14.4	9.94
1958	40.1	6.85	2.61	3.84	135	168	21.7	100	156	880	48.2	1,057	218
1959	30.5	26.4	19.8	17.5	120	181	13.4	150	30.6	180	13.9	88.4	82.5
1960	328	37.4	58.2	283	207	708	193	143	241	74.6	70.3	15.7	197

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	34,630	2,060	1,410	1,210	3,130	8,270	14,150	51,540	123,000	62,800	30,540	42,180	374,900
1952	6,680	7,160	2,790	4,130	3,250	29,950	29,340	24,720	4,650	11,180	22,960	4,210	151,000
1953	847	2,280	3,020	3,890	4,500	7,630	5,480	6,310	1,850	1,370	1,310	1,103	38,590
1954	25	112	472	125	1,090	288	218	4,940	39,550	666	56,190	1,390	105,100
1955	1,030	589	628	735	18,220	3,460	2,210	1,040	9,220	981	137	25	38,280
1956	16	16	70	61	108	65	16	184	550	1,020	242	0	2,350
1957	0	0	0	0	1.0	4.0	1,910	1,500	2,510	192	220	856	7,190
1958	2,470	396	160	236	7,470	10,330	1,290	6,150	9,270	54,090	2,960	62,870	157,700
1959	1,880	1,570	1,220	1,070	6,680	11,130	7,480	9,240	1,820	11,040	857	5,260	59,750
1960	20,180	2,220	3,580	17,400	11,910	43,550	11,460	8,800	14,320	4,590	4,320	936	143,300

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	147	-	106,500
1951	1210	9,460	June 15, 1951	11	518	374,900	488	-	353,400
1952	1240	6,590	May 22, 1952	14	208	151,000	194	-	140,500
1953	1280	1,320	Apr. 30, 1953	.2	53.3	38,590	45.6	-	33,050
1954	1340	10,800	June 17, 1954	.1	145	105,100	147	-	106,700
1955	1390	3,230	June 25, 1955	.1	52.9	38,280	49.9	-	36,130
1956	1440	670	June 27, 1956	0	3.24	2,350	3.10	-	2,250
1957	1510	890	June 18, 1957	0	9.94	7,190	14.1	-	10,220
1958	1560	18,000	Sept. 4, 1958	0	218	157,700	220	-	159,500
1959	1650	3,140	July 4, 1959	1.8	82.5	59,750	112	-	81,060
1960	1710	11,700	Mar. 28, 1960	4.5	197	143,300	-	-	-

## 8145. North Fork Nemaha River at Humboldt, Nebr.

Location.--Lat 40°09'25", long 95°56'40", in N½ sec.10, T.2 N., R.13 E., on right pile bent under county road bridge at south edge of Humboldt, 800 ft downstream from Long Branch Creek.

Drainage area.--531 sq mi.

Records available.--October 1952 to September 1960.

Gage.--Water-stage recorder for stages above 8.2 ft; wire-weight gage. Datum of gage is 944.44 ft above mean sea level, datum of 1929.

Average discharge.--8 years (1952-60), 195 cfs (141,200 acre-ft per year).

Extremes.--1952-60: Maximum discharge, 51,000 cfs July 10, 1958 (gage height, 31.70 ft); minimum daily, 6.2 cfs Aug. 8, 9, 1957.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952													
1953	44.1	77.8	121	97.7	144	164	122	138	76.5	41.5	92.5	20.7	94.8
1954	19.8	27.8	36.1	18.5	70.0	39.8	36.2	152	1,412	54.1	1,436	45.2	280
1955	142	35.4	32.7	27.7	485	90.8	80.9	32.7	379	38.4	16.6	13.3	111
1956	15.8	21.4	27.8	23.7	31.8	27.1	25.1	42.4	105	549	35.4	10.7	76.9
1957	12.8	18.4	17.9	15.1	28.4	39.5	151	142	292	38.0	49.6	93.0	74.5
1958	339	46.1	35.4	39.6	420	322	80.9	113	74.0	1,800	74.3	1,040	365
1959	51.5	50.3	53.6	37.5	217	492	154	743	221	351	53.7	149	215
1960	557	76.9	66.4	411	262	1,327	343	179	283	133	319	82.2	339

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952													
1953	2,710	4,630	7,430	6,010	8,020	10,100	7,230	8,480	4,550	2,550	5,680	1,230	68,620
1954	1,220	1,650	2,220	1,140	3,890	2,450	2,150	9,340	84,000	3,320	88,320	2,690	202,400
1955	8,710	2,100	2,010	1,710	26,940	5,580	4,810	2,010	22,550	2,360	1,020	791	80,590
1956	971	1,270	1,710	1,460	1,830	1,660	1,560	2,610	6,230	33,730	2,180	636	55,850
1957	787	1,090	1,100	930	1,570	2,430	9,000	8,730	17,390	2,340	3,050	5,540	53,960
1958	20,820	2,740	2,180	2,440	23,350	19,800	4,810	6,950	4,410	110,400	4,570	61,810	264,300
1959	3,170	2,990	3,300	2,300	12,040	30,270	9,150	45,710	13,140	21,590	3,300	8,850	155,800
1960	34,250	4,570	4,080	25,250	15,090	81,600	20,400	11,020	16,830	8,180	19,630	4,890	245,800

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950								
1951								
1952								
1953	1280	2,180	Aug. 6, 1953	15	94.8	68,620	81.4	58,940
1954	1340	43,300	June 17, 1954	12	280	202,400	290	210,100
1955	1390	13,500	June 24, 1955	10	111	80,590	99.1	71,720
1956	1440	18,800	July 2, 1956	7.4	76.9	55,850	75.6	54,870
1957	1510	10,400	June 17, 1957	6.2	74.5	53,960	108	76,720
1958	1560	51,000	July 10, 1958	12	365	264,300	343	248,000
1959	1630	12,600	Mar. 26, 1959	8.2	215	155,800	261	189,200
1960	1710	36,200	Mar. 27, 1960	23	339	245,800	-	-

## 8150. Nemaha River at Falls City, Nebr.

Location.--Lat 40°02'00", long 95°35'30", on line between secs.22 and 23, T.1 N., R.16 E., near right bank on downstream side of pier of bridge on U. S. Highway 73, 1 mile south of Falls City and 13 miles upstream from mouth.

Drainage area.--1,340 sq mi, approximately.

Records available.--March 1944 to September 1960.

Gage.--Water-stage recorder for stages above 6.3 ft; wire-weight gage. Datum of gage is 861.24 ft above mean sea level, datum of 1929, supplementary adjustment of 1943, tentative (levels by Corps of Engineers). Prior to Oct. 16, 1952, wire-weight gage at same site and datum.

Average discharge.--16 years (1944-60), 659 cfs (477,100 acre-ft per year); median of yearly mean discharges, 590 cfs (427,000 acre-ft per year).

Extremes.--1944-60: Maximum discharge, 51,400 cfs June 17, 1954 (gage height, 27.44 ft); maximum gage height, 28.8 ft June 2, 1949 (from floodmark); minimum daily discharge, 4.3 cfs Dec. 15, 16, 1953.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1,640	177	117	106	231	591	937	3,211	7,816	4,665	1,867	2,713	2,010
1952	429	466	238	332	308	1,877	1,925	1,437	472	851	2,018	501	892
1953	117	204	310	303	402	450	355	370	170	97.2	163	50.7	247
1954	32.0	52.7	56.9	34.7	109	58.8	60.9	269	3,462	101	3,898	159	693
1955	233	95.0	87.9	85.5	945	300	320	133	881	133	40.3	33.7	268
1956	36.8	36.7	41.3	33.5	51.8	42.5	32.3	48.9	132	493	68.3	16.6	86.7
1957	21.0	28.1	24.1	19.9	42.2	46.3	276	233	576	94.2	58.4	151	130
1958	595	93.5	57.2	78.1	720	889	180	386	4293,888	470	5,408	934	934
1959	195	150	121	101	547	1,087	511	1,893	459	972	167	928	594
1960	1,660	293	257	1,136	842	5,518	996	646	1,226	402	509	198	978

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	100,800	10,500	7,190	6,510	12,830	36,350	55,730	197,400	465,100	286,700	114,800	161,400	1,455,000
1952	26,360	27,760	14,620	20,410	17,710	15,400	14,600	88,340	28,110	52,300	124,100	17,890	647,600
1953	7,190	12,160	19,060	18,620	22,310	27,690	19,950	22,770	10,090	5,980	10,030	3,020	178,900
1954	1,970	3,140	3,500	2,140	6,060	3,610	3,620	16,520	206,000	6,190	239,700	9,430	501,900
1955	14,300	5,650	5,400	5,260	52,500	18,430	19,050	8,160	52,400	8,160	2,480	2,000	193,800
1956	2,260	2,180	2,540	2,060	2,980	2,610	1,920	3,010	7,860	30,500	4,200	986	62,910
1957	1,290	1,670	1,480	1,220	2,340	2,850	16,440	14,330	34,250	5,790	3,590	8,990	94,240
1958	36,580	5,560	3,520	4,800	39,990	54,680	10,710	23,740	25,550	39,100	28,930	202,600	676,000
1959	11,970	8,900	7,470	6,190	30,370	66,850	30,400	116,400	26,150	59,780	10,270	55,230	430,000
1960	102,000	17,420	15,820	69,860	48,410	216,300	59,280	39,710	72,980	24,740	31,320	11,790	709,600

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	538	389,600	
1951	1210	33,200	May 1, 1951	72	2,010	1,455,000	1,942	1,406,000	
1952	1240	26,300	Aug. 29, 1952	110	892	647,600	850	617,500	
1953	1280	1,920	Aug. 7, 1953	28	247	178,900	206	149,100	
1954	1340	51,400	June 17, 1954	4.3	693	501,900	716	518,600	
1955	1390	16,000	June 24, 1955	20	268	193,800	242	175,400	
1956	1440	13,400	July 3, 1956	7.0	86.7	62,910	83.2	60,370	
1957	1510	13,200	June 17, 1957	5.2	130	94,240	187	135,500	
1958	1560	35,100	July 10, 1958	14	934	676,000	910	658,600	
1959	1630	20,500	May 30, 1959	65	594	430,000	742	536,900	
1960	1710	46,900	Mar. 28, 1960	78	978	709,600	-	-	



## 8155. Muddy Creek at Verdon, Nebr.

Location.--Lat 40°08'40", long 95°43'10", in NE<sup>1</sup>/<sub>4</sub> sec.15, T.2 N., R.15 E., on downstream end of right pier of bridge on U. S. Highway 73, 0.4 mile west of Verdon and 1 mile downstream from Sardine Creek.

Drainage area.--188 sq mi.

Records available.--October 1952 to September 1960.

Gage.--Water-stage recorder for stages above 7.6 ft; wire-weight gage. Datum of gage is 896.74 ft above mean sea level, datum of 1929.

Average discharge.--8 years (1952-60), 79.7 cfs (57,700 acre-ft per year).

Extremes.--1952-60: Maximum discharge, 31,900 cfs July 10, 1958 (gage height, 31.50 ft), from rating curve extended above 6,400 cfs on basis of slope-area measurement of peak flow; minimum daily, 1.0 cfs Dec. 1, 1956.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952													
1953	19.4	70.5	94.7	66.2	68.2	81.6	68.2	58.2	28.4	18.5	28.5	12.2	51.0
1954	11.9	17.4	18.2	10.9	36.3	21.1	26.0	64.2	396	12.2	147	18.4	64.5
1955	17.4	18.3	24.3	18.2	218	48.2	53.3	24.0	53.0	12.2	8.38	6.81	40.5
1956	12.1	9.34	11.3	23.0	28.0	13.2	11.5	14.8	22.2	116	15.2	5.70	23.6
1957	7.10	11.6	11.0	11.7	8.40	21.3	83.8	107	136	9.19	52.6	37.7	41.5
1958	110	37.4	22.8	22.7	155	115	55.3	122	56.1	779	32.8	469	165
1959	36.6	29.4	22.9	21.8	73.2	202	92.0	269	115	88.9	67.7	133	96.2
1960	216	44.0	47.4	222	119	499	122	135	191	55.7	153	48.5	155

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952													
1953	1,190	4,190	5,830	4,070	3,790	5,020	4,060	3,580	1,690	1,140	1,630	724	36,910
1954	733	1,040	1,120	672	2,020	1,300	1,550	3,950	23,590	753	9,040	974	46,740
1955	1,070	1,090	1,490	1,120	12,080	2,960	3,170	1,480	3,160	751	515	405	29,290
1956	742	558	692	1,410	1,610	813	683	908	1,320	7,140	932	339	17,150
1957	437	690	676	721	467	1,310	4,980	6,590	8,110	565	3,230	2,240	30,020
1958	6,760	2,230	1,400	1,400	8,600	7,100	3,290	7,520	3,840	47,860	2,020	27,910	119,400
1959	2,250	1,750	1,410	1,340	4,060	12,410	5,480	16,550	6,830	5,470	4,170	7,890	69,610
1960	13,290	2,620	2,910	13,640	6,850	30,680	7,230	8,300	11,380	3,430	9,420	2,880	112,600

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950								
1951								
1952								
1953	1280	4,040	Nov. 18, 1952	8.4	51.0	36,910	39.5	28,600
1954	1340	17,100	June 17, 1954	6.0	64.5	46,740	65.6	47,500
1955	1390	8,480	Feb. 18, 1955	3.3	40.5	29,290	38.2	27,630
1956	1440	8,370	July 2, 1956	1.0	23.6	17,150	23.4	16,960
1957	1510	10,200	June 17, 1957	4.0	41.5	30,020	53.3	38,600
1958	1560	31,900	July 10, 1958	8.2	165	119,400	158	114,500
1959	1630	6,700	Mar. 26, 1959	14	96.2	69,610	115	83,020
1960	1710	20,000	Mar. 27, 1960	20	155	112,600	-	-

8160. Mill Creek at Oregon, Mo.

Location.--Lat 39°58'55", long 95°07'35", in NE 1/4 sec. 35, T.60 N., R.38 W., on left bank at downstream side of bridge on U. S. Highway 275, half a mile upstream from Rock Creek, 1 mile southeast of Oregon, and 7 miles upstream from mouth.

Drainage area.--4.90 sq mi.

Records available.--July 1950 to September 1959, water year 1960 (annual maximum).

Gage.--Crest-stage gage. Datum of gage is 921.26 ft above mean sea level, datum of 1929. Prior to Oct. 1, 1959, water-stage recorder at same site and datum.

Average discharge.--9 years (1950-59), 1.71 cfs (1,238 acre-ft per year).

Extremes.--1950-60: Maximum discharge, 2,640 cfs July 30, 1958 (gage height, 7.0 ft), from rating curve extended above 830 cfs by logarithmic plotting.  
1950-59: No flow for many days in 1953-58.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1950	-	-	-	-	-	-	-	-	-	-	3.35	1.73	-
1951	2.50	0.819	0.535	0.794	1.24	3.11	5.12	8.76	12.7	4.79	7.79	5.20	4.45
1952	2.57	2.94	1.95	2.07	1.59	3.49	3.79	4.75	2.57	1.55	2.29	1.24	2.57
1953	.943	1.68	1.35	1.21	1.39	2.03	2.15	2.32	1.53	.476	.117	.025	1.27
1954	0	.07	.14	.04	.25	.17	.97	1.03	1.20	.03	†3.96	.07	.67
1955	2.26	.10	.20	.22	10.7	2.06	1.14	.49	3.54	1.02	.03	.03	1.75
1956	.11	.07	.02	0	0	.10	.10	.21	.11	2.34	.48	0	.300
1957	0	.01	0	0	0	.23	1.71	.17	1.16	0	.31	.07	.302
1958	.39	.16	.18	.11	.21	.19	.17	2.45	3.72	11.1	2.00	5.33	2.18
1959	.67	1.04	.36	.33	5.20	1.61	1.57	6.12	3.45	1.87	1.49	1.07	1.89
1960													

† Corrected.

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1950	-	-	-	-	-	-	-	-	-	-	206	103	-
1951	154	49	33	49	69	192	305	539	753	294	479	309	3,220
1952	158	175	120	127	92	214	225	292	153	95	141	74	1,870
1953	58	100	83	74	77	125	128	143	91	29	7.2	1.5	917
1954	0	4.4	8.7	2.4	14	11	58	63	71	2.0	244	4.2	483
1955	139	5.8	12	13	595	127	68	30	211	63	1.6	1.8	1,270
1956	6.9	4.0	1.4	0	0	6.0	6.0	13	6.7	144	30	0	218
1957	0	.8	0	0	0	14	102	11	69	0	19	4	†220
1958	24	9.5	11	6.5	12	12	9.9	151	222	690	123	317	1,580
1959	41	62	22	20	178	99	93	376	205	115	92	64	1,370
1960													

† Corrected.

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30						Calendar year			
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff	
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet
1950	1210	-	-	-	-	-	-	-	-	-	-
1951	1210	840	Mar. 2, 1951	0.27	4.45	0.908	12.34	3,220	4.75	13.16	3,440
1952	1240	194	Nov. 12, 1951	0.86	2.57	.524	7.14	1,870	2.28	6.33	1,650
1953	1280	78	Nov. 17, 1952	0	1.27	.259	3.51	917	.951	2.64	689
1954	1340	590	Aug. 21, 1954	0	.67	.137	1.84	483	.865	2.39	626
1955	1390	706	June 24, 1955	0	1.75	.357	4.84	1,270	1.55	4.30	1,120
1956	1440	417	July 2, 1956	0	.300	.061	.84	218	.284	.783	206
1957	1510	381	June 14, 1957	0	.302	.062	.833	†220	.363	1.00	284
1958	1560	2,640	July 30, 1958	0	2.18	.445	6.04	1,580	2.29	6.36	1,660
1959	1630	500	June 29, 1959	.2	1.89	.386	5.25	1,370	-	-	-
1960	-	739	June 30, 1960	-	-	-	-	-	-	-	-

† Corrected.

## 8170. Nodaway River at Clarinda, Iowa

Location.--Lat 40°44'10", long 95°00'30", in NE $\frac{1}{4}$  sec.32, T.69 N., R.36 W., on downstream side of center pier of bridge on State Highway 2, 0.5 mile downstream from Neele Branch, 1.2 miles east of city square of Clarinda, and 7.5 miles upstream from East Nodaway River.

Drainage area.--762 sq mi (revised).

Records available.--May 1918 to July 1925, May 1936 to September 1960. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder for stages above 4.5 ft; wire-weight gage. Datum of gage is 960.36 ft above mean sea level, datum of 1929. Prior to July 5, 1925, chain gage and May 28, 1936, to Mar. 26, 1957, wire-weight gage, at same site and datum.

Average discharge.--30 years (1918-24, 1936-60), 291 cfs (210,700 acre-ft per year).

Extremes.--1918-25, 1936-60: Maximum discharge, 31,100 cfs June 13, 1947 (gage height, 25.3 ft, from floodmark), from rating curve extended above 15,000 cfs on basis of an overflow profile and extended channel rating; minimum daily, 1 cfs Sept. 5, 9, 12, 14, 1918, Dec. 9, 27-31, 1923.

Maximum stage known, 25.4 ft, from floodmarks, in August 1903.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	187	40.2	21.0	16.0	336	1,096	1,162	1,967	1,632	637	340	379	652
1952	184	138	78.0	218	197	1,068	680	549	998	241	244	71.8	388
1953	59.3	63.9	82.5	68.9	411	368	386	310	277	74.8	30.6	18.4	176
1954	16.9	28.1	24.8	15.1	42.6	26.0	38.0	75.6	252	17.3	323	28.3	74.1
1955	75.6	26.5	15.8	16.4	278	333	70.6	105	162	277	13.3	27.8	116
1956	20.8	15.9	11.1	10.7	14.4	38.9	14.4	18.4	45.7	227	269	35.5	60.6
1957	52.2	107	26.0	16.8	49.9	59.9	401	630	607	85.2	26.0	54.2	176
1958	42.5	50.3	76.0	52.3	269	273	128	65.8	45.5	1,429	300	632	282
1959	89.3	70.1	42.6	32.5	343	475	327	1,743	540	376	526	150	395
1960	143	158	171	570	293	1,579	1,201	629	379	261	633	449	540

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	11,470	2,390	1,290	986	18,640	67,400	69,150	120,900	97,100	39,170	20,900	22,540	471,900
1952	11,330	8,210	4,800	13,370	11,360	65,680	40,440	33,780	58,770	14,810	14,990	4,270	281,800
1953	2,420	3,800	5,070	4,230	22,830	22,640	22,990	19,050	16,500	4,600	1,880	1,100	†127,100
1954	1,040	1,670	1,530	930	2,370	1,600	2,260	4,650	14,980	1,060	19,860	1,680	53,630
1955	4,650	1,580	974	1,010	15,450	20,460	4,200	6,450	9,650	17,010	820	1,650	83,900
1956	1,280	948	680	655	827	2,390	857	1,010	2,720	13,980	16,560	2,110	†44,020
1957	3,210	6,360	1,600	1,030	2,770	3,680	23,850	38,720	36,130	5,240	1,600	3,230	127,400
1958	2,610	2,990	4,670	3,830	14,970	16,780	7,610	4,050	2,710	87,880	18,440	37,600	204,100
1959	5,490	4,170	2,620	2,000	19,060	29,210	19,430	107,100	32,160	23,130	32,320	8,910	285,600
1960	8,810	9,410	10,510	35,030	16,880	97,080	71,440	38,700	22,580	16,080	38,890	26,710	392,100

† Corrected.

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30						Calendar year			
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff	
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet
1950	-	-	-	-	-	-	-	-	188	3.34	136,000
1951	1210	15,000	May 1, 1951	13	652	0.856	11.60	471,900	665	11.83	481,100
1952	1240	13,400	June 22, 1952	36	588	.509	6.95	281,800	370	6.62	†268,800
1953	1280	1,630	Apr. 30, 1953	13	176	.231	3.13	†127,100	166	2.97	120,100
1954	1340	83,930	Aug. 23, 1954	8	74.1	.097	1.33	53,630	78.2	1.39	56,590
1955	1390	7,100	July 9, 1955	6.0	116	.152	2.05	83,900	110	1.95	79,610
1956	1440	3,850	July 7, 1956	3.8	60.6	.080	1.08	†44,020	72.0	1.29	†52,780
1957	1510	6,980	May 30, 1957	8.6	176	.231	3.15	127,400	175	3.11	126,500
1958	1560	13,800	July 3, 1958	14	282	.370	5.01	204,100	285	5.07	206,200
1959	1630	13,200	May 30, 1959	17	395	.518	7.04	285,600	417	7.45	302,000
1960	1710	16,900	Mar. 30, 1960	40	540	.709	9.67	392,100	-	-	-

† Corrected.

a Maximum observed.

## 8175. Nodaway River near Burlington Junction, Mo.

Location.--Lat 40°26'40", long 95°05'20", in NW¼ sec.17, T.65 N., R.37 W., on downstream side of left pier of bridge on U. S. Highway 136, a quarter of a mile upstream from Mill Creek, 0.5 mile downstream from Wabash Railroad Co. bridge, and 1½ miles west of Burlington Junction.

Drainage area.--1,240 sq mi, approximately.

Records available.--March 1922 to September 1960.

Gage.--Water-stage recorder and wire-weight gage. Datum of gage is 896.17 ft above mean sea level, datum of 1929. Prior to Oct. 26, 1928, chain gage on former bridge at same site at approximately same datum. Oct. 26, 1928, to June 9, 1929, chain gage at site half a mile upstream set to read same as former gage at low water. June 10, 1929, to Dec. 6, 1934, chain gage and Dec. 7, 1934, to June 28, 1939, wire-weight gage, at present site and datum.

Average discharge.--38 years (1922-60), 479 cfs (346,800 acre-ft per year).

Extremes.--1922-60: Maximum discharge, 32,000 cfs June 14, 1947 (gage height, 19.0 ft); maximum gage height observed, 19.69 ft Mar. 5, 1949 (ice jam); minimum discharge, 1.1 cfs Aug. 7, 1934.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	310	56.7	42.4	35.3	835	1,492	1,857	3,908	3,024	1,482	956	900	1,243
1952	332	380	197	463	367	2,005	1,331	965	1,337	374	289	86.8	683
1953	50.1	146	133	129	628	612	781	584	556	148	53.2	29.2	319
1954	18.7	30.0	30.6	19.7	50.6	29.8	233	242	592	21.6	378	38.2	140
1955	133	36.5	33.2	28.1	949	714	334	160	292	411	16.5	23.3	256
1956	32.8	15.5	13.3	11.6	20.3	40.2	14.5	22.2	81.8	471	462	51.6	104
1957	39.2	116	36.8	25.6	59.9	64.3	693	900	715	124	28.5	59.8	238
1958	80.8	78.7	111	100	502	406	194	315	74.7	2,489	481	803	471
1959	150	132	72.7	44.5	704	881	646	3,253	1,180	766	866	546	772
1960	412	342	361	1,884	549	2,873	1,767	1,155	938	569	1,029	724	1,054

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	19,090	3,370	2,610	2,170	46,360	91,740	10,500	240,300	179,900	91,130	58,790	53,570	899,500
1952	20,420	22,640	12,100	28,490	21,110	123,300	82,790	59,350	79,550	23,030	17,760	5,160	495,700
1953	3,080	8,690	8,150	7,930	34,880	37,650	46,460	35,930	33,100	9,090	3,880	1,740	230,600
1954	1,150	1,790	1,880	1,210	2,810	1,830	13,890	14,880	35,240	1,330	23,240	2,270	101,500
1955	8,160	2,170	2,040	1,730	52,730	43,900	19,880	9,840	17,350	25,270	1,010	1,390	185,500
1956	2,020	924	815	712	1,170	2,470	862	1,370	4,870	28,990	28,390	3,070	75,660
1957	2,410	6,900	2,260	1,570	3,330	3,950	41,210	55,350	42,530	7,640	1,750	3,560	172,500
1958	4,970	4,680	6,820	6,150	27,880	24,980	11,570	19,400	4,440	153,000	29,560	47,790	341,200
1959	9,220	7,840	4,470	2,730	39,090	54,190	38,470	200,000	70,200	47,090	53,270	32,500	559,100
1960	25,350	20,350	22,210	115,900	31,580	176,600	105,100	71,010	55,810	34,940	63,260	43,070	765,200

† Corrected.

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30							Calendar year		
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff	
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet
1950	-	-	-	-	-	-	-	-	336	3.68	243,200
1951	1210	24,600	May 1, 1951	25	1,243	1.00	13.60	899,500	1,284	14.05	929,600
1952	1240	14,100	June 22, 1952	54	683	.551	7.49	495,700	634	6.96	460,500
1953	1280	4,300	June 9, 1953	17	319	.257	3.49	230,600	298	3.27	215,500
1954	1340	5,680	May 31, 1954	8	140	.113	1.53	101,500	151	1.63	109,100
1955	1390	12,200	Feb. 18, 1955	7.8	256	.206	2.80	185,500	244	2.67	176,900
1956	1440	10,000	July 8, 1956	3.6	104	.084	1.14	75,660	115	1.26	83,470
1957	1510	5,820	June 18, 1957	9.4	238	.192	2.60	172,500	245	2.68	177,400
1958	1560	26,000	July 19, 1958	16	471	.380	5.15	341,200	478	5.23	346,300
1959	1630	22,400	May 30, 1959	35	772	.623	8.45	559,100	836	.67	605,400
1960	1710	26,000	Jan. 12, 1960	94	1,054	.850	11.57	765,200	-	-	-

8180. Missouri River at St. Joseph, Mo.

Location.--Lat 39°45'10", long 94°51'28", in sec.17, T.57 N., R.35 W., on downstream side of left pier of St. Joseph & Grand Island Railroad bridge in St. Joseph.

Drainage area.--424,300 sq mi, approximately.

Records available.--August 1928 to September 1960. Gage-height records collected in vicinity 1873-99 are contained in reports of Missouri River Commission; since 1900 in reports of U. S. Weather Bureau.

Gage.--Water-stage recorder. Datum of gage is 788.19 ft above mean sea level, datum of 1929. Prior to Oct. 21, 1931, chain gage and Oct. 21, 1931, to Dec. 31, 1933, water-stage recorder, at same site at datum 5.50 ft higher.

Average discharge.--32 years (1928-60), 37,150 cfs (26,900,000 acre-ft per year).

Extremes.--1928-60: Maximum discharge, 397,000 cfs Apr. 22, 23, 1952 (gage height, 26.82 ft); minimum, 2,300 cfs Jan. 9, 1937; minimum gage height, 0.00 ft Dec. 18, 19, 1940. Maximum stage known, 27.2 ft, present datum, Apr. 29, 1881 (discharge, about 370,000 cfs, computed by Corps of Engineers). Flood in June 1844 reached a stage of 24.5 ft (discharge, about 350,000 cfs, computed by Corps of Engineers).

Remarks.--Flow partly regulated by many reservoirs above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	45,960	37,030	15,060	22,300	23,450	48,820	101,800	182,990	113,900	84,220	74,110	75,230	60,480
1952	59,240	52,510	22,900	23,030	47,810	57,240	203,000	90,570	76,360	58,000	45,540	38,440	64,340
1953	36,550	34,950	17,870	18,940	29,480	50,090	42,640	52,480	77,790	49,780	36,510	34,510	40,140
1954	33,810	25,310	19,010	11,870	24,400	31,640	34,550	37,230	54,700	35,020	43,560	34,350	32,130
1955	36,140	19,500	16,160	11,790	17,860	31,180	33,440	34,100	39,660	35,710	28,630	34,590	28,290
1956	34,670	16,880	9,835	12,500	13,980	28,910	34,110	34,100	38,520	36,520	37,350	36,180	27,700
1957	30,850	17,700	11,590	11,000	13,450	15,650	22,570	36,540	50,870	38,820	33,000	33,530	26,350
1958	36,370	21,570	15,580	14,270	17,020	26,200	37,000	36,390	35,620	58,530	44,010	43,800	32,300
1959	34,760	20,390	13,730	12,210	19,650	29,640	37,360	57,660	44,610	38,130	40,570	37,330	32,240
1960	38,550	22,170	16,500	18,440	19,940	31,660	93,330	52,170	48,640	39,710	41,660	37,490	38,340

† Corrected.

Monthly and yearly discharge, in thousands of acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	2,826	2,204	926.2	1,371	1,302	3,002	6,057	5,103	6,780	5,179	4,557	4,477	43,780
1952	3,642	3,125	1,408	1,416	2,750	3,520	12,080	5,569	4,544	3,566	2,800	2,288	46,000
1953	2,247	2,079	1,099	1,164	1,637	3,080	2,537	3,227	4,629	3,061	2,245	2,053	29,060
1954	2,079	1,506	1,169	729.6	1,355	1,946	2,056	2,289	3,255	2,153	2,678	2,044	23,260
1955	2,222	1,160	993.5	725.2	991.7	1,917	1,990	2,097	2,360	2,196	1,772	2,058	20,480
1956	2,132	1,124	604.7	768.8	804.1	1,778	2,030	2,097	2,073	2,246	2,296	2,153	20,110
1957	1,897	1,053	712.7	676.4	746.8	962	1,343	2,247	3,027	2,387	2,029	1,995	19,060
1958	2,237	1,284	958	877.1	945.1	1,611	2,201	2,238	2,119	3,599	2,706	2,606	23,360
1959	2,137	1,213	844.2	750.5	1,091	1,822	2,223	3,546	2,654	2,344	2,494	2,221	23,340
1960	2,370	1,319	1,015	1,134	1,147	1,947	5,554	3,208	2,894	2,442	2,574	2,231	27,840

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	49,100	35,550,000
1951	1210	196,000	May 3, 1951	5,500	60,480	43,780,000	63,540	46,000,000
1952	1240	397,000	Apr. 22, 23, 1952	5,600	64,340	46,710,000	60,550	43,960,000
1953	1280	118,000	June 28, 1953	11,800	40,140	29,060,000	39,210	28,390,000
1954	1340	104,000	June 22, 1954	7,000	32,130	23,260,000	31,610	22,880,000
1955	1390	91,600	June 25, 1955	8,000	28,290	20,480,000	27,580	19,970,000
1956	1440	58,600	July 3, 1956	4,500	27,700	20,110,000	27,420	19,910,000
1957	1510	126,000	June 18, 1957	3,800	26,350	19,080,000	27,480	19,690,000
1958	1560	139,000	July 11, 1958	7,400	32,300	23,360,000	31,900	23,100,000
1959	1630	133,000	May 31, 1959	6,700	32,240	23,340,000	32,950	23,850,000
1960	1710	175,000	Apr. 6, 1960	8,400	38,340	27,840,000	-	-

## 8189. Platte River at Ravenwood, Mo.

Location.--Lat 40°20'42", long 94°41'10", in SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec.14, T.64 N., R.34 W., on downstream side of left pier of bridge on U. S. Highway 136, three-quarters of a mile west of Ravenwood and 1 mile downstream from Honey Creek.

Drainage area.--486 sq mi.

Records available.--September 1958 to September 1960.

Gage.--Water-stage recorder. Altitude of gage is 960 ft above mean sea level (from topographic map).

Extremes.--1958-60: Maximum discharge, 11,000 cfs Mar. 29, 1960 (gage height, 18.40 ft in well, 18.8 ft from outside gage); minimum, 7.6 cfs Sept. 17, 1959; minimum gage height, 2.00 ft Aug. 5, 1960.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1958	-	-	-	-	-	-	-	-	-	-	-	194	-
1959	85.2	157	27.3	20.9	461	739	534	1,124	363	364	317	529	393
1960	251	65.4	226	1,152	129	1,179	598	504	494	438	876	502	538

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1958	-	-	-	-	-	-	-	-	-	-	-	11,540	-
1959	5,240	9,340	1,680	1,280	25,590	45,440	31,770	69,090	21,580	22,390	19,490	31,480	284,400
1960	15,430	3,890	13,880	70,850	7,420	72,490	35,610	31,010	29,380	26,940	53,870	29,880	390,600

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year				
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff	
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet
1958	1630	-	-	-	-	-	-	-	-	-	-
1959	1630	10,500	May 31, 1959	8.0	393	0.809	10.96	284,400	416	11.63	301,300
1960	1710	11,000	Mar. 29, 1960	19	538	1.11	15.08	390,600	-	-	-

## 8191.9. East Fork One Hundred and Two River near Bedford, Iowa

Location.--Lat 40°38'00", long 94°44'55", in NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec.9, T.67 N., R.34 W., on left bank at downstream side of county highway bridge, a quarter of a mile upstream from Daugherty Creek and 2.8 miles southwest of junction of U. S. Highways 2 and 148 in Bedford.

Drainage area.--92.1 sq mi.

Records available.--September 1959 to September 1960.

Gage.--Water-stage recorder.

Extremes.--1959-60: Maximum discharge, 5,400 cfs Jan. 12, 1960 (gage height, 15.95 ft); minimum daily, 0.2 cfs Aug. 4, 1960.

Remarks.--Slight regulation at low flow by low dam used for water supply in Bedford.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1959	-	-	-	-	-	-	-	-	-	-	-	-	-
1960	23.9	5.46	29.7	291	26.8	209	79.0	70.3	124	89.0	191	73.4	102

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1959	-	-	-	-	-	-	-	-	-	-	-	-	-
1960	1,470	325	1,820	17,880	1,540	12,860	4,700	4,320	7,390	5,470	11,770	4,370	73,920

8195. One Hundred and Two River near Maryville, Mo.

Location.--Lat 40°23'15", long 94°49'35" in SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec.34, T.65 N., R.35 W., on right bank in front of steel pile pier of county highway bridge, 2 $\frac{1}{2}$  miles northeast of Maryville and 3 $\frac{1}{2}$  miles downstream from Norway Creek.

Drainage area.--500 sq mi, approximately.

Records available.--October 1932 to September 1960. April to June 1934 monthly discharge only, published in WSP 1310. Prior to June 1934, published as "at Maryville."

Gage.--Water-stage recorder and wire-weight gage. Datum of gage is 969.90 ft above mean sea level, datum of 1929. Prior to June 20, 1934, staff gage at site 3 miles downstream at datum 5.68 ft lower. June 20, 1934, to Sept. 14, 1958, wire-weight gage at same site and datum.

Average discharge.--28 years (1932-60), 190 cfs (137,600 acre-ft per year).

Extremes.--1932-60: Maximum discharge, 14,200 cfs June 14, 1947 (gage height, 21.2 ft, from floodmark); no flow at times in August and September 1934, July 25, 26, 1940, Jan. 28-30, 1954, and part of each day July 29, 30, 1960 (caused by temporary dam upstream).

Stage equal to that of June 14, 1947, was reached at an unknown date prior to establishment of station, from floodmarks.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	58.5	8.02	4.84	4.74	372	421	723	1,571	1,010	538	410	277	448
1952	96.6	332	70.7	205	90.7	823	482	400	446	83.8	54.6	9.73	258
1953	5.98	108	61.7	59.2	207	283	334	213	217	42.7	10.9	3.16	128
1954	2.97	3.89	3.98	1.60	7.52	3.42	65.8	112	260	2.77	30.3	2.32	41.2
1955	77.9	3.69	3.62	9.02	568	311	156	26.4	48.1	8.67	.87	1.20	97.9
1956	1.02	1.31	2.09	1.20	7.12	4.58	.74	.52	28.4	269	141	3.90	38.9
1957	.29	5.56	1.55	.79	13.1	19.0	494	491	257	7.89	1.76	5.65	108
1958	59.4	21.5	14.3	14.1	214	133	40.6	251	15.0	1,115	136	143	181
1959	41.9	101	29.0	16.7	465	510	432	1,170	358	361	155	306	328
1960	179	68.0	116	1,186	139	1,151	386	410	681	465	949	300	506

† Corrected.

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	2,360	477	298	292	20,680	25,900	43,030	96,620	60,070	33,070	25,190	16,460	324,400
1952	5,940	19,750	4,350	12,580	5,220	50,580	28,660	24,610	26,550	5,150	3,360	579	187,300
1953	368	6,420	3,800	3,640	11,520	17,390	19,870	13,100	12,900	2,620	671	188	92,490
1954	182	231	243	98	418	210	3,920	6,920	15,450	170	1,860	138	29,840
1955	4,790	219	223	555	31,560	19,120	9,270	1,620	2,860	533	54	72	70,880
1956	63	78	128	74	409	282	44	332	1,690	16,550	8,660	232	28,240
1957	18	331	95	49	727	1,170	29,370	30,170	15,320	485	108	336	79,180
1958	3,650	1,280	879	866	11,890	8,160	2,410	15,430	891	68,560	8,370	8,530	130,900
1959	2,580	5,980	1,780	1,030	25,820	31,330	25,710	71,950	21,310	22,220	9,540	18,200	237,400
1960	10,980	4,050	7,140	72,950	8,000	70,800	22,950	25,230	40,520	28,600	58,350	17,830	367,400

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30						Calendar year			
		Momentary		Minimum day	Mean	Per square mile	Runoff	Mean	Runoff		
		Discharge	Date						Inches	Acre-feet	
1950	-	-	-	-	-	-	-	99.9	2.70	72,290	-
1951	1210	11,600	July 6, 1951	2	448	0.896	12.16	324,400	485	13.16	351,400
1952	1240	6,300	Nov. 12, 1951	3.5	258	.516	7.02	187,300	231	6.29	167,900
1953	1280	2,900	June 9, 1953	1.7	128	.256	3.47	92,490	114	3.10	82,560
1954	1340	3,100	June 1, 1954	0	41.2	.082	1.13	29,840	47.5	1.30	34,420
1955	1390	5,080	Feb. 19, 1955	.1	97.9	.196	2.66	70,880	91.0	2.48	65,910
1956	1440	2,840	July 8, 1956	.1	38.9	.078	1.06	28,240	39.1	1.06	28,420
1957	1510	3,740	May 14, 1957	.1	108	.216	2.92	79,180	115	3.13	83,530
1958	1560	8,510	July 19, 1958	.2	181	.362	4.91	130,900	187	5.08	135,400
1959	1630	7,930	July 1, 1959	7.8	328	.656	8.91	237,400	334	9.35	249,300
1960	1710	14,100	Jan. 13, 1960	6.6	506	1.01	13.79	367,400	-	-	-

8200. White Cloud Creek near Maryville, Mo.

Location.--Lat 40°23'22", long 94°54'33", in NW<sup>1</sup> sec. 1, T.64 N., R.36 W., on downstream side of left pier of bridge on U. S. Highway 71, 4 miles upstream from Big Slough and 4½ miles northwest of Maryville.

Drainage area.--6.06 sq mi.

Records available.--October 1948 to September 1959, water year 1960 (annual maximum).

Gage.--Crest-stage gage. Altitude of gage is 1,070 ft (from topographic map). Prior to Oct. 1, 1959, water-stage recorder at same site and datum.

Average discharge.--11 years (1948-59), 2.99 cfs (2,165 acre-ft per year).

Extremes.--1948-60: Maximum discharge, 4,100 cfs June 1, 1949 (gage height, 13.41 ft), from rating curve extended above 130 cfs on basis of contracted-opening measurement of peak flow.

1948-59: No flow for many days.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	3.49	0.668	0.193	0.179	6.63	7.29	16.2	9.87	17.5	8.10	11.0	4.72	7.13
1952	2.32	9.00	1.33	1.74	1.18	10.7	8.19	5.86	14.4	.824	0.649	.165	4.68
1953	.007	.258	.348	.552	1.04	3.89	3.63	3.04	1.11	.091	0	0	1.16
1954	0	0	0	0	0	0	2.23	3.47	2.16	0	.03	0	.657
1955	.01	0	0	.003	18.0	5.09	9.77	.90	2.28	.10	0	0	2.89
1956	0	0	0	0	0	0	0	0	.27	5.75	.47	0	.549
1957	0	0	0	0	.44	.40	4.46	2.34	.68	.003	0	0	.688
1958	.93	.43	.18	.32	6.50	4.11	.84	19.7	.15	19.6	.59	2.63	4.70
1959	.45	.42	.40	.31	4.43	7.63	6.22	14.1	2.90	2.66	6.14	20.8	5.53
1960													

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	215	40	12	11	368	448	962	607	1,040	498	675	281	5,160
1952	143	536	82	107	68	660	487	360	857	51	40	9.8	3,400
1953	.5	14	21	34	58	239	216	187	66	5.6	0	0	841
1954	0	0	0	0	0	0	132	213	128	0	1.6	0	475
1955	.8	0	0	.2	1,000	313	581	56	135	6.1	0	0	2,090
1956	0	0	0	0	0	0	0	0	16	353	29	0	398
1957	0	0	0	0	24	25	266	144	39	2	0	0	498
1958	57	26	11	20	361	252	50	1,210	8.9	1,210	36	157	3,400
1959	28	25	24	19	246	469	370	869	172	164	378	1,240	4,000
1960													

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30						Calendar year			
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff	
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet
1950	-	-	-	-	-	-	-	-	2.04	4.57	1,480
1951	1210	920	Apr. 30, 1951	0	7.13	1.18	15.97	5,160	7.81	17.50	5,650
1952	1240	1,610	June 21, 1952	0	4.68	.772	10.51	3,400	3.69	8.27	2,680
1953	1280	107	Apr. 30, 1953	0	1.16	.191	2.61	841	1.11	2.50	806
1954	1340	256	May 31, 1954	0	.657	.108	1.48	475	.658	1.48	475
1955	1390	900	Apr. 13, 1955	0	2.89	.477	6.48	2,090	2.89	6.48	2,090
1956	1440	395	July 7, 1956	0	.549	.091	1.23	398	.549	1.23	398
1957	1510	169	Apr. 3, 1957	0	.688	.114	1.54	498	1.817	1.85	592
1958	1560	2,300	July 19, 1958	0	4.70	.776	10.52	3,400	4.67	10.48	3,380
1959	1630	1,430	May 30, 1959	0	5.53	.913	12.40	4,000	-	-	-
1960	-	1,500	May 16, 1960	-	-	-	-	-	-	-	-

† Corrected.



## 8205. Platte River near Agency, Mo.

Location--Lat 39°41'20", long 94°42'15", in NE  $\frac{1}{4}$  NW  $\frac{1}{4}$  sec. 10, T.56 N., R.34 W., near center of left span on upstream side of bridge on U. S. Highway 169,  $\frac{1}{2}$  miles downstream from Third Fork and  $\frac{3}{4}$  miles northeast of Agency.

Drainage area--1,760 sq mi, approximately.

Records available--May 1924 to August 1930 (published as "at Agency"), May 1932 to September 1960.

Gage--Wire-weight gage. Datum of gage is 807.38 ft above mean sea level, datum of 1929.  
May 22, 1924, to Aug. 9, 1930, chain gage at site 4 miles downstream at different datum.  
May 13, 1932, to Dec. 12, 1934, chain gage at present site and datum.

Average discharge--33 years (1924-29, 1932-60), 783 cfs (566,900 acre-ft per year).

Extremes--1924-30, 1932-60: Maximum discharge, 50,000 cfs June 23, 1947; maximum gage height, 30.46 ft June 23, 1947; no flow at times in July and August 1934, October 1956.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	279	67.0	41.4	32.6	938	1,764	2,045	4,585	5,372	3,203	1,481	1,635	1,789
1952	521	1,388	318	615	328	3,152	1,559	1,356	1,276	181	149	81.4	912
1953	23.4	205	154	128	506	842	1,171	1,311	745	94.9	30.4	8.85	433
1954	3.54	10.4	13.9	6.7	28.2	16.5	381	611	943	12.5	354	24.7	200
1955	562	23.9	20.7	107	2,062	1,198	869	123	674	+231	19.2	6.76	479
1956	30.6	6.14	6.49	7.64	18.2	25.8	9.89	26.9	239	828	374	13.1	133
1957	.02	9.81	6.68	4.24	33.0	23.2	1,236	1,054	636	55.8	20.6	18.5	258
1958	177	54.5	49.5	41.2	519	643	1,155	1,343	438	3,572	1,030	601	724
1959	205	532	109	88.5	1,638	1,675	1,675	2,780	1,928	749	664	1,622	1,131
1960	559	249	509	3,144	636	3,112	2,943	1,527	1,521	1,948	2,169	1,564	1,741

† Corrected.

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	17,140	3,980	2,550	2,000	52,090	108,500	121,700	281,900	319,700	196,900	91,080	97,270	1,295,000
1952	32,060	82,590	19,540	37,790	18,880	193,600	92,740	83,370	75,910	11,110	9,170	4,840	661,800
1953	1,440	12,220	9,480	7,730	28,100	51,800	69,700	80,810	44,340	5,840	1,870	527	313,700
1954	217	620	855	413	1,570	1,020	22,680	37,600	56,140	770	21,780	1,470	145,100
1955	34,530	1,420	1,270	6,560	114,500	73,670	51,700	7,540	40,080	14,150	1,180	402	347,000
1956	1,880	366	399	470	1,050	1,580	589	1,660	14,240	50,900	22,970	778	96,880
1957	1.0	584	411	261	1,830	1,420	73,550	64,830	37,860	3,430	1,270	1,100	186,500
1958	10,860	3,240	3,050	2,530	28,810	39,560	9,230	82,560	25,880	219,600	63,330	35,790	524,400
1959	12,600	31,680	6,710	5,440	90,940	102,900	99,640	170,900	114,600	46,070	40,810	96,530	818,800
1960	95,860	14,840	31,290	193,300	48,230	191,400	175,100	93,870	90,480	113,600	134,600	81,150	1,264,000

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30						Calendar year			
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff	
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet
1950	-	-	-	-	-	-	-	-	521	4.02	377,300
1951	1210	18,800	May 3, 1951	12	1,789	1.02	13.80	1,295,000	1,941	14.98	1,405,000
1952	1240	12,200	Nov. 13, 1951	24	912	.518	7.05	661,800	759	5.87	550,800
1953	1280	6,800	May 1, 1953	2.3	433	.246	3.34	313,700	404	3.10	292,200
1954	1340	7,070	May 3, 1954	1.0	200	.114	1.55	145,100	262	1.93	180,700
1955	1390	11,900	Feb. 19, 1955	.9	479	.272	3.69	347,000	432	3.32	312,400
1956	1440	6,050	July 3, 1956	.1	133	.076	1.03	96,880	131	1.01	95,230
1957	1510	8,980	Apr. 4, 1957	0	258	.147	1.98	186,500	280	2.15	202,700
1958	1560	16,700	July 18, 1958	3	724	.411	5.59	524,400	771	5.95	558,300
1959	1630	16,700	June 2, 1959	36	1,131	.643	8.72	818,800	1,257	9.69	909,800
1960	1710	29,100	Mar. 31, 1960	67	1,741	.989	13.45	1,264,000	-	-	-

8210. Jenkins Branch at Gower, Mo.

Location.--Lat 39°37'29", long 94°36'01", in SW¼NW¼ sec.34, T.56 N., R.33 W., on right bank at upstream side of culvert on U. S. Highway 169, 0.8 mile north of Gower and 4.4 miles upstream from mouth.

Drainage area.--2.72 sq mi.

Records available.--April 1950 to September 1960.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 905 ft (from topographic map).

Average discharge.--10 years (1950-60); 1.13 cfs (818 acre-ft per year).

Extremes.--1950-60: Maximum discharge, 1,730 cfs May 30, 1956 (gage height, 9.03 ft), from rating curve extended above 240 cfs on basis of slope-area measurement of peak flow; no flow for many days.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	0.099	0.070	0.068	0.068	0.125	0.841	1.29	1.31	8.88	8.66	3.85	6.94	2.69
1952	3.02	2.02	.770	.602	.648	4.92	3.55	1.56	.239	.020	.033	.622	1.50
1953	0	.009	.025	.017	.041	.385	.920	3.17	.194	.121	0	0	.412
1954	0	0	0	0	0	0	.31	1.00	1.43	0	.45	.06	.27
1955	3.44	0	0	.19	5.27	.22	.08	.18	2.06	.01	.01	0	.92
1956	0	0	0	0	0	0	0	5.26	.003	.35	.02	0	.48
1957	0	0	0	0	0	.01	.33	.12	0	0	0	0	.04
1958	.09	0	0	0	1.46	.37	.15	1.29	3.73	7.59	.40	.31	1.28
1959	.15	.87	.05	.02	4.40	1.12	1.65	1.30	.16	.30	2.06	3.67	1.29
1960	5.18	.71	.74	1.39	1.31	5.13	2.77	1.33	4.63	1.94	3.78	.02	2.42

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	6.1	4.2	4.1	4.2	6.9	52	77	81	526	532	237	413	1,950
1952	186	120	47	37	37	303	211	96	14	1.2	2.0	37	1,090
1953	0	.6	1.5	1.1	2.3	24	55	195	12	7.5	0	0	299
1954	0	0	0	0	0	0	18	62	85	0	27	3.4	195
1955	211	0	0	12	293	13	4.8	11	123	.6	.8	0	669
1956	0	0	0	0	0	0	0	324	.2	21	1.2	0	346
1957	0	0	0	0	0	.8	20	7.5	0	0	0	0	28
1958	5.8	0	0	0	91	23	9.1	79	222	467	25	19	950
1959	9.3	52	3.4	1.4	244	69	98	80	9.7	19	127	219	932
1960	319	42	45	85	75	315	165	82	276	119	232	1.0	1,760

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30						Calendar year			
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff	
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet
1950	-	-	-	-	-	-	-	-	-	-	-
1951	1210,1440	582	June 21, 1951	0	2.69	0.989	13.42	1,950	3.12	15.58	2,260
1952	1240,1440	181	Sept. 1, 1952	0	1.50	.551	7.55	1,090	1.02	5.12	740
1953	1280	97	May 5, 1953	0	.412	.151	2.06	299	.409	2.05	297
1954	1340,1440	666	June 2, 1954	0	.27	.099	1.36	195	.56	2.82	406
1955	1390,1440	471	June 24, 1955	0	.92	.338	4.62	669	.63	3.16	458
1956	1440	1,730	May 30, 1956	0	.48	.176	2.39	346	.48	2.39	346
1957	1510	53	Apr. 3, 1957	0	.04	.015	.20	28	.047	.24	34
1958	1560	662	July 30, 1958	0	1.28	.471	6.42	930	1.36	6.82	989
1959	1630	968	Sept. 22, 1959	0	1.29	.474	6.43	932	1.76	8.79	1,270
1960	1710	864	June 30, 1960	0	2.42	.890	12.11	1,760	-	-	-

## 8215. Arikaree River at Haigler, Nebr.

Location.--Lat 40°01'30", long 101°57'25", in NE 1/4 sec. 28, T.1 N., R.41 W., on right bank 40 ft downstream from bridge on U. S. Highway 34, 0.6 mile upstream from Chicago, Burlington & Quincy Railroad bridge, 1 mile upstream from confluence with North Fork Republican River, 1 mile northwest of Haigler, and 4 miles downstream from Kansas-Nebraska State line.

Drainage area.--1,460 sq mi, approximately, of which about 1,330 sq mi contributes directly to surface runoff.

Records available.--October 1931 to September 1960. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 3,246.61 ft above mean sea level, datum of 1929. Prior to May 30, 1935, staff gage at site 0.6 mile downstream at datum 1.25 ft lower. May 30, 1935, to Nov. 20, 1938, staff gage and Nov. 21, 1938, to Sept. 30, 1940, water-stage recorder, at datum 3.25 ft lower; Oct. 1, 1940, to May 9, 1956, water-stage recorder at datum 4.25 ft lower, all at site 0.6 mile downstream.

Average discharge.--29 years (1931-60), 29.0 cfs (21,000 acre-ft per year); median of yearly mean discharges, 24 cfs (17,500 acre-ft per year).

Extremes.--1931-60: Maximum discharge, 50,000 cfs May 31, 1935 (gage height, 11.2 ft, site and datum then in use, from floodmarks), from rating curve extended above 3,800 cfs on basis of slope-area measurement of peak flow; no flow for some periods in most years.

Remarks.--Natural flow affected by ground-water withdrawals and diversions for irrigation of about 1,500 acres in Colorado, and by return flow from Pioneer Canal. Records of suspended sediment loads for the period March 1947 to September 1951 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	17.6	17.6	12.2	9.79	22.2	16.8	31.8	58.4	*137	27.3	11.4	*93.3	*37.8
1952	26.4	22.8	11.4	23.3	33.1	36.7	40.3	41.7	10.5	3.8	0	3.04	20.7
1953	7.75	2.81	1.89	14.5	22.1	26.0	34.5	17.8	8.20	.66	3.60	.58	11.6
1954	5.00	7.64	1.70	3.64	14.7	19.1	17.1	17.8	4.81	21	*6.15	*14.9	*9.34
1955	12.5	1.30	1.60	1.60	7.51	21.3	17.5	141	149	3.39	6.93	5.13	30.8
1956	9.37	6.03	1.00	3.59	11.2	8.85	9.93	*18.0	3.34	*35.4	*100	5.03	*17.8
1957	9.51	6.37	10.2	5.35	25.6	22.5	47.5	129	88.1	98.7	29.5	6.79	37.4
1958	16.7	7.45	9.64	10.2	13.3	24.2	44.7	36.0	25.8	33.8	90.5	13.5	27.3
1959	8.00	11.4	15.8	15.1	22.8	31.0	29.9	27.1	8.45	5.68	.81	5.50	14.9
1960	14.4	1.65	1.58	1.03	18.7	*400	32.8	27.1	19.5	*14.8	.24	3.47	*45.1

\* Revised; revised daily discharge for the periods thus affected are available and will be published in a future water-supply paper.

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1,080	1,050	753	602	1,230	1,030	1,890	3,590	*8,170	1,680	702	*5,550	*27,330
1952	1,620	1,360	699	1,430	1,900	2,260	2,400	2,560	623	24	0	181	15,060
1953	477	167	116	892	1,230	1,600	2,050	1,100	488	41	221	35	8,420
1954	308	454	105	224	*817	1,180	1,020	1,100	286	13	*378	*884	*6,770
1955	772	77	98	98	417	1,310	1,040	8,690	8,860	209	428	305	22,300
1956	576	359	61	221	643	544	591	*1,110	199	*2,180	*6,170	299	*12,950
1957	585	379	625	329	1,420	1,380	2,820	7,910	4,050	5,330	1,810	404	27,040
1958	1,030	443	593	627	739	1,490	2,660	2,210	1,540	2,080	5,580	802	19,770
1959	492	676	851	927	1,270	1,910	1,780	1,670	503	349	50	327	10,800
1960	889	98	97	63	1,070	*24,620	1,950	1,670	1,160	*684	15	207	*32,720

\* Revised; see footnote to preceding table.

† Corrected.

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet		
		Discharge	Date							
1950	-	-	-	-	-	-	22.8	-	16,490	
1951	1210	*4,000	Sept. 7, 1951	0.6	*37.8	*27,330	*38.9		*28,120	
1952	1240	a680	May 8, 1952	0	20.7	15,060	16.7		12,140	
1953	1260	924	Aug. 4, 1953	0	11.6	8,420	11.8		6,520	
1954	1340	*872	Sept. 28, 1954	0	*9.34	*6,770	*9.45		*6,850	
1955	1390	6,360	June 15, 1955	0	30.8	22,300	30.9		22,350	
1956	1440	5,680	Aug. 17, 1956	0	*17.8	*12,950	*18.7		*13,550	
1957	1510	2,960	May 16, 1957	.7	37.4	27,040	38.0		27,520	
1958	1560	7,790	Aug. 16, 1958	.2	27.3	19,770	27.2		19,750	
1959	1630	511	May 20, 1959	0	14.9	10,800	13.6		9,870	
1960	1910	*5,690	Mar. 24, 1960	0	*45.1	*32,720	-		-	

\* Revised.

a Estimated.

8220. North Fork Republican River near Wray, Colo.

Location.--Lat 40°04', long 102°17', in NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec.9, T.1 N., R.44 W., on right bank 150 ft upstream from bridge on State Highway 29, 1 $\frac{1}{2}$  miles upstream from Chief Creek, and  $\frac{3}{2}$  miles west of Wray.

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

Gage.--Water-stage recorder. Prior to Aug. 2, 1940, staff gage and Aug. 2, 1940, to Sept. 30, 1946, water-stage recorder, at site three-quarters of a mile upstream at different datum.

Average discharge.--15 years (1937-46, 1951-57), 22.1 cfs (16,000 acre-ft per year).

Extremes.--1937-46, 1951-57: 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.--Diversions above station for irrigation.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952	23.1	23.2	26.3	24.6	25.9	26.6	26.5	25.6	20.8	18.0	20.2	21.4	23.5
1953	20.7	23.0	25.1	24.7	24.8	26.0	26.4	24.2	20.3	18.4	18.9	17.8	22.5
1954	19.8	23.8	23.7	24.1	24.3	23.2	21.2	22.6	18.7	23.4	19.8	18.0	21.9
1955	22.0	22.0	21.9	21.2	23.0	23.3	21.1	21.9	32.8	19.1	19.3	20.9	22.3
1956	20.6	21.9	23.2	24.3	23.2	23.4	20.4	21.4	19.2	18.5	30.0	20.1	22.2
1957	20.6	23.8	23.2	22.0	24.2	24.8	25.8	30.9	26.7	21.2	19.9	20.5	23.6
1958													
1959													
1960													

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952	1,420	1,390	1,620	1,520	1,490	1,630	1,580	1,570	1,240	1,110	1,240	1,270	17,070
1953	1,280	1,370	1,540	1,520	1,380	1,600	1,570	1,490	1,210	1,130	1,160	1,060	16,310
1954	1,220	1,420	1,460	1,480	1,350	1,430	1,260	1,390	1,110	1,440	1,220	1,070	15,850
1955	1,350	1,310	1,350	1,310	1,280	1,430	1,260	1,340	1,950	1,170	1,190	1,240	16,180
1956	1,270	1,300	1,430	1,490	1,340	1,440	1,210	1,310	1,140	1,140	1,840	1,200	16,110
1957	1,270	1,420	1,430	1,350	1,350	1,520	1,540	1,900	1,590	1,300	1,230	1,220	17,120
1958													
1959													
1960													

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950								
1951								
1952	1240	50	Aug. 20, 1952	-	23.5	17,070	23.2	16,840
1953	1280	60	Apr. 24, 1953	16	22.5	16,310	22.4	16,220
1954	1340	198	Aug. 16, 1954	16	21.9	15,850	21.8	15,760
1955	1440	268	June 18, 1955	16	22.3	16,180	22.3	16,170
1956	1440	283	Aug. 11, 1956	15	22.2	16,110	22.4	16,230
1957	1510	110	June 1, 1957	17	23.6	17,120	-	-
1958								
1959								
1960								

## 8230. North Fork Republican River at Colorado-Nebraska State line

Location.--Lat 40°04'10", long 102°03'05", in sec.10, T.1 N., R.42 W., on right bank 100 ft east of Colorado-Nebraska State line and 9½ miles upstream from confluence with Arikaree River.

Records available.--October 1930 to September 1960. Prior to October 1932, published as North Fork of Arikaree River. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 3,336.09 ft above mean sea level, datum of 1929. Prior to Oct. 17, 1934, staff gage at same site and datum.

Average discharge.--30 years (1930-60), 49.4 cfs (35,760 acre-ft per year).

Extremes.--1930-60: Maximum discharge, 2,110 cfs Apr. 28, 1947 (gage height, 5.92 ft), from rating curve extended above 800 cfs on basis of slope-area measurement of peak flow; no flow Aug. 25, 26, 1932.

Remarks.--Natural flow of stream affected by irrigation developments above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	30.9	58.6	70.5	62.6	64.1	66.7	66.6	104	55.2	32.4	46.1	128	65.3
1952	46.9	71.0	68.8	72.2	73.6	80.8	74.8	53.3	12.2	8.59	9.25	14.2	48.7
1953	28.6	61.9	68.9	73.4	63.6	68.4	58.0	39.0	15.6	8.15	13.0	15.4	42.7
1954	30.9	60.4	74.7	72.3	63.9	67.5	26.3	31.9	13.2	9.47	32.1	17.2	41.6
1955	34.1	65.5	69.3	66.3	72.1	73.2	30.8	32.8	40.2	8.94	9.24	15.5	43.0
1956	29.0	50.8	66.7	68.4	70.3	68.5	37.6	17.9	16.0	11.3	54.1	16.1	42.2
1957	33.3	83.5	71.9	65.5	68.3	75.6	80.3	81.3	68.7	51.3	10.8	20.3	59.1
1958	43.3	64.2	70.0	71.5	75.6	81.5	80.0	93.9	49.0	32.4	19.3	25.7	58.8
1959	43.2	73.3	71.6	69.6	66.2	78.0	72.1	56.2	18.4	13.5	12.8	17.2	49.2
1960	48.8	72.0	72.1	71.1	76.8	85.8	68.7	52.7	34.9	32.3	8.20	12.1	52.9

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1,900	3,490	4,340	3,850	3,560	4,100	3,960	6,390	3,280	1,990	2,930	7,600	47,290
1952	2,890	4,220	4,230	4,440	4,230	4,970	4,450	3,280	724	528	588	847	35,370
1953	1,760	3,690	4,230	4,510	3,540	4,200	3,450	2,400	930	501	801	914	30,930
1954	1,900	3,590	4,590	4,440	3,550	4,150	1,570	1,960	783	582	1,980	1,020	30,120
1955	2,100	3,900	4,260	4,070	4,000	4,500	1,830	2,020	2,390	550	568	925	31,110
1956	1,790	3,020	4,100	4,200	4,040	4,210	2,240	1,100	951	694	3,330	958	30,630
1957	2,050	4,970	4,420	4,020	3,790	4,650	4,780	5,000	4,090	3,160	662	1,210	42,800
1958	2,660	3,820	4,310	4,390	4,200	5,010	4,760	5,770	2,910	1,990	1,180	1,530	42,530
1959	2,660	4,360	4,410	4,260	3,680	4,790	4,290	3,460	1,090	830	788	1,020	35,660
1960	3,000	4,260	4,430	4,370	4,420	5,280	4,090	3,240	2,080	1,990	504	722	38,410

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	54.5	39,420
1951	1210	1,460	May 15, 1951	9.6	65.3	47,290	67.6	48,890
1952	1240	100	Mar. 27, 1952	5.4	48.7	35,370	46.4	33,720
1953	1280	193	Aug. 15, 1953	4.2	42.7	30,930	43.3	31,330
1954	1340	819	Aug. 17, 1954	6.0	41.6	30,120	41.8	30,300
1955	1390	278	June 19, 1955	6.8	43.0	31,110	41.1	29,760
1956	1440	544	Aug. 11, 1956	6.8	42.2	30,630	45.7	33,160
1957	1510	620	July 26, 1957	8.9	59.1	42,800	58.2	42,150
1958	1560	1,260	May 2, 1958	8.0	58.8	42,530	59.6	43,170
1959	1630	295	Mar. 28, 1959	5.6	49.2	35,660	49.7	35,940
1960	1710	424	July 6, 1960	3.0	52.9	38,410	-	-

## 8235. Buffalo Creek near Haigler, Nebr.

Location.--Lat 40°02'45", long 101°52'15", in NW¼NW¼ sec.20, T.1 N., R.40 W., on right bank 90 ft downstream from highway bridge, three-quarters of a mile upstream from mouth, and 4 miles northeast of Haigler.

Drainage area.--180 sq mi, approximately, of which about 21 sq mi contributes directly to surface runoff.

Records available.--October 1940 to September 1960.

Gage.--Water-stage recorder and concrete control. Datum of gage is 3,204.57 ft above mean sea level, datum of 1929.

Average discharge.--20 years (1940-60), 8.78 cfs (6,360 acre-ft per year).

Extremes.--1940-60: Maximum discharge not determined, occurred Aug. 11, 1950; maximum gage height, 5.78 ft Mar. 7, 1960 (backwater from ice); no flow Aug. 3-5, 1955.

Remarks.--Natural flow affected by irrigation development above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	10.3	10.6	10.3	9.60	11.1	11.3	10.7	10.2	11.0	10.3	10.3	15.2	10.9
1952	11.2	11.0	10.7	11.0	12.5	14.3	12.2	10.9	5.67	1.28	1.20	3.11	8.75
1953	6.15	8.94	11.7	12.7	10.0	11.7	11.3	9.03	4.22	2.12	1.56	1.64	7.58
1954	6.55	10.4	9.50	9.65	10.2	10.2	10.2	7.85	6.00	1.67	2.28	4.40	7.37
1955	8.86	9.69	9.43	9.76	10.6	10.6	10.4	7.23	6.11	.78	.56	1.67	7.11
1956	4.69	7.02	8.64	7.59	8.25	9.60	9.76	5.03	4.10	2.66	5.74	4.40	6.45
1957	5.97	10.5	9.03	7.59	9.75	11.6	11.1	11.9	10.3	7.06	1.90	2.69	8.29
1958	5.42	9.70	9.90	9.82	10.9	12.5	11.4	10.6	9.43	7.74	5.90	6.33	9.29
1959	9.10	8.95	7.58	9.44	9.13	11.8	11.5	9.68	5.36	2.90	1.25	3.55	7.52
1960	8.60	7.97	9.75	9.79	12.9	12.2	11.9	10.1	5.60	1.02	1.08	4.31	7.91

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	634	629	634	590	619	694	639	630	656	636	636	902	7,900
1952	688	657	656	677	720	877	727	671	337	79	74	185	6,350
1953	378	532	720	780	555	717	674	555	251	131	96	98	5,490
1954	403	617	584	593	564	625	606	483	357	103	140	262	5,340
1955	545	577	580	600	585	649	618	444	364	48	35	99	5,140
1956	288	418	531	467	475	590	581	309	244	164	353	262	4,680
1957	367	624	555	467	541	715	663	732	615	434	117	172	6,000
1958	333	577	609	604	604	768	680	654	561	476	363	496	6,720
1959	559	532	466	580	507	726	682	608	319	179	77	211	5,450
1960	529	474	600	602	740	752	708	621	333	62	66	257	5,740

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean
		Discharge	Date				
1950	-	-	-	-	-	-	10.9
1951	1210	*a80	Sept. 3, 1951	4.7	10.9	7,900	11.1
1952	1240	25	Mar. 26, 1952	.3	8.75	6,350	8.24
1953	1260	18	Jan. 12, 1953	.4	7.58	5,490	7.54
1954	1340	21	May 26, 1954	.8	7.37	5,340	7.51
1955	1390	16	June 27, 1955	0	7.11	5,140	6.46
1956	1440	24	Aug. 11, 1956	.8	6.45	4,680	6.89
1957	1510	33	Mar. 26, 1957	.3	8.29	6,000	8.25
1958	1560	28	June 19, 1958	.1	9.29	6,720	9.34
1959	1630	a34	Mar. 27, 1959	.6	7.52	5,450	7.58
1960	-	a25	Mar. 9, 1960	.4	7.91	5,740	-

\* Not previously published.

a About.

## 8240. Rock Creek at Parks, Nebr.

Location.--Lat 40°02'30", long 101°43'40", in SW $\frac{1}{4}$ NE $\frac{1}{4}$  sec.21, T.1 N., R.39 W., on right bank at west edge of Parks, 100 ft downstream from highway bridge and half a mile upstream from mouth.

Drainage area.--180 sq mi, approximately, of which about 14 sq mi contributes directly to surface runoff.

Records available.--October 1940 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 3,093.35 ft above mean sea level, datum of 1929.

Average discharge.--20 years (1940-60), 14.5 cfs (10,500 acre-ft per year).

Extremes.--1940-60: Maximum discharge, 95 cfs Sept. 3, 1951 (gage height, 3.80 ft), from rating curve extended above 39 cfs; maximum gage height, 3.92 ft Jan. 26, 1949 (backwater from ice); minimum daily discharge, 3.1 cfs Feb. 19-23, 1943, Oct. 3, 1960.

Remarks.--One diversion above station for irrigation; flow regulated at times by reservoir at State fish hatchery 7 miles upstream.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	14.9	15.1	14.7	15.0	14.6	15.1	16.5	16.3	14.6	13.8	14.4	18.8	15.3
1952	15.4	15.7	13.6	14.5	17.1	17.9	18.6	14.9	12.1	11.4	11.7	12.7	14.5
1953	13.0	13.5	14.4	14.8	13.9	15.8	15.1	13.7	12.7	11.8	12.3	12.7	13.6
1954	14.0	15.9	16.6	14.9	15.1	14.7	14.1	14.9	13.1	11.6	13.5	12.4	14.2
1955	14.6	14.5	14.2	15.4	14.5	15.7	14.1	15.3	14.7	11.5	12.5	11.3	14.0
1956	13.5	14.0	15.0	15.2	15.4	14.7	15.3	13.6	12.1	12.9	13.5	12.3	14.0
1957	13.3	14.8	14.9	14.0	14.8	16.5	16.7	17.7	16.6	15.8	12.6	14.6	15.2
1958	15.2	15.8	16.0	15.3	16.4	16.9	17.8	15.7	14.0	13.8	13.3	15.9	15.3
1959	14.0	15.4	14.6	14.5	14.9	16.4	16.0	15.8	12.8	17.8	15.3	11.2	14.9
1960	11.4	15.2	15.8	17.0	17.2	17.5	15.2	15.0	13.3	12.6	10.8	11.0	14.3

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	914	900	904	922	811	930	984	1,000	867	849	885	1,120	11,090
1952	946	936	837	893	984	1,100	988	918	719	702	720	756	10,500
1953	797	805	885	912	770	972	900	843	754	726	758	754	9,880
1954	859	944	1,020	914	841	902	841	916	781	712	831	738	10,300
1955	897	865	871	948	803	964	839	938	877	708	768	671	10,150
1956	829	835	924	934	887	904	912	833	720	793	831	734	10,140
1957	819	881	914	859	819	1,020	994	1,090	988	974	774	867	11,000
1958	934	938	984	942	908	1,040	1,060	966	833	847	819	829	11,100
1959	859	914	900	895	827	1,010	952	972	762	1,090	942	668	10,790
1960	700	902	958	1,040	988	1,070	908	922	789	778	665	656	10,370

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	15.6	11,260
1951	1210	a95	Sept. 3, 1951	9.0	15.3	11,090	15.3	11,090
1952	1240	29	May 20, 1952	9.0	14.5	10,500	14.1	10,270
1953	1280	b19	Feb. 27, 1953	8.0	13.6	9,880	14.1	10,210
1954	1340	#21	Dec. 14, 1953	10	14.2	10,300	14.0	10,110
1955	1390	25	Aug. 11, 1955	8.9	14.0	10,150	14.0	10,100
1956	1440	33	Aug. 11, 1956	9.6	14.0	10,140	14.0	10,160
1957	1510	51	May 31, 1957	10	15.2	11,000	15.5	11,240
1958	1560	37	June 19, 1958	8.6	15.3	11,100	15.1	10,920
1959	1630	37	July 29, 1959	3.2	14.9	10,790	14.7	10,680
1960	1710	30	Mar. 18, 1960	3.1	14.3	10,370	-	-

\* Not previously published.

a About.

b Maximum daily discharge.

## 8245. Republican River at Benkelman, Nebr.

Location.--Lat 40°01'55", long 101°32'30", in SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec.19, T.1 N., R.37 W., on downstream end of second pier from right end of bridge on U. S. Highway 34, 0.6 mile south of Chicago, Burlington & Quincy Railroad track, 1 mile southwest of Benkelman, 2 miles upstream from South Fork Republican River, and 11 miles downstream from Rock Creek.

Drainage area.--4,770 sq mi, approximately, of which a large area does not contribute directly to surface runoff.

Records available.--October 1894 to September 1895, October 1902 to November 1906, October 1946 to September 1960. Published as North Fork Republican River at Benkelman 1894-95. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 2,975.34 ft above mean sea level, datum of 1929. Prior to Dec. 17, 1946, staff gages at several sites within 1½ miles of present site at various datums.

Average discharge.--19 years (1894-95, 1902-6, 1946-60), 96.3 cfs (69,720 acre-ft per year).

Extremes.--1894-95, 1902-6, 1946-60: Maximum discharge, 6,040 cfs Sept. 7, 1951; maximum gage height, 7.80 ft Aug. 9, 1950; no flow at times in most years.  
Maximum stage known, 13.1 ft May 31, 1935 (from elevations furnished by State Highway Department).

Remarks.--Natural flow affected by irrigation developments above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	73.6	108	126	93.9	108	106	125	257	266	78.8	120	376	153
1952	110	132	90.4	123	159	168	165	*156	32.2	9.02	3.41	12.3	*96.3
1953	40.6	63.0	78.9	128	111	145	120	90.9	42.8	5.72	3.26	1.70	69.1
1954	40.0	87.0	96.2	72.3	116	116	64.0	75.5	23.5	.63	19.5	12.3	60.0
1955	54.8	94.0	85.4	84.4	84.3	103	76.3	329	278	23.0	11.1	9.94	103
1956	43.4	64.8	74.5	79.4	116	109	73.8	42.4	21.6	*48.0	203	22.7	*75.0
1957	41.5	108	114	74.5	113	150	176	261	181	131	26.7	26.2	117
1958	71.2	96.3	102	108	100	173	171	166	95.4	94.7	126	63.2	114
1959	65.5	99.0	128	107	144	154	162	113	35.7	11.5	3.99	12.4	85.9
1960	78.4	85.6	91.4	78.9	120	538	136	115	68.2	49.6	.81	10.9	115

\* Revised; revised daily discharge for the periods thus affected are available and will be published in a future water-supply paper.

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	4,530	6,420	7,770	5,770	6,020	6,510	7,410	15,790	15,840	4,850	7,380	22,370	110,700
1952	6,750	7,850	5,560	7,560	9,130	10,220	9,850	*9,580	1,920	554	209	732	*69,900
1953	2,500	3,750	4,850	7,890	6,180	8,940	7,160	5,590	2,550	352	201	101	50,040
1954	2,460	5,190	5,920	4,450	6,450	7,130	3,810	4,840	1,400	39	1,200	733	43,410
1955	3,370	5,590	5,250	5,190	4,690	6,320	4,540	20,250	16,520	1,410	681	592	74,390
1956	2,670	3,860	4,580	4,880	6,650	6,690	4,390	2,600	1,290	*2,950	12,510	1,350	*54,420
1957	2,550	6,410	7,040	4,580	6,280	9,230	10,470	16,070	10,770	8,040	1,640	1,560	84,640
1958	4,380	5,730	6,290	6,660	5,580	10,650	10,190	10,210	5,560	5,820	7,760	3,760	82,590
1959	4,030	5,890	7,900	6,550	8,010	9,450	9,620	6,960	2,130	705	245	735	62,220
1960	4,820	5,090	5,620	4,850	6,890	33,080	8,110	7,040	4,060	3,050	50	646	83,310

\* Revised; see footnote to preceding table.

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	1176	-	-	-	-	-	113	81,440
1951	1210	6,040	Sept. 7, 1951	20	153	110,700	155	112,100
1952	1240	*1,250	May 8, 1952	0	*96.3	69,900	*83.8	*60,860
1953	1280	*4340	Jan. 21, 1953	0	69.1	50,040	72.5	52,500
1954	1340	373	Aug. 18, 1954	0	60.0	43,410	60.9	44,060
1955	1390	5,250	June 15, 1955	0	103	74,390	98.5	71,290
1956	1440	3,970	Aug. 17, 1956	.3	*75.0	*54,420	*81.7	*59,310
1957	1510	3,340	May 31, 1957	2.8	117	84,640	117	85,040
1958	1560	4,190	Aug. 16, 1958	4.5	114	82,590	116	84,010
1959	1630	520	Mar. 26, 1959	0	85.9	62,220	82.8	59,940
1960	1710	4,910	Mar. 24, 1960	0	115	83,310	-	-

\* Revised.

\* Not previously published.

a About.



8250. South Fork Republican River near Idalia, Colo.

Location--Lat 39°37'00", long 102°14'30", in SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec.13, T.5 S., R 44 W., on left bank 0.7 mile east of State Highway 51, 1 $\frac{1}{2}$  miles upstream from Landsman Creek, 4 miles upstream from Bonny Dam, and 6 $\frac{1}{2}$  miles southeast of Idalia.

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

Records available--May 1950 to September 1960.

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 2 $\frac{1}{2}$  miles upstream at different datum.

Average discharge--10 years (1950-60), 35.5 cfs (25,700 acre-ft per year).

Extremes--1950-60: Maximum discharge, 14,300 cfs May 16, 1957 (gage height, 9.64 ft); no flow at times in 1952-54, 1959-60.

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

Remarks--Diversions above station for irrigation.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	18.9	29.5	26.5	31.3	31.4	30.0	26.7	23.8	94.3	195	20.9	51.1	46.8
1952	26.7	25.1	22.3	26.5	48.6	30.6	35.5	30.9	8.08	3.28	10.1	18.0	23.7
1953	24.8	20.5	26.9	32.1	23.0	23.3	38.0	30.9	10.4	.19	81.5	25.0	28.1
1954	16.6	29.0	36.0	34.9	33.7	38.5	29.8	25.6	1.64	54.3	14.3	.20	26.3
1955	3.86	18.7	31.9	54.0	35.6	31.6	17.3	49.6	151	5.22	6.16	5.11	34.0
1956	56.2	27.2	30.2	28.4	33.2	31.0	24.8	18.3	3.81	39.3	11.4	4.69	25.8
1957	15.5	48.4	33.9	35.3	37.4	45.1	43.1	408	87.3	127	29.4	24.1	78.6
1958	28.1	31.0	34.7	29.7	31.6	37.2	35.3	57.5	35.2	48.0	19.2	19.5	34.0
1959	26.7	32.3	39.0	32.7	32.2	39.5	42.1	29.0	17.7	37.9	.42	6.35	28.0
1960	22.3	23.7	28.4	26.4	30.5	72.7	38.1	46.2	40.4	30.1	0	1.44	30.1

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1,160	1,750	1,630	1,920	1,740	1,840	1,590	1,460	5,610	12,020	1,280	1,850	33,850
1952	1,640	1,500	1,370	1,630	2,790	1,880	2,110	1,900	481	202	618	1,070	17,190
1953	1,530	1,220	1,660	1,970	1,280	1,430	2,280	1,900	818	12	5,010	1,490	20,380
1954	1,020	1,730	2,220	2,140	1,870	2,370	1,780	1,570	97	3,340	880	12	19,030
1955	238	1,110	1,960	3,320	1,980	1,940	1,030	3,050	8,990	321	379	304	24,620
1956	3,460	1,620	1,850	1,750	1,910	1,910	1,470	1,130	227	2,410	702	279	18,720
1957	956	2,880	2,080	2,170	2,080	2,770	2,570	25,100	5,200	7,820	1,810	1,440	56,880
1958	1,730	1,850	2,130	1,830	1,750	2,290	2,100	3,530	2,090	2,950	1,180	1,160	24,590
1959	1,640	1,920	2,400	2,010	1,790	2,430	2,500	1,780	1,060	2,330	26	378	20,260
1960	1,370	1,410	1,740	1,620	1,750	4,470	2,270	2,840	2,400	1,850	0	86	21,810

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean
		Discharge	Date				
1950	-	-	-	-	-	-	-
1951	1210	6,660	July 12, 1951	6.0	46.8	33,850	46.7
1952	1240	184	Aug. 20, 1952	0	23.7	17,190	23.5
1953	1280	6,920	Aug. 19, 1953	0	28.1	20,380	28.9
1954	1340	4,290	July 26, 1954	0	26.3	19,030	24.0
1955	1390	4,850	June 15, 1955	.1	34.0	24,620	39.0
1956	1440	3,730	Oct. 4, 1955	.1	25.8	18,720	24.4
1957	1510	14,300	May 16, 1957	4.3	78.6	56,880	78.3
1958	1560	3,070	July 21, 1958	3.6	34.0	24,590	34.3
1959	1630	9,880	July 2, 1959	0	28.0	20,260	26.0
1960	1710	1,520	Mar. 21, 1960	0	30.1	21,810	-

8255. Landsman Creek near Hale, Colo.

Location.--Lat 39°34'40", long 102°14'50", in SW $\frac{1}{4}$  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.

Records available.--May 1950 to September 1960.

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.--10 years (1950-60), 4.98 cfs (3,610 acre-ft per year).

Extremes.--1950-60: 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.--Small diversions above station for irrigation.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1.05	1.48	1.64	1.46	1.81	1.79	2.06	1.66	49.5	74.0	1.43	1.19	11.6
1952	1.41	1.96	1.99	2.33	2.33	2.95	3.05	1.98	.56	.47	7.25	.52	2.24
1953	.58	1.11	1.55	1.91	1.84	2.01	3.12	2.07	1.01	1.11	33.7	.52	4.26
1954	.68	1.40	2.06	2.07	1.95	2.29	1.72	1.73	1.04	.29	.17	.21	1.30
1955	.37	.68	1.16	1.57	1.64	1.44	1.32	3.15	8.92	.45	.14	.29	1.75
1956	4.63	.81	.85	.83	1.27	2.12	1.41	10.5	.80	35.9	.76	.88	5.12
1957	.53	1.48	1.62	1.55	1.79	2.33	4.17	34.6	18.7	68.5	10.2	1.09	12.4
1958	8.47	2.35	2.63	2.68	2.45	3.51	3.50	25.3	5.39	8.06	9.97	.99	6.34
1959	1.31	1.71	1.76	2.21	2.47	3.68	3.37	2.83	.72	7.91	.43	.51	2.44
1960	1.00	1.21	2.07	1.64	2.28	7.72	5.47	2.51	2.40	1.51	.25	.30	2.36

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	65	88	101	90	101	110	122	102	2,940	4,550	88	71	8,430
1952	87	116	122	143	134	181	181	122	34	29	446	51	1,630
1953	36	68	94	117	102	123	185	128	60	68	2,070	51	3,080
1954	42	83	127	127	108	141	102	106	62	18	11	12	939
1955	23	40	72	96	91	88	79	194	531	.28	8.5	17	1,270
1956	285	48	53	51	73	130	84	645	47	2,200	47	52	3,720
1957	33	88	99	95	99	143	248	2,130	1,110	4,210	630	65	8,950
1958	521	140	161	165	136	216	208	1,580	321	496	613	59	4,600
1959	81	102	108	136	137	239	201	174	43	487	26	51	1,760
1960	61	72	128	101	131	474	325	155	143	93	15	18	1,720

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	-	-	-
1951	1210	3,110	July 12, 1951	0.8	11.6	8,430	11.7	8,500	
1952	1240	2,180	Aug. 20, 1952	.2	2.24	1,630	2.06	1,500	
1953	1280	4,510	Aug. 19, 1953	.3	4.26	3,080	4.34	3,140	
1954	1340	345	June 14, 1954	.1	1.50	939	1.14	822	
1955	1390	546	June 15, 1955	0	1.75	1,270	2.10	1,520	
1956	1440	1,800	July 4, 1956	.2	5.12	3,720	4.90	3,550	
1957	1510	4,570	July 24, 1957	.3	12.4	8,950	13.2	9,550	
1958	1590	1,750	May 2, 1958	.7	6.34	4,600	5.61	4,060	
1959	1630	3,580	July 2, 1959	.2	2.44	1,760	2.40	1,740	
1960	1710	612	Apr. 13, 1960	.2	2.36	1,720	-	-	

## 8260. Bonny Reservoir near Hale, Colo.

Location.--Lat 39°38'00", long 102°10'40", in SE $\frac{1}{4}$ SE $\frac{1}{4}$  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 1960.

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

Extremes.--1950-60: 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 earthfill 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.

Contents, in acre-feet, on last day of month

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951	2,500	3,970	5,530	6,860	7,800	4,910	4,700	5,270	13,290	25,560	25,320	25,560
1952	25,890	26,960	28,380	30,020	31,440	33,440	29,680	25,640	24,210	22,740	22,220	21,470
1953	21,470	22,060	23,970	25,890	27,280	28,900	30,460	30,900	29,680	28,120	35,120	34,180
1954	34,780	35,780	37,480	39,130	40,120	41,340	40,620	40,850	39,030	40,120	38,440	36,820
1955	35,320	34,760	35,600	37,390	38,640	39,820	40,220	41,440	44,260	38,440	36,340	34,580
1956	36,340	34,580	35,780	37,390	38,930	40,120	40,620	40,520	38,440	40,320	38,840	37,100
1957	35,320	33,670	35,130	36,250	37,770	39,820	40,620	45,440	41,440	47,990	41,750	35,320
1958	35,690	37,200	38,840	40,520	42,060	44,470	40,120	39,130	38,350	38,640	37,680	35,320
1959	35,870	37,390	39,230	41,240	42,880	43,940	39,430	37,680	36,160	36,440	34,760	33,580
1960	33,940	35,410	37,010	38,840	41,340	46,430	45,120	42,160	37,300	36,440	34,490	33,220

8265. South Fork Republican River near Hale, Colo.

Location.--Lat 39°37'25", long 102°09'45", in SW 1/4 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 1960.

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.--9 years (1951-60), 27.0 cfs (19,550 acre-ft per year).

Extremes.--1946-48, 1951-60: 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.--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.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	-	-	-	17.4	56.0	48.3	4.71	6.59	-
1952	5.60	4.96	5.95	6.92	6.12	7.24	108	96.7	5.27	4.75	5.28	5.06	21.8
1953	5.09	5.54	6.05	5.88	5.90	6.27	7.22	6.81	6.19	5.84	6.13	6.16	6.09
1954	6.79	10.3	7.19	7.18	7.11	9.16	31.0	10.9	7.64	6.52	6.39	6.48	9.70
1955	20.5	13.1	7.24	6.76	6.32	6.90	7.29	23.6	133	61.0	6.54	6.47	24.9
1956	26.8	46.8	12.9	6.15	6.51	6.70	6.53	6.98	6.82	6.38	6.27	6.25	12.1
1957	22.9	69.3	15.8	7.20	7.51	8.77	47.2	270	257	81.2	122	99.4	84.3
1958	25.6	6.65	6.63	6.76	6.58	6.69	119	125	64.9	33.4	17.2	27.0	37.2
1959	5.98	6.53	6.62	6.71	6.55	25.7	111	80.5	14.3	6.09	5.98	6.18	21.8
1960	6.55	6.27	6.37	6.02	6.48	6.65	53.9	86.2	90.6	17.7	6.38	6.12	25.1

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	-	-	-	1,070	3,330	2,840	290	332	-
1952	344	295	366	425	352	445	6,410	5,940	314	292	325	301	15,810
1953	313	329	372	361	328	386	430	419	368	359	377	367	4,410
1954	418	613	442	441	395	564	1,850	689	454	401	393	386	7,030
1955	1,260	780	445	416	351	424	434	1,450	7,920	3,750	402	385	18,020
1956	1,650	2,780	796	378	375	412	389	429	406	393	385	372	8,760
1957	1,410	4,120	970	443	417	540	2,810	16,590	15,300	4,990	7,610	5,920	61,020
1958	1,570	396	407	416	365	412	7,110	7,670	3,860	2,050	1,060	1,610	26,930
1959	367	389	407	413	364	1,580	6,610	3,720	849	375	368	368	15,810
1960	403	373	429	370	371	532	3,210	5,300	5,400	1,090	392	364	18,230

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950								
1951	1210	a135	July 12, 1951	-	-	-	-	-
1952	1240	186	May 7, 1952	4.0	21.8	15,810	21.8	15,820
1953	1280	20	Aug. 4, 1953	4.7	6.09	4,410	6.72	4,870
1954	1340	114	Nov. 25, 1953	5.8	9.70	7,030	11.1	8,040
1955	1390	362	June 21, 1955	5.8	24.9	18,020	28.7	20,760
1956	1440	75	Nov. 9, 1955	5.0	12.1	8,760	13.8	10,040
1957	1510	822	May 18, 1957	6.4	64.3	61,020	78.6	56,890
1958	1560	175	June 25, 1958	5.8	37.2	26,930	35.5	25,720
1959	1630	153	Mar. 31, 1959	5.5	21.8	15,810	21.9	15,850
1960	1710	153	Apr. 30, 1960	5.2	25.1	18,230	-	-

a Maximum during period May to September.

## 8270. South Fork Republican River near Colorado-Kansas State line

Location.--Lat 39°40'10", long 102°00'40", in SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec.27, T.4 S., R.42 W., on left bank at downstream side of bridge on county road, 2 miles downstream from Colorado-Kansas State line, 5 miles downstream from Beaver Creek, 11 miles downstream from Bonny Dam, and 15 miles southwest of St. Francis, Kans.

Drainage area.--1,860 sq mi, approximately.

Records available.--October 1946 to September 1956.

Gage.--Water-stage recorder. Datum of gage is 3,469.85 ft above mean sea level, datum of 1929.

Extremes.--1946-56: Maximum gage height, 7.91 ft June 18, 1955 (discharge not determined); no flow at times in 1947, 1949-50, 1952-54.

Remarks.--Natural flow of stream affected by diversions for irrigation, return flow from irrigated areas, and since July 6, 1950, by storage in Bonny Reservoir (see elsewhere in this report).

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	12.0	16.7	18.7	13.6	29.3	78.0	57.0	24.1	106	92.7	15.0	19.6	40.2
1952	16.6	21.2	15.2	19.1	21.3	19.9	107	110	7.34	1.60	1.65	2.94	28.6
1953	9.85	13.5	12.0	22.2	13.6	20.6	18.3	17.8	8.23	9.72	12.7	4.32	13.6
1954	9.16	19.4	21.1	20.1	17.0	22.0	43.6	23.8	14.1	2.48	3.23	2.39	16.5
1955	21.0	22.3	17.1	18.8	17.9	17.3	16.1	39.4	163	65.0	6.06	4.07	34.0
1956	50.0	45.7	19.9	15.6	14.2	14.2	16.0	11.7	5.11	28.5	24.6	5.66	21.0
1957													
1958													
1959													
1960													

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	740	992	1,150	838	1,630	4,800	3,390	1,480	6,310	5,700	921	1,170	29,120
1952	1,020	1,260	935	1,170	1,230	1,230	6,370	6,750	437	99	101	175	20,780
1953	606	805	736	1,360	758	1,270	1,090	1,090	490	597	778	257	9,840
1954	564	1,150	1,500	1,240	946	1,350	2,590	1,460	840	152	199	172	11,960
1955	1,290	1,320	1,050	1,160	994	1,070	956	2,420	9,710	4,000	373	242	24,580
1956	3,070	2,720	1,230	960	817	871	954	721	304	1,750	1,510	337	15,240
1957													
1958													
1959													
1960													

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean
		Discharge	Date				
1950	-	-	-	-	-	-	32.7
1951	1210	-	July 22, 1951	4.1	40.2	29,120	40.7
1952	1240	-	-	0	28.6	20,780	27.1
1953	1260	-	July 22, 1953	0	13.6	9,840	14.8
1954	1340	-	June 12, 1954	0	16.5	11,960	17.4
1955	1390	-	June 18, 1955	.9	34.0	24,580	38.6
1956	1440	-	July 12, 1956	.4	21.0	15,240	-
1957							
1958							
1959							
1960							

## 8275. South Fork Republican River near Benkelman, Nebr.

Location.--Lat 40°00'25", long 101°32'30", in NE $\frac{1}{4}$ SW $\frac{1}{4}$  sec.31, T.1 N., R.37 W., on downstream end of second pier from left end of bridge on State Highway 61, 1 mile downstream from Kansas-Nebraska State line, 2 $\frac{1}{2}$  miles southwest of Benkelman, and 4 miles upstream from mouth.

Drainage area.--2,580 sq mi, approximately, of which about 2,550 sq mi contributes directly to surface runoff.

Records available.--October 1894 to September 1895, October 1902 to November 1906, October 1930 to September 1932, August 1937 to September 1960. Published as South Fork of Republican River at Benkelman prior to 1906 and as Republican River at Benkelman, 1931-32. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 2,992.91 ft above mean sea level, datum of 1929. Prior to Aug. 27, 1937, staff gages at several sites within 3 $\frac{1}{2}$  miles of present site at various datums. Aug. 27, 1937, to Mar. 4, 1940, staff gage at site a quarter of a mile downstream at present datum. Mar. 5, 1940, to Dec. 9, 1947, wire-weight gage at present site and datum.

Average discharge.--30 years(1894-95, 1902-6, 1930-32, 1937-60), 64.0 cfs (46,330 acre-ft per year).

Extremes.--1894-95, 1902-6, 1930-32, 1937-60: Maximum discharge determined, 19,600 cfs Aug. 16, 1958 (gage height, 8.70 ft), but may have been higher during flood of June 24, 1945; no flow at times in most years.

Maximum stage known since at least 1923, 10.1 ft May 31, 1935, from floodmarks at site a quarter of a mile downstream, present datum (discharge, 150,000 cfs, by slope-area measurement).

Remarks.--Natural flow affected by irrigation development above station, and since July 6, 1950, by storage in Bonny Reservoir (see p.319).

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	5.29	11.6	29.6	28.1	46.5	84.7	69.7	*191	*336	212	*99.9	*335	*121
1952	28.6	28.6	20.6	28.1	31.7	79.3	152	*156	7.27	*16.4	0	0	*45.9
1953	0	0	0	21.6	17.7	26.9	25.4	15.3	2.62	1.14	7.27	0	*9.79
1954	0	5.21	6.47	6.05	25.9	23.5	37.1	27.4	*68.5	0	3.34	*12.4	*17.6
1955	.48	8.19	11.0	11.5	10.4	21.1	17.8	*147	*194	50.0	*7.62	0	*40.0
1956	7.84	31.2	14.3	12.5	11.7	18.3	12.1	12.5	.08	*36.0	140	0	*24.9
1957	0	63.8	22.3	9.22	26.1	28.6	94.5	396	334	260	111	84.8	120
1958	26.9	16.8	24.2	27.4	29.8	52.4	158	257	76.9	139	383	109	109
1959	28.7	35.0	35.5	25.4	36.8	66.0	157	111	23.6	4.80	0	0	43.6
1960	0	16.2	15.8	6.92	33.0	139	87.2	118	108	25.7	0	0	45.8

\* Revised; revised daily discharge for the periods thus affected are available and will be published in a future water-supply paper.

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	525	689	1,620	1,730	2,690	5,210	4,150	11,720	*20,120	13,040	*6,140	*19,920	*87,550
1952	1,760	1,700	1,260	1,730	1,820	4,870	9,050	*9,720	432	*1,010	0	0	33,350
1953	0	0	0	1,330	983	1,650	1,510	941	156	70	447	0	7,090
1954	0	191	398	372	1,440	1,450	2,210	1,680	*4,080	0	205	*736	*12,760
1955	30	488	679	707	577	1,300	1,060	*9,020	*11,550	3,070	*469	0	*28,950
1956	482	1,860	878	767	673	1,120	722	770	46	*2,210	8,610	0	*18,100
1957	0	3,790	1,370	567	1,450	1,760	5,620	24,330	19,850	16,010	6,820	5,050	86,620
1958	1,660	997	1,480	1,680	1,650	3,220	9,400	15,790	4,560	8,530	23,560	6,490	79,050
1959	1,770	2,080	2,190	1,560	2,040	4,060	9,340	6,830	1,400	286	0	0	31,560
1960	0	965	963	426	1,900	8,560	5,190	7,230	6,450	1,580	0	0	33,270

\* Revised; see footnote to preceding table.

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	-	-	30,310
1951	1210	*9,910	Aug. 10, 1951	0.8	*121	*87,550	*124	*89,440	
1952	1340	*4,150	May 6, 1952	0	*45.9	*33,350	*39.4	*28,590	
1953	1280	184	Aug. 20, 1953	0	9.79	7,090	10.6	7,680	
1954	1340	*6,640	June 13, 1954	0	*17.6	*12,760	*18.5	*13,370	
1955	1390	*7,170	May 25, 1955	0	*40.0	*28,950	*42.8	*30,970	
1956	1440	*6,310	Aug. 11, 1956*	0	*24.9	*18,100	*27.6	*20,040	
1957	1510	6,110	July 21, 1957	0	120	86,620	118	85,600	
1958	1560	19,600	Aug. 16, 1958	1.1	109	79,050	112	80,940	
1959	1650	324	June 25, 1959	0	43.6	31,560	37.9	27,460	
1960	1710	2,020	Mar. 19, 1960	0	45.8	33,270	-	-	

\* Revised.

8285. Republican River at Stratton, Nebr.

Location.--Lat 40°08'40", long 101°13'30", in NW¼ sec.13, T.2 N., R.35 W., on left bank half a mile south of Stratton, half a mile downstream from Muddy Creek, 10 miles upstream from Trenton Dam, and 19 miles downstream from South Fork Republican River.

Drainage area.--7,940 sq mi, approximately, of which a large area does not contribute directly to surface runoff.

Records available.--July 1950 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 2,775.49 ft above mean sea level, datum of 1929.

Average discharge.--10 years (1950-60), 159 cfs (115,110 acre-ft per year).

Extremes.--1950-60: Maximum discharge, 18,900 cfs Sept. 4, 1951 (gage height, 6.50 ft, from graph based on wire-weight-gage readings), from rating curve extended above 12,000 cfs; maximum gage height, 7.03 ft Aug. 16, 1958; no flow at times in 1952-57, 1959-60. Maximum flood known since about 1826 occurred May 31, 1935 (discharge, about 200,000 cfs, based on slope-area measurement at Max).

Remarks.--Natural flow affected by irrigation development above station and by storage in Bonny Reservoir (see p. 319). Records of suspended sediment loads for the periods February 1950 to September 1951 and February 1953 to June 1954 and water temperatures for the periods December 1950 to September 1951 and February 1953 to June 1954 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1950	-	-	-	-	-	-	-	-	-	-	479	138	-
1951	68.9	102	131	97.5	186	176	212	574	572	296	236	1,005	304
1952	155	197	109	156	203	288	295	304	38.5	17.0	0	0	147
1953	16.5	53.3	72.4	135	145	164	164	107	29.8	.02	.37	0	73.7
1954	4.97	73.8	89.0	85.5	148	132	86.5	95.5	55.2	0	15.9	.10	65.0
1955	27.4	70.8	51.1	75.2	104	133	104	384	438	75.4	6.13	.57	120
1956	14.5	73.8	67.5	94.0	137	112	91.6	40.8	67.7	101	328	6.46	94.7
1957	19.7	161	127	78.9	137	172	290	766	562	550	160	111	262
1958	85.9	118	128	150	141	265	342	401	181	244	479	165	226
1959	90.6	146	143	125	213	252	329	224	54.6	4.44	0	.06	131
1960	51.7	77.9	90.5	82.7	180	788	225	254	193	95.4	0	0	170

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1950	-	-	-	-	-	-	-	-	-	-	29,480	8,240	-
1951	4,230	6,070	8,080	6,000	10,340	10,790	12,640	35,280	34,010	18,200	14,520	59,780	219,900
1952	9,550	11,720	6,710	9,590	12,690	17,680	17,580	18,770	2,290	1,050	0	0	106,600
1953	1,140	3,170	4,450	8,290	8,070	10,100	9,740	6,800	1,770	1.4	23	0	53,350
1954	305	4,390	5,470	5,260	8,250	8,100	5,150	5,870	3,280	0	960	60	47,060
1955	1,680	4,210	3,140	4,620	5,750	8,190	6,160	22,370	26,050	4,640	377	34	87,220
1956	889	4,390	4,150	5,780	7,900	6,900	5,450	2,510	4,030	6,210	20,170	384	68,760
1957	1,210	9,560	7,830	4,850	7,620	10,550	17,280	47,120	33,420	33,800	9,820	6,610	189,700
1958	5,280	7,000	7,840	9,210	7,830	16,310	20,370	24,640	10,740	14,990	29,440	9,800	163,500
1959	5,580	8,670	8,820	7,720	11,820	15,520	19,600	13,760	3,250	273	0	34	95,020
1960	3,180	4,640	5,560	5,080	10,340	48,440	13,400	15,650	11,460	5,860	0	0	123,600

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	1210	a10,600	Aug. 3, 1950	-	-	-	-	-	-
1951	1210	18,900	Sept. 4, 1951	10	304	219,900	317	229,500	
1952	1240	3,050	May 8, 1952	0	147	106,600	120	87,410	
1953	1280	356	Mar. 3, 1953	0	73.7	53,350	75.7	54,760	
1954	1340	1,000	June 13, 1954	0	65.0	47,060	63.4	45,930	
1955	1390	5,680	June 19, 1955	0	120	87,220	121	87,820	
1956	1440	5,060	Aug. 17, 1956	0	94.7	68,760	106	77,930	
1957	1510	7,970	July 7, 1957	0	262	189,700	264	191,200	
1958	1560	13,900	Aug. 16, 1958	10	226	163,500	230	166,400	
1959	1630	894	May 20, 1959	0	131	95,020	118	85,330	
1960	1710	4,320	Mar. 24, 1960	0	170	123,600	-	-	

a Maximum discharge during period July to September.

## 8290. Swanson Lake near Trenton, Nebr.

Location.--Lat 40°10'10", long 101°03'35", in SE $\frac{1}{4}$ NE $\frac{1}{4}$  sec.5, T.2 N., R.33 W., in gate-control house at right end of spillway on downstream side of Trenton Dam on Republican River, 2 $\frac{1}{2}$  miles west of Trenton.

Drainage area.--8,100 sq mi, approximately, of which a large area does not contribute directly to surface runoff.

Records available.--May 1953 to September 1960.

Gage.--Water-stage recorder. Gage is referred to mean sea level, datum of 1929. Prior to Nov. 13, 1953, staff gage at same site and datum.

Extremes.--1953-60: Maximum contents, 146,400 acre-ft Apr. 29, 1960; maximum elevation, 2,757.03 ft Apr. 19, 1960 (affected by wind action); minimum contents since normal use of water started, 19,950 acre-ft Oct. 24, 1954 (elevation, 2,722.61 ft).

Remarks.--Reservoir is formed by earthfill dam; storage began May 4, 1953. Capacity, 116,100 acre-ft between elevations 2,710.0 (sill of outlet gates) and 2,752.0 ft (top of storage pool). Top of flood-control pool is at elevation 2,773.0 ft (capacity, 254,000 acre-ft). Top of superstorage flood-control pool at elevation 2,785.0 ft (capacity, 361,600 acre-ft). Dead storage, 4,100 acre-ft. Figures given herein represent total contents. Water used for irrigation in Frenchman-Cambridge irrigation project.

Contents, in acre-feet, at 12 p.m. on last day of month

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951												
1952												
1953	-	-	-	-	-	-	-	4,920	4,480	3,740	3,400	3,140
1954	3,210	6,410	9,560	13,280	20,730	26,630	29,320	34,120	34,880	30,500	27,320	21,320
1955	20,020	22,260	25,630	29,140	34,090	40,870	45,190	56,210	73,850	62,390	48,150	41,980
1956	40,790	43,120	46,650	51,890	58,440	64,250	67,180	67,390	67,540	60,200	69,260	62,960
1957	60,700	67,390	73,500	76,780	84,410	92,780	108,100	119,100	123,700	135,400	115,800	112,100
1958	113,100	116,900	122,300	125,900	121,100	120,700	119,500	130,700	117,900	121,900	125,200	117,200
1959	118,600	119,700	118,200	116,700	119,400	122,400	119,200	121,700	116,100	94,450	74,680	67,310
1960	68,530	72,520	78,590	82,990	94,800	141,300	145,000	122,800	122,600	106,600	83,110	75,160



## 8295. Republican River at Trenton, Nebr.

Location.--Lat 40°10'00", long 101°02'40", in SW $\frac{1}{4}$  sec. 4, T.2 N., R.33 W., on left bank 300 ft upstream from Elm Creek, 0.9 mile downstream from centerline of spillway at Trenton Dam, and  $\frac{1}{2}$  miles southwest of Trenton.

Drainage area.--8,100 sq mi (revised), approximately, of which a large area does not contribute directly to surface runoff.

Records available.--October 1946 to September 1960. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 2,671.06 ft above mean sea level, datum of 1929. Prior to Sept. 12, 1948, wire-weight gage and Sept. 13, 1948, to Nov. 11, 1954 (corrected), water-stage recorder, at site 2 miles downstream at datum 8.19 ft lower; Nov. 12, 1954 (corrected), to Sept. 30, 1959, at present site at datum 5.00 ft higher.

Average discharge.--14 years (1946-60), 144 cfs (104,300 acre-ft per year), unadjusted.

Extremes.--1946-60: Maximum discharge, 16,800 cfs June 16, 1948; maximum gage height, 9.25 ft May 5, 1960 (backwater from Elm Creek); no flow at times in 1947-50, 1952-54. Maximum flood known since about 1826 occurred May 31, 1935 (discharge, about 200,000 cfs). Discharge of 21,100 cfs was measured June 3, 1946 (gage height, 6.0 ft), former site and datum.

Remarks.--Natural flow affected by irrigation development above station, since July 6, 1950, by storage in Bonny Reservoir, and since 1953 by storage in Swanson Lake (see elsewhere in this report). Records of suspended sediment loads and water temperatures for the period February to September 1953 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	61.8	99.0	128	105	196	171	208	561	551	292	237	957	296
1952	150	175	109	166	244	271	360	301	38.8	8.91	0	0	152
1953	0	41.8	61.8	144	129	162	157	24.5	13.1	42.05	0	0	60.7
1954	0	0	33.5	10.9	4.50	7.74	9.16	13.9	17.1	42.2	46.5	82.4	22.4
1955	26.3	10.5	5.58	7.75	9.17	8.04	7.83	52.7	7.61	185	214	82.1	51.9
1956	10.1	4.50	4.41	3.51	4.96	3.29	6.87	11.6	36.6	172	88.8	73.4	35.2
1957	23.4	7.68	3.43	2.25	.59	.72	.61	631	615	210	391	100	167
1958	31.0	24.7	9.04	59.5	239	254	343	247	306	91.1	245	204	170
1959	26.9	83.3	162	155	154	181	328	126	64.2	163	130	23.6	133
1960	.97	.83	.93	.94	1.89	1.50	116	591	121	119	129	31.0	95.6

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	3,800	5,890	7,860	6,450	10,880	10,520	12,370	34,520	32,800	17,970	14,580	56,970	214,600
1952	9,250	10,400	6,700	10,210	14,040	16,880	21,420	18,510	2,310	548	30	0	110,100
1953	0	2,490	3,800	8,830	7,190	9,970	9,370	1,500	777	16	0	0	43,930
1954	0	0	2,060	673	250	476	545	855	1,020	2,600	2,860	4,900	16,240
1955	1,620	625	343	476	509	494	466	3,240	4651	350	13,140	4,890	37,620
1956	623	268	271	216	285	202	409	713	2,180	10,570	5,460	4,370	25,570
1957	1,440	457	211	138	53	44	36	38,800	36,580	12,940	24,080	5,960	120,700
1958	1,910	1,470	556	3,660	13,290	15,590	20,380	15,200	18,220	5,600	15,090	12,160	123,100
1959	1,660	4,950	9,960	9,520	8,570	11,100	19,510	7,740	3,820	10,030	8,000	1,410	96,270
1960	60	49	57	58	108	92	6,900	36,340	7,200	7,320	7,930	1,840	67,950

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	173	125,600
1951	1210	15,200	Sept. 4, 1951	14	296	214,600	309	223,400
1952	1240	1,800	May 8, 1952	0	152	110,100	124	90,010
1953	1280	450	Mar. 4, 1953	0	60.7	43,930	54.8	39,700
1954	1340	*700	Dec. 22, 1953	0	22.4	16,240	23.1	16,770
1955	1390	493	Aug. 9, 1955	.1	51.9	37,620	50.0	36,190
1956	1440	360	June 7, 1956	.2	35.2	25,570	36.5	26,510
1957	1510	4,000	May 24, 1957	.2	167	120,700	169	122,500
1958	1560	457	June 9, 10, 1958	1.4	170	123,100	188	135,800
1959	1630	468	Apr. 5, 1959	.8	133	96,270	110	79,870
1960	1710	bl,130	May 4-7, 1960	.6	93.6	67,950	-	-

\* Not previously published.

a About.

b Maximum daily.

## 8310. Frenchman Creek below Champion, Nebr.

Location.--Lat 40°28'00", long 101°43'10", in SW $\frac{1}{4}$  sec.22, T.6 N., R.39 W., on left bank 0.4 mile downstream from bridge on State Highway 48 at Champion and three-quarters of a mile upstream from Sand Creek.

Drainage area.--519 sq mi, approximately, of which about 421 sq mi contributes directly to surface runoff (revised).

Records available.--October 1934 to September 1956. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Altitude of gage is 3,240 ft (from topographic map for Harvey Reservoir in Report on Survey for Flood Control Republican River, by Corps of Engineers).

Average discharge.--22 years (1934-56), 42.3 cfs (30,620 acre-ft per year).

Extremes.--1934-56: Maximum discharge, 2,850 cfs June 7, 1940 (gage height, 13.7 ft), from rating curve extended above 1,100 cfs on basis of channel conveyance-slope studies; minimum daily, 5 cfs Mar. 27, 29, Apr. 3, July 3, 1938.

Remarks.--Natural flow affected by irrigation development and some regulation at low flow from a powerplant a short distance above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	40.2	46.8	49.6	52.7	52.5	40.1	39.8	74.9	83.2	45.2	54.5	64.2	53.6
1952	52.5	47.8	57.3	57.3	61.3	53.1	44.6	48.2	34.4	35.2	37.4	34.6	47.0
1953	34.9	41.3	52.7	54.4	43.2	42.6	43.2	42.1	32.9	39.9	41.4	33.9	41.9
1954	33.3	46.3	48.8	50.1	39.8	41.8	28.3	45.8	35.3	42.6	38.1	36.6	40.6
1955	25.1	37.9	48.9	50.1	48.8	39.2	26.8	35.2	75.7	35.0	39.6	40.8	41.8
1956	28.5	37.7	49.4	48.8	46.6	33.4	30.6	34.9	39.0	49.1	30.2	32.8	38.4
1957													
1958													
1959													
1960													

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	2,470	2,780	3,050	3,240	2,920	2,470	2,370	4,610	4,950	2,780	3,350	3,820	38,810
1952	3,230	2,850	3,520	3,320	3,520	3,280	2,680	2,970	2,050	2,180	2,300	2,060	34,100
1953	2,150	2,460	3,240	3,340	2,400	2,620	2,570	2,590	1,960	2,480	2,550	2,020	30,360
1954	2,050	2,760	3,000	3,080	2,210	2,570	1,680	2,820	2,100	2,620	2,340	2,180	29,410
1955	1,540	2,260	3,010	3,080	2,710	2,410	1,590	2,160	4,500	2,150	2,430	2,430	30,270
1956	1,760	2,240	3,030	3,000	2,680	2,050	1,820	2,150	2,320	3,020	1,850	1,950	27,870
1957													
1958													
1959													
1960													

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	42.6	30,810
1951	1210	1,370	May 20, 1951	19	53.6	38,810	55.4	40,110
1952	1240	116	Mar. 25, 1952	15	47.0	34,100	44.6	32,350
1953	1280	127	Feb. 23, 1953	12	41.9	30,360	41.9	30,320
1954	1340	199	May 16, 1954	20	40.6	29,410	39.2	28,410
1955	1390	666	June 29, 1955	17	41.8	30,270	42.1	30,490
1956	1440	368	July 6, 1956	20	38.4	27,870	-	-
1957								
1958								
1959								
1960								

## 8315. Frenchman Creek near Imperial, Nebr.

Location.--Lat 40°25'45", long 101°37'25", in SW¼NW¼ sec.3, T.5 N., R.38 W., on right bank 0.2 mile downstream from bridge on county highway, 5.8 miles upstream from Enders Dam, and 6.1 miles south of Imperial.

Drainage area.--1,220 sq mi, approximately, of which about 760 sq mi contributes directly to surface runoff.

Records available.--October 1940 to September 1960.

Gage.--Water-stage recorder. Prior to Mar. 7, 1941, chain gage at bridge 0.2 mile upstream at different datum. Mar. 7 to Sept. 30, 1941, water-stage recorder at site a quarter of a mile downstream at datum 5.35 ft lower and Oct. 1, 1941, to Sept. 30, 1958, at datum 4.35 ft lower.

Average discharge.--20 years (1940-60), 73.6 cfs (53,280 acre-ft per year).

Extremes.--1940-60: Maximum discharge, 2,340 cfs Mar. 22, 1960 (gage height, 8.43 ft); minimum daily, 23 cfs June 17, 1946, Sept. 2, 1956.

Flood of June 7, 1940, reached a stage of 12.4 ft, from floodmarks, previous site and datum (discharge not determined).

Remarks.--Natural flow affected by irrigation development and regulation at low flow from powerplants above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	68.2	76.1	78.1	81.8	83.2	69.0	73.2	136	119	75.3	84.5	97.4	86.9
1952	83.2	79.8	88.9	89.5	94.8	89.8	76.0	78.4	60.8	63.1	70.1	65.1	78.3
1953	68.1	71.2	87.6	84.7	71.9	72.8	72.6	74.2	63.5	65.2	70.2	62.6	71.9
1954	58.9	74.6	79.2	79.7	70.6	72.2	60.3	77.9	70.5	65.7	67.2	70.5	70.6
1955	55.9	70.0	78.6	82.6	80.1	72.0	57.4	63.3	96.9	65.4	64.7	65.7	71.0
1956	55.0	68.3	78.1	78.1	77.0	61.7	57.8	64.6	75.8	80.3	58.4	58.1	67.8
1957	59.4	84.4	75.8	77.6	79.3	71.7	81.3	89.6	68.8	65.0	54.2	60.6	72.0
1958	63.5	74.6	80.5	80.5	79.5	84.9	75.2	84.8	65.8	104	56.2	63.0	75.8
1959	60.7	71.8	82.6	81.2	82.9	74.0	70.3	76.0	56.9	50.7	55.7	51.5	67.8
1960	63.4	75.9	76.6	85.1	87.3	303	76.0	61.6	51.8	50.9	51.9	48.7	87.1

† Corrected.

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	4,200	4,530	4,800	5,030	4,620	4,240	4,350	8,390	7,100	4,630	5,200	5,800	62,890
1952	5,120	4,750	5,470	5,500	5,450	5,520	4,520	4,820	3,620	3,880	4,310	3,870	56,830
1953	4,060	4,230	5,390	5,210	3,990	4,480	4,320	4,560	3,780	4,010	4,320	3,720	52,070
1954	3,620	4,440	4,870	4,900	3,920	4,440	3,590	4,790	4,190	4,040	4,130	4,200	51,130
1955	3,440	4,170	4,830	5,080	4,450	4,430	3,410	3,890	5,770	4,020	3,980	3,910	51,380
1956	3,390	4,060	4,800	4,800	4,430	3,790	3,440	3,970	4,510	4,930	3,590	3,460	49,170
1957	3,650	5,020	4,860	4,770	4,420	4,410	4,840	5,330	4,090	3,990	3,350	3,600	52,110
1958	3,900	4,440	4,950	4,950	4,360	5,220	4,350	5,210	3,910	6,370	3,450	3,750	54,860
1959	3,730	4,270	5,080	4,990	4,610	4,550	4,180	4,670	3,390	3,120	3,430	3,060	49,080
1960	3,900	4,520	4,710	5,230	5,020	18,630	4,520	3,790	3,680	3,130	3,190	2,900	63,220

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean		Acre-feet	
		Discharge	Date							
1950	-	-	-	-	-	-	-	-	-	-
1951	1210	1,860	May 21, 1951	33	86.9	62,890	71.7	89.4	51,910	64,700
1952	1240	167	Aug. 28, 1952	36	78.3	56,830	76.0	70.9	55,170	51,320
1953	1280	150	Aug. 17, 1953	26	71.9	52,070	69.9	70.7	50,640	51,190
1954	1340	266	Sept. 16, 1954	25	70.6	51,130	69.9	70.7	50,640	51,190
1955	1390	330	June 30, 1955	33	71.0	51,380	70.7	70.7	50,640	51,190
1956	1440	824	June 18, 1956	23	67.8	49,170	69.2	71.9	50,250	52,070
1957	1510	383	June 26, 1957	27	72.0	52,110	71.9	75.5	54,650	54,130
1958	1560	1,070	July 18, 1958	27	75.8	54,860	75.5	75.5	54,650	54,130
1959	1630	170	May 18, 1959	24	67.8	49,080	67.9	-	-	-
1960	1710	2,340	Mar. 22, 1960	27	87.1	63,220	-	-	-	-

## 8320. Enders Reservoir near Enders, Nebr.

Location.--Lat 40°25'05", long 101°30'55", in NE $\frac{1}{4}$  sec.9, T.5 N., R.37 W.; near right bank in control house at outlet tube of Enders Dam on Frenchman Creek, 2 $\frac{1}{4}$  miles southeast of Enders.

Drainage area.--1,300 sq mi, approximately, of which about 820 sq mi contributes directly to surface runoff.

Records available.--October 1950 to September 1960.

Gage.--Water-stage recorder. Datum of gage is at mean sea level, datum of 1929. Prior to Sept. 3, 1960, mercury-column pressure gage at same datum.

Extremes.--1950-60: Maximum contents observed, 55,330 acre-ft Mar. 25, 1960 (elevation, 3,118.2 ft); minimum since storage pool first filled, 25,560 acre-ft Oct. 18, 19, 1953 (elevation, 3,099.2 ft).

Remarks.--Reservoir is formed by earthfill dam; storage began Oct. 23, 1950. Capacity, 36,010 acre-ft between elevations 3,080.0 (sill of outlet gates) and 3,112.3 ft (top of storage pool). Top of flood-control pool at elevation 3,127.0 ft (capacity, 74,520 acre-ft). Top of superstorage flood-control pool at elevation 3,129.5 ft (capacity, 80,730 acre-ft). Dead storage, 8,470 acre-ft. Figures given herein represent total contents. Water used for irrigation in Frenchman-Cambridge irrigation project.

Contents, in acre-feet, at 8 a.m. on last day of month

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951	959	4,560	8,380	11,850	15,180	17,600	19,910	25,980	30,460	31,750	31,680	34,860
1952	37,460	39,560	42,630	45,260	42,380	39,850	36,930	35,300	33,560	31,480	29,540	27,860
1953	28,440	29,610	31,280	32,030	33,350	34,210	34,490	34,710	33,280	30,670	28,690	26,600
1954	26,360	30,330	33,850	37,230	39,800	42,210	42,880	44,050	42,540	38,930	36,400	31,680
1955	32,720	35,450	38,770	42,380	44,560	43,460	42,960	41,640	43,460	39,800	36,040	34,280
1956	33,070	34,710	37,540	40,110	42,380	43,800	43,460	42,540	44,480	41,890	37,920	34,210
1957	32,370	35,300	37,580	39,180	41,070	42,540	43,800	44,140	42,960	42,050	38,930	37,300
1958	38,000	39,400	43,130	44,310	43,960	44,480	43,960	45,420	43,630	46,920	43,460	41,070
1959	40,510	41,150	42,130	43,300	44,140	45,860	46,030	44,560	42,720	38,540	33,490	33,140
1960	34,930	37,460	39,870	42,630	45,680	52,040	47,980	45,420	45,170	41,150	36,330	34,420

a Contents at 12 p.m., Sept. 30.

## 8325. Frenchman Creek near Enders, Nebr.

Location.--Lat 40°25'05", long 101°30'35", in NW¼NW¼ sec.10, T.5 N., R.37 W., on left bank a quarter of a mile downstream from Enders Dam and 2½ miles southeast of Enders.

Drainage area.--1,300 sq mi, approximately, of which about 820 sq mi contributes directly to surface runoff.

Records available.--February 1946 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 3,031.22 ft above mean sea level, datum of 1929 (Bureau of Reclamation bench mark). Prior to June 14, 1948, at site 800 ft upstream at datum 1.03 ft higher.

Average discharge.--14 years (1946-60), 69.3 cfs (50,170 acre-ft per year), unadjusted.

Extremes.--1946-60: Maximum discharge, 763 Aug. 20, 1953 (gage height, 6.31 ft); maximum gage height, 6.65 ft July 18, 1958 (backwater from downstream tributary); minimum daily discharge, 1.6 cfs Nov. 3, 1950.

Remarks.--Flow regulated by Enders Reservoir (see preceding station).

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	65.9	2.26	2.85	3.65	4.88	5.69	10.6	33.9	7.72	15.5	55.2	12.8	18.6
1952	10.4	10.3	9.94	17.0	126	144	101	106	76.3	77.7	85.0	77.4	69.8
1953	44.7	42.2	55.4	66.4	42.4	52.7	63.3	65.7	76.3	93.8	97.0	85.1	65.6
1954	53.0	8.48	9.20	10.1	9.77	10.3	29.5	39.2	75.2	103	95.7	138	48.6
1955	39.9	8.75	9.42	10.1	26.9	79.3	60.7	77.1	50.4	109	114	88.4	56.3
1956	67.8	30.6	29.4	29.9	30.2	23.5	46.7	75.5	*60.9	105	114	110	*60.4
1957	88.4	36.0	37.2	37.3	38.4	37.5	58.8	86.9	86.8	67.7	89.4	78.8	62.1
1958	51.6	37.6	10.3	56.9	77.5	77.7	78.8	56.2	80.7	66.9	94.0	91.4	64.8
1959	64.2	54.8	60.6	65.3	67.4	37.2	86.9	108	74.0	110	136	57.2	75.3
1960	34.7	33.9	34.4	37.4	23.7	189	153	91.4	70.8	107	128	77.2	82.1

\* Revised; revised daily discharge thus affected is available and will be published in a future water-supply paper.

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	4,050	134	175	225	271	350	632	2,090	459	954	3,400	759	13,500
1952	637	615	611	1,050	7,240	8,860	6,040	6,500	4,540	4,780	5,230	4,610	50,710
1953	2,750	2,510	3,400	4,080	2,350	3,240	3,770	4,040	4,540	5,770	5,970	5,080	47,480
1954	3,260	505	568	624	543	634	1,750	2,410	4,470	6,350	5,880	8,200	35,190
1955	2,450	520	579	620	1,490	4,880	3,610	4,740	3,000	6,710	7,000	5,140	40,740
1956	4,170	1,820	1,810	1,840	1,740	1,440	2,780	4,640	*3,620	6,440	6,980	6,530	*43,810
1957	5,430	2,140	2,280	2,290	2,130	2,310	3,500	5,340	5,170	4,160	5,500	4,690	44,940
1958	3,170	2,230	654	3,500	4,300	4,780	4,890	3,460	4,800	4,110	5,780	5,440	46,890
1959	3,950	3,260	3,720	4,010	3,740	2,290	3,980	6,610	4,400	6,790	8,360	3,400	54,510
1960	2,130	2,020	2,120	2,300	1,360	11,600	9,120	5,620	4,210	6,600	7,890	4,600	59,570

\* Revised; see footnote to preceding table.

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	71.6	-	51,830
1951	1210	174	May 14, 1951	1.6	18.6	13,500	15.2	-	11,000
1952	1240	151	Mar. 12, 1952	9.7	69.8	50,710	79.2	-	57,510
1953	1280	763	Aug. 20, 1953	38	65.6	47,480	59.6	-	43,150
1954	1340	561	June 8, 1954	7.6	48.6	35,190	47.5	-	34,410
1955	1390	260	Sept. 9, 1955	8.0	56.3	40,740	62.2	-	44,990
1956	1440	*316	Sept. 28, 1956*	10	*60.4	*43,810	*63.2	-	*45,860
1957	1510	249	Sept. 12, 1957	11	62.1	44,940	56.8	-	41,120
1958	1560	234	Sept. 15, 1958	8.4	64.8	46,890	71.5	-	51,790
1959	1630	396	Oct. 1, 1959	7.2	75.3	54,510	68.9	-	49,850
1960	1710	546	Mar. 24, 25, 1960	12	82.1	59,570	-	-	-

\* Revised.

## 8335. Frenchman Creek near Hamlet, Nebr.

Location.--Lat 40°22'30", long 101°12'50", in NW¼ sec.29, T.5 N., R.34 W., on right bank 120 ft downstream from county highway bridge, a quarter of a mile downstream from Chicago, Burlington & Quincy Railroad bridge, and 1½ miles east of Hamlet.

Drainage area.--1,480 sq mi, approximately, of which about 960 sq mi contributes directly to surface runoff.

Records available.--October 1928 to September 1956. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 2,797.61 ft above mean sea level, datum of 1929. Prior to Apr. 20, 1932, staff gage and Apr. 20, 1932, to June 14, 1940, water-stage recorder (gage destroyed by flood of June 7, 1940), at bridge on U. S. Highway 6, a quarter of a mile upstream at datum 1.66 ft higher.

Extremes.--1928-56: Maximum discharge, 7,000 cfs June 17, 1956 (gage height, 12.20 ft); minimum daily, 19 cfs Dec. 20, 1951.

Remarks.--Natural flow affected by irrigation development above station and since Oct. 23, 1950, by storage in Enders Reservoir (see p. 328).

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	86.5	30.3	27.3	29.7	31.7	29.4	33.1	86.6	59.0	61.9	87.2	97.3	55.2
1952	39.2	39.2	32.7	40.4	138	168	131	142	94.9	89.0	109	98.2	93.1
1953	72.5	67.8	77.4	94.8	71.6	80.1	90.9	88.8	91.7	110	110	100	88.1
1954	76.8	41.2	40.5	35.5	38.1	39.4	50.4	70.3	85.0	99.7	129	147	71.2
1955	72.3	38.4	37.4	38.2	47.8	100	82.1	105	96.7	118	115	131	82.0
1956	96.7	57.1	53.3	54.3	56.6	49.5	66.7	90.1	223	129	137	120	94.4
1957													
1958													
1959													
1960													

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	5,320	1,800	1,680	1,850	1,760	1,810	1,970	5,330	3,510	3,810	5,360	5,790	39,970
1952	2,419	2,330	2,010	2,480	7,910	10,330	7,770	8,700	5,640	5,470	8,690	5,840	67,580
1953	4,460	4,030	4,780	5,830	3,980	4,320	5,410	5,460	5,450	8,770	8,770	5,350	63,790
1954	4,720	2,450	2,490	2,180	2,110	2,420	3,000	4,320	5,060	6,130	7,920	8,770	51,570
1955	4,440	2,280	2,300	2,350	2,650	6,150	4,890	6,440	5,760	7,240	7,090	7,780	59,370
1956	5,950	3,400	3,280	3,340	3,260	3,050	3,970	5,540	13,260	7,900	8,440	7,160	68,550
1957													
1958													
1959													
1960													

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	87.6	63,390
1951	1210	1,700	Sept. 2, 1951	20	55.2	39,970	52.4	37,920
1952	1240	379	Aug. 28, 1952	19	93.1	67,580	102	74,080
1953	1280	359	July 23, 1953	55	88.1	63,790	83.2	60,200
1954	1340	960	Aug. 17, 1954	29	71.2	51,570	70.4	50,930
1955	1390	1,700	June 16, 1955	20	82.0	59,370	†87.0	62,980
1956	1440	7,000	June 17, 1956	35	94.4	68,550	-	-
1957								
1958								
1959								
1960								

† Corrected.

## 8340. Frenchman Creek at Palisade, Nebr.

Location.--Lat 40°20'50", long 101°07'40", in SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec.36, T.5 N., R.34 W., on right bank at downstream side of bridge on U. S. Highway 6, three-eighths of a mile upstream from Chicago, Burlington & Quincy Railroad bridge, 1 mile west of Palisade, and 2 miles upstream from Stinking Water Creek.

Drainage area.--1,500 sq mi, approximately, of which about 980 sq mi contributes directly to surface runoff.

Records available.--October 1894 to October 1896 (published as Frenchman River at Palisade), June 1950 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 2,747.49 ft above mean sea level, datum of 1929. October 1894 to October 1896 nonrecording gage at railroad bridge three-eighths of a mile downstream at different datum.

Average discharge.--12 years (1894-96, 1950-60), 90.9 cfs (65,810 acre-ft per year).

Extremes.--1894-96, 1950-60: Maximum discharge, 5,560 cfs June 17, 1956 (gage height, 8.79 ft); minimum daily, 13 cfs Mar. 12, 1951.

Remarks.--Natural flow affected by irrigation development above station and, since Oct. 23, 1950, by storage in Enders Reservoir (see p. 328).

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	88.3	29.9	31.7	30.3	34.0	32.0	35.5	97.4	84.1	67.0	86.0	107	60.4
1952	42.1	40.7	37.3	43.7	147	173	132	142	91.5	83.4	102	91.4	93.6
1953	62.8	69.1	77.6	102	73.5	81.1	91.1	80.7	82.3	108	103	94.8	85.6
1954	77.4	44.9	41.5	39.2	41.7	37.8	29.6	62.9	73.3	90.3	125	133	66.6
1955	68.1	31.8	36.8	42.9	51.7	107	84.9	90.5	90.2	108	111	122	78.9
1956	93.6	60.3	59.3	58.8	63.8	52.7	53.3	75.5	203	127	142	128	93.1
1957	111	69.8	67.2	59.9	72.4	61.3	73.3	151	156	109	96.7	94.2	93.6
1958	77.7	71.0	42.5	76.3	105	109	118	103	111	145	102	116	97.8
1959	95.0	88.9	97.4	97.1	102	74.5	93.9	142	103	127	137	79.7	103
1960	61.6	60.7	61.3	59.5	64.9	247	198	149	120	125	136	95.4	115

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	5,430	1,780	1,950	1,860	1,890	1,970	2,110	5,990	5,000	4,120	5,290	6,360	43,750
1952	2,590	2,420	2,290	2,690	8,460	10,660	7,840	8,710	5,440	5,130	6,300	5,440	67,970
1953	3,860	4,110	4,770	6,260	4,080	4,980	5,420	4,960	4,900	6,840	6,350	5,640	61,950
1954	4,760	2,670	2,550	2,410	2,320	2,350	1,760	3,870	4,360	5,550	7,690	7,940	46,210
1955	4,190	1,890	2,260	2,640	2,870	6,600	5,050	5,560	5,370	6,630	6,840	7,250	57,150
1956	5,760	3,590	3,650	3,610	3,670	3,240	3,170	4,640	12,100	7,830	8,730	7,600	67,590
1957	6,830	4,150	4,130	3,680	4,020	3,770	4,360	9,260	9,300	6,670	5,950	5,600	67,720
1958	4,780	4,230	2,620	4,690	5,810	6,700	7,000	6,320	6,600	8,900	6,280	6,920	70,850
1959	5,840	5,290	5,990	5,970	5,670	4,580	5,590	8,710	6,120	7,790	8,430	4,740	74,720
1960	3,790	3,610	3,770	3,660	3,730	15,220	11,780	9,180	7,130	7,690	8,350	5,670	83,580

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	-	-	-
1951	1210	1,630	June 17, 1951	13	60.4	43,750	57.9	41,890	
1952	1240	335	Aug. 28, 1952	24	93.6	67,970	101	73,410	
1953	1280	306	July 23, 1953	52	86.6	61,950	81.8	59,190	
1954	1340	780	Aug. 18, 1954	14	66.6	48,210	64.3	46,570	
1955	1390	964	June 17, 1955	15	78.9	57,150	85.4	61,810	
1956	1440	5,560	June 17, 1956	30	93.1	67,590	96.0	69,700	
1957	1510	1,040	June 27, 1957	45	93.6	67,720	88.8	64,240	
1958	1560	1,440	July 19, 1958	36	97.8	70,850	105	76,340	
1959	1630	565	May 18, 1959	50	103	74,720	95.0	68,770	
1960	1710	865	Mar. 21, 1960	42	115	83,580	-	-	

## 8350. Stinking Water Creek near Palisade, Nebr.

Location.--Lat 40°22'10", long 101°06'50", at southwest corner of NW $\frac{1}{4}$  sec.30, T.5 N., R.33 W., on right bank 85 ft downstream from county bridge,  $1\frac{1}{4}$  miles upstream from mouth, and  $1\frac{1}{4}$  miles northwest of Palisade.

Drainage area.--1,390 sq mi, approximately, of which about 430 sq mi contributes directly to surface runoff.

Records available.--October 1949 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 2,740.99 ft above mean sea level, datum of 1929.

Average discharge.--11 years (1949-60), 43.7 cfs (31,640 acre-ft per year).

Extremes.--1949-60: Maximum discharge, 3,030 cfs June 17, 1956 (gage height, 11.30 ft). From rating curve extended above 1,200 cfs on basis of slope-area measurement of peak flow; minimum daily, 6.0 cfs Aug. 4, 1955.

Remarks.--Natural flow affected by irrigation development above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	32.3	37.4	43.6	37.3	48.9	43.8	46.8	118	103	63.4	37.0	78.6	57.2
1952	49.3	48.8	44.8	44.8	56.2	58.2	53.4	62.2	29.0	22.0	45.1	29.3	48.1
1953	29.3	37.4	41.4	45.9	41.1	49.4	49.6	43.6	28.2	20.3	20.0	16.6	35.2
1954	22.6	44.5	40.5	32.9	44.9	45.2	37.6	47.4	30.3	14.6	23.1	17.5	33.3
1955	26.9	32.7	33.7	36.0	40.1	45.4	36.7	35.8	*72.0	18.3	18.2	28.9	*35.3
1956	27.9	33.4	36.5	40.1	42.9	43.9	36.0	29.2	185	25.6	32.2	20.6	45.9
1957	22.8	40.5	39.8	36.0	45.6	46.2	54.5	72.6	57.3	38.5	21.1	25.5	41.6
1958	35.5	40.3	40.6	38.2	44.0	56.3	58.4	59.4	41.2	113	32.7	30.0	49.1
1959	32.6	40.5	43.8	41.1	50.9	58.5	54.4	65.0	32.4	34.9	16.4	21.9	41.0
1960	35.2	42.3	39.9	37.1	63.5	215	67.0	59.3	56.0	35.5	21.1	21.8	57.0

\* Revised. Revised daily discharge for period thus affected are available and will be published in a future water-supply paper.

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1,990	2,230	2,680	2,290	2,710	2,690	2,780	7,130	6,140	3,900	2,280	4,560	41,380
1952	3,030	2,900	2,760	2,750	3,230	4,200	3,180	3,820	1,730	1,350	2,770	1,750	33,470
1953	1,800	2,220	2,540	2,820	2,280	3,040	2,950	2,680	1,680	1,250	1,230	986	25,480
1954	1,390	2,650	2,490	2,020	2,490	2,780	2,240	2,910	1,800	897	1,420	1,040	24,130
1955	1,660	1,950	2,070	2,210	2,230	2,790	2,180	2,200	*4,280	1,130	1,120	1,720	*25,540
1956	1,720	1,990	2,240	2,470	2,470	2,700	2,140	1,800	11,010	1,570	1,980	1,230	33,320
1957	1,400	2,410	2,450	2,220	2,540	2,840	3,250	4,470	3,410	2,370	1,300	1,520	30,150
1958	2,060	2,400	2,500	2,350	2,450	3,460	3,480	3,650	2,450	6,880	2,010	1,790	35,580
1959	2,010	2,410	2,690	2,520	2,820	3,600	3,240	3,990	1,930	2,140	1,010	1,310	29,670
1960	2,170	2,520	2,450	2,280	3,650	13,200	3,390	3,650	3,330	2,180	1,300	1,300	41,420

\* Revised. See footnote to preceding table.

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	39.5	-	28,630
1951	1210	*846	May 15, 1951	25	57.2	41,380	59.6	-	43,170
1952	1240	*1,030	Aug. 28, 1952	15	46.1	33,470	43.2	-	31,340
1953	1280	106	Aug. 20, 1953	14	35.2	25,480	35.2	-	25,450
1954	1340	193	Aug. 17, 1954	11	33.3	24,130	32.2	-	23,280
1955	1390	*1,250	June 17, 1955	6.0	*35.3	*25,540	*35.7	-	*25,810
1956	1440	3,030	June 17, 1956	13	45.9	33,320	46.3	-	33,630
1957	1510	239	May 17, 1957	14	41.6	30,150	42.6	-	30,880
1958	1560	1,270	July 19, 1958	22	49.1	35,580	49.3	-	35,750
1959	1630	338	May 19, 1959	12	41.0	29,670	41.0	-	29,700
1960	1710	1,780	Mar. 22, 1960	16	57.0	41,420	-	-	-

\* Revised.



## 8355. Frenchman Creek at Culbertson, Nebr.

Location.--Lat 40°14'05", long 100°52'40", in SW<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub> sec.12, T.3 N., R.32 W., on right bank 19 ft upstream from bridge on U. S. Highways 6 and 34, 2 miles west of Culbertson, and 4.5 miles upstream from mouth.

Drainage area.--3,080 sq mi, approximately, of which about 1,560 sq mi contributes directly to surface runoff.

Records available.--June 1913 to September 1915 (gage heights and discharge measurements only), October 1930 to September 1960. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 2,583.44 ft above mean sea level, datum of 1929. Prior to Nov. 2, 1950, staff or chain gage at bridge 3.3 miles downstream at datums as follows: June 12, 1913, to Sept. 30, 1915, datum unknown; Mar. 11, 1931, to May 31, 1935, at datum 20.51 ft lower than present datum; June 1, 1935, to Nov. 1, 1950, at datum 21.51 ft lower than present datum.

Average discharge.--30 years (1930-60), 123 cfs (89,050 acre-ft per year).

Extremes.--1930-60: Maximum discharge, 15,000 cfs (estimated) May 31, 1935 (gage height, 14.8 ft, from floodmarks, present site and datum); minimum daily, 7 cfs Aug. 13, 14, 26, 1936.

Remarks.--Natural flow affected by irrigation development above station and, since Oct. 23, 1950, by storage in Enders Reservoir (see p. 328).

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	77.0	89.0	89.5	79.9	101	94.6	71.1	182	304	153	79.5	245	130
1952	83.8	104	85.9	97.8	210	250	197	222	56.4	28.7	57.2	54.1	120
1953	99.6	114	141	182	142	149	150	67.9	44.3	35.0	33.1	28.3	98.6
1954	65.7	100	109	102	111	107	64.5	75.5	44.8	20.2	55.2	62.1	76.2
1955	106	93.2	92.5	85.5	111	166	107	75.8	150	44.5	37.5	60.6	93.8
1956	67.1	109	94.0	98.1	129	119	86.3	37.1	285	64.6	91.0	56.7	103
1957	76.5	127	126	104	140	126	128	198	178	134	35.5	34.3	117
1958	89.1	132	106	137	167	183	201	199	117	189	45.1	50.1	135
1959	133	136	162	133	165	155	166	206	79.5	73.1	39.6	88.9	128
1960	112	117	114	100	160	543	290	221	140	65.0	35.4	88.3	165

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	4,730	5,290	5,500	4,920	5,630	5,820	4,230	11,190	18,090	9,430	4,890	14,580	94,300
1952	5,150	6,180	5,280	6,010	12,100	15,340	11,700	13,640	3,360	1,770	3,520	3,220	87,270
1953	6,120	6,770	8,680	11,170	7,900	9,170	8,910	4,180	2,640	2,150	2,030	1,690	71,410
1954	4,040	5,970	6,890	6,260	6,180	6,580	3,840	4,650	2,670	1,240	3,390	3,700	55,190
1955	6,500	5,550	5,680	5,250	6,140	10,210	6,340	4,660	8,930	2,740	2,310	3,610	67,920
1956	4,120	6,510	5,780	6,030	7,430	7,300	5,140	2,280	16,970	3,970	5,600	3,370	74,500
1957	4,700	7,570	7,730	6,410	7,790	7,760	7,640	12,190	10,620	7,980	2,180	2,040	84,610
1958	5,480	7,870	6,540	8,450	9,260	11,230	11,970	12,240	6,940	11,650	2,770	2,980	97,380
1959	8,180	8,110	9,980	8,210	9,140	9,560	9,880	12,650	4,730	4,490	2,440	5,290	92,640
1960	6,860	6,950	7,010	6,170	9,220	33,380	17,260	13,590	8,510	4,000	2,180	5,140	120,100

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	110	79,490
1951	1210	5,260	June 17, 1951	26	130	94,300	132	95,390
1952	1240	628	Aug. 29, 1952	22	120	87,270	127	92,230
1953	1260	230	Jan. 8, 1953	23	98.6	71,410	91.9	66,540
1954	1340	616	Aug. 18, 1954	14	76.2	55,190	77.6	56,220
1955	1390	1,750	June 17, 1955	19	93.8	67,920	92.0	66,600
1956	1440	3,350	June 18, 1956	23	103	74,500	108	78,090
1957	1510	2,450	July 8, 1957	27	117	84,610	117	84,500
1958	1560	1,390	July 20, 1958	25	135	97,380	143	103,800
1959	1630	2,480	July 13, 1959	21	128	92,640	120	87,190
1960	1710	2,390	Mar. 23, 1960	27	165	120,100	-	-

8360. Blackwood Creek near Culbertson, Nebr.

Location.--Lat 40°14'15", long 100°48'25", in SE 1/4 sec. 10, T.3 N., R.31 W., on left bank 60 ft upstream from bridge on U. S. Highways 6 and 34, a quarter of a mile north of Chicago, Burlington & Quincy Railroad bridge, 1 1/4 miles east of Culbertson, and 2 miles upstream from mouth.

Drainage area.--290 sq mi, approximately.

Records available.--May 1946 to September 1960.

Gage.--Water-stage recorder and concrete control. Datum of gage is 2,555.25 ft above mean sea level, datum of 1929.

Average discharge.--14 years (1946-60), 6.42 cfs (4,650 acre-ft per year); median of yearly mean discharges, 5.5 cfs (4,000 acre-ft per year).

Extremes.--1946-60: Maximum discharge, 1,650 cfs June 17, 1955 (gage height, 14.64 ft); no flow Jan. 4-6, 1950.

Remarks.--Natural flow affected by irrigation development above station, return flow from irrigated areas, and waste from Culbertson Canal.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	2.94	1.92	0.65	0.51	0.81	0.54	5.75	47.3	63.5	40.5	4.60	21.6	15.9
1952	5.23	1.68	.67	.83	.91	2.33	.76	1.03	1.97	3.68	2.88	.57	1.89
1953	.51	1.03	.42	.40	.32	.24	.86	6.04	6.70	2.03	4.35	.81	1.99
1954	.89	.74	.63	.64	.54	.47	1.17	10.6	6.57	1.34	6.06	.89	2.56
1955	.66	.58	.54	.57	.95	.53	2.46	4.74	36.2	1.27	10.9	1.56	5.07
1956	1.33	1.06	.85	.79	.68	.63	1.33	7.02	50.9	3.12	2.61	1.39	5.92
1957	1.12	1.11	.93	.84	.94	.85	5.04	21.6	17.0	19.4	3.78	4.64	6.48
1958	2.34	1.66	1.34	1.19	.99	1.26	2.04	17.7	11.9	23.9	3.71	7.95	6.37
1959	1.56	1.57	1.42	1.31	2.98	1.04	1.00	17.5	7.20	11.6	4.04	2.56	4.50
1960	1.34	.99	1.00	.78	19.3	129	1.94	7.57	8.77	2.83	2.50	1.78	14.9

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	181	114	40	31	45	33	342	2,910	3,780	2,490	283	1,280	11,530
1952	322	100	41	51	52	143	45	63	117	228	177	34	1,370
1953	31	61	26	25	18	14	51	371	399	125	288	48	1,440
1954	55	44	38	39	30	29	70	650	391	82	373	53	1,850
1955	41	35	33	35	53	33	146	291	2,160	78	673	95	3,670
1956	82	83	52	48	39	38	79	431	3,030	192	160	83	4,300
1957	69	66	57	52	52	52	300	1,330	1,010	1,190	232	276	4,690
1958	144	99	82	73	55	77	121	1,090	706	1,470	228	472	4,620
1959	96	94	87	81	183	64	60	1,060	428	716	248	140	3,260
1960	83	59	61	48	1,110	7,950	115	465	522	174	154	106	10,850

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean
		Discharge	Date				
1950	-	-	-	-	-	-	4.66
1951	1210	1,360	July 18, 1951	0.1	15.9	11,530	16.1
1952	1240	100	Aug. 29, 1952	.1	1.89	1,370	1.42
1953	1280	134	Aug. 6, 1953	.1	1.99	1,440	2.01
1954	1340	205	June 13, 1954	.1	2.56	1,850	2.52
1955	1390	1,650	June 17, 1955	.3	5.07	3,670	5.19
1956	1440	1,560	June 17, 1956	.2	5.92	4,300	5.91
1957	1510	406	July 8, 1957	.1	6.48	4,690	6.66
1958	1560	383	May 15, 1958	.7	6.37	4,620	6.31
1959	1630	664	July 14, 1959	.7	4.50	3,260	4.40
1960	1710	1,630	Mar. 21, 1960	.6	14.9	10,850	-

## 8365. Driftwood Creek near McCook, Nebr.

Location.--Lat 40°08'50", long 100°39'40", in SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec.12, T.2 N., R.30 W., on right bank at downstream side of bridge on county road, half a mile downstream from siphon and wateway on Meeker Canal, 4 miles southwest of McCook, and 5 miles upstream from mouth.

Drainage area.--360 sq mi, approximately.

Records available.--March 1946 to September 1960.

Gage.--Water-stage recorder and concrete control. Datum of gage is 2,493.78 ft above mean sea level, datum of 1929.

Average discharge.--14 years (1946-60), 11.8 cfs (8,540 acre-ft per year); median of yearly mean discharges, 8.8 cfs (6,400 acre-ft per year).

Extremes.--1946-60: Maximum discharge, 4,740 cfs Aug. 7, 1950 (gage height, 25.43 ft, from floodmark), from rating curve extended above 3,000 cfs; no flow at times in most years.

Remarks.--Natural flow affected by waste from Meeker Canal and by minor irrigation development above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	0.52	0.46	0.38	0.29	0.41	0.25	0.65	31.7	24.8	31.3	28.9	302	35.0
1952	1.99	1.21	.87	.78	1.02	1.98	2.57	9.45	2.50	29.8	.41	.41	4.47
1953	.94	.30	.42	.52	.42	.36	.28	4.98	.57	3.03	1.43	.04	1.12
1954	.10	.15	.12	.26	.47	.11	.97	1.11	.23	.36	12.6	.52	1.44
1955	.70	.12	.12	.10	.16	.10	1.13	1.19	10.6	.03	.08	2.69	1.41
1956	.07	.08	.08	.10	.05	.04	1.66	.19	75.3	100	28.5	1.18	17.4
1957	.18	.16	.15	.10	.10	.13	11.5	112	36.9	11.3	5.26	.47	14.6
1958	13.4	.46	.33	.25	.23	.64	.35	3.71	2.52	37.8	32.0	5.51	8.22
1959	2.14	.34	.32	.29	14.9	.54	.39	1.48	4.35	12.1	8.17	12.9	4.75
1960	6.00	.42	.57	.53	31.4	209	1.56	1.71	29.0	12.3	10.6	5.00	25.8

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	32	27	24	18	23	15	39	1,950	1,470	1,930	1,780	18,000	25,310
1952	123	72	54	48	59	122	153	581	149	1,830	25	24	3,240
1953	58	18	26	32	23	22	16	306	34	186	88	24	811
1954	6.1	8.9	7.5	16	26	68	58	68	14	22	777	31	1,040
1955	43	7.3	7.5	6.1	9.1	6.0	67	73	633	1.8	5.2	160	1,020
1956	4.4	5.0	5.2	6.1	2.8	24	99	12	4,480	6,160	1,750	70	12,600
1957	11	9.7	9.5	6.1	5.6	81	682	6,860	2,190	696	32	28	10,540
1958	822	27	20	15	13	39	21	228	150	2,320	1,960	328	5,940
1959	131	20	19	18	830	33	23	91	259	742	503	770	3,440
1960	369	25	35	33	1,810	12,840	93	105	1,750	759	649	297	18,740

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	20.1	14,580
1951	1210	4,470	Sept. 8, 1951	0.1	35.0	25,310	35.2	25,470
1952	1240	1,370	July 5, 1952	0	4.47	3,240	4.27	3,090
1953	1280	124	July 12, 1953	0	1.12	811	1.01	732
1954	1340	593	Aug. 18, 1954	0	1.44	1,040	1.49	1,080
1955	1390	284	June 18, 1955	0	1.41	1,020	1.35	976
1956	1440	3,810	June 17, 1956	0	17.4	12,600	17.4	12,610
1957	1510	3,620	May 30, 1957	.1	14.6	10,540	15.7	11,380
1958	1560	560	Oct. 23, 1957	.1	8.22	5,940	7.26	5,240
1959	1630	220	July 20, 1959	.2	4.75	3,440	5.11	3,700
1960	1710	2,830	Mar. 21, 1960	.3	25.8	18,740	-	-

## 8370. Republican River at McCook, Nebr.

Location.--Lat 40°11'15", long 100°37'05", in SW¼ sec. 32, T.3 N., R.29 W., on left bank 25 ft downstream from bridge on U. S. Highway 83 at south edge of McCook, 2½ miles downstream from Driftwood Creek, and 10½ miles upstream from Red Willow Creek.

Drainage area.--12,560 sq mi (revised), approximately, of which a large area does not contribute directly to surface runoff.

Records available.--October 1930 to June 1932, October 1954 to September 1960. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 2,456.37 ft above mean sea level, datum of 1929. October 1930 to June 1932 staff gage on former highway bridge 325 ft upstream at different datum. October 1954 to Mar. 13, 1959, wire-weight gage on highway bridge 25 ft upstream at present datum.

Average discharge.--7 years (1931, 1954-60), 248 cfs (179,500 acre-ft per year).

Extremes.--1930-32, 1954-60: Maximum discharge, 5,890 cfs Mar. 21, 1960 (gage height, 9.14 ft); no flow for several days in July and August 1931. Maximum flood known since about 1826 occurred May 31, 1935 (discharge, about 245,000 cfs).

Remarks.--Natural flow affected by irrigation development above station and by storage in Bonny Reservoir, Enders Reservoir, and Swanson Lake (see elsewhere in this report). Records of chemical analyses and water temperatures for the period September 1956 to September 1957 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952													
1953													
1954													
1955	113	97.4	87.8	76.5	109	184	113	89.0	167	112	164	87.5	117
1956	57.2	115	104	104	118	130	93.9	22.6	269	237	112	53.3	118
1957	70.3	126	139	110	145	143	177	1,022	895	383	374	123	310
1958	127	170	130	214	398	452	577	527	439	353	268	235	323
1959	154	229	321	269	316	358	528	433	203	262	176	129	281
1960	141	142	136	88.3	279	901	424	860	280	186	169	122	312

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952													
1953													
1954													
1955	6,950	5,800	5,400	4,700	6,050	11,290	6,730	5,470	9,930	6,900	10,080	5,210	84,510
1956	3,520	6,840	6,400	6,380	6,810	7,990	5,590	1,390	16,030	14,580	6,890	3,170	85,590
1957	4,320	7,510	8,530	6,770	8,080	8,770	10,530	62,860	53,240	23,520	22,970	7,290	224,400
1958	7,790	10,090	8,010	13,160	22,100	27,800	34,310	32,430	26,150	21,690	16,470	14,010	234,000
1959	9,440	13,640	19,740	16,540	17,530	22,040	31,420	26,650	12,060	16,120	10,800	7,690	203,700
1960	8,680	8,450	8,380	5,430	16,030	55,390	25,200	52,910	16,630	11,430	10,390	7,240	226,200

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950								
1951								
1952								
1953								
1954								
1955	1390	2,590	June 18, 1955	9.6	117	84,510	115	83,120
1956	1440	3,530	June 18, 1956	11	118	85,590	123	89,190
1957	1510	5,040	May 30, 1957	44	310	224,400	318	229,900
1958	1560	2,190	July 21, 1958	48	323	234,000	347	250,900
1959	1630	1,830	July 14, 1959	74	281	203,700	257	186,400
1960	1710	5,890	Mar. 21, 1960	62	312	226,200	-	-

8380. Red Willow Creek near Red Willow, Nebr.

Location.--Lat 40°14'10", long 100°30'00", in NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 17, T.3 N., R.28 W., on left bank at downstream side of bridge on U. S. Highways 6 and 34, three-quarters of a mile north of Red Willow and  $2\frac{1}{2}$  miles upstream from mouth.

Drainage area.--710 sq mi, approximately, of which about 400 sq mi contributes directly to surface runoff.

Records available.--September 1939 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 2,398.64 ft above mean sea level, datum of 1929. Prior to May 26, 1945, wire-weight gage at bridge  $1\frac{1}{4}$  miles upstream at datum 11.16 ft higher.

Average discharge.--21 years (1939-60), 42.4 cfs (30,700 acre-ft per year).

Extremes.--1939-60: Maximum discharge, 30,000 cfs June 22, 1947 (gage height, 18.36 ft), from rating curve extended above 6,800 cfs on basis of slope-area measurement of peak flow; minimum daily, 2.0 cfs July 29-31, 1954.

Remarks.--Natural flow affected by irrigation development above station. Records of chemical analyses for the period October 1950 to October 1952, suspended sediment loads for the period January 1950 to November 1953, and water temperatures for the period January 1950 to September 1953 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	27.5	32.9	33.1	30.6	35.2	39.5	48.9	136	117	86.8	34.4	112	61.2
1952	41.2	43.6	42.6	41.5	51.4	63.3	52.3	60.5	24.8	27.2	23.3	19.7	41.0
1953	24.2	31.0	32.2	48.9	37.7	44.7	40.0	38.2	24.7	42.4	18.4	14.5	33.1
1954	21.9	40.1	35.6	27.9	45.6	41.2	32.3	35.7	28.0	8.08	35.5	13.5	30.3
1955	20.2	26.5	30.6	32.9	35.5	45.1	32.9	46.4	168	15.9	9.53	11.0	39.3
1956	20.3	25.0	24.3	30.7	35.5	42.1	33.7	33.0	47.5	62.3	18.3	11.2	32.0
1957	14.8	29.8	29.0	22.2	39.5	38.2	68.9	166	58.6	71.9	19.6	30.8	49.2
1958	32.3	37.0	38.2	37.1	39.7	58.0	59.3	53.3	29.1	64.4	19.4	31.5	41.7
1959	25.1	32.7	34.5	31.9	37.1	54.7	47.7	59.2	29.9	22.6	13.4	16.3	33.8
1960	26.5	34.5	31.8	27.6	104	262	53.3	50.0	103	25.6	14.1	13.8	62.1

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1,690	1,960	2,040	1,880	1,960	2,430	2,910	8,350	6,990	5,340	2,120	6,680	44,350
1952	2,530	2,590	2,620	2,550	2,960	3,890	3,110	3,720	1,470	1,670	1,430	1,170	29,710
1953	1,490	1,850	1,960	3,000	2,090	2,750	2,380	2,350	1,470	2,610	1,130	861	23,960
1954	1,340	2,380	2,190	1,710	2,530	2,530	1,920	2,200	1,670	497	2,190	803	22,000
1955	1,240	1,570	1,880	2,030	1,970	2,770	1,960	2,850	9,990	980	586	653	28,480
1956	1,250	1,490	1,490	1,890	2,040	2,590	2,000	2,030	2,830	3,830	1,130	665	23,240
1957	908	1,770	1,790	1,360	2,190	2,350	4,100	10,230	3,490	4,420	1,200	1,830	35,640
1958	1,980	2,200	2,350	2,280	2,210	3,570	3,530	3,280	1,730	3,960	1,190	1,870	30,150
1959	1,540	1,950	2,120	1,960	2,060	3,560	2,840	3,640	1,760	1,390	825	972	24,440
1960	1,630	2,060	1,950	1,700	6,010	16,130	3,170	3,070	6,120	1,560	865	818	45,090

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	-	-	-
1951	1210	854	June 8, 1951	16	61.2	44,350	43.9	31,800	
1952	1240	1,120	May 27, 1952	17	41.0	29,710	37.6	27,290	
1953	1280	1,160	July 11, 1953	13	33.1	23,960	33.9	24,550	
1954	1340	1,140	Aug. 17, 1954	2.0	30.3	22,000	28.7	20,740	
1955	1390	5,400	June 17, 1955	4.6	39.3	28,480	38.7	28,020	
1956	1440	2,940	July 5, 1956	2.7	32.0	23,240	32.3	23,470	
1957	1510	3,930	May 14, 1957	9.1	49.2	35,640	52.1	37,700	
1958	1560	858	Sept. 14, 1958	15	41.7	30,150	40.4	29,230	
1959	1630	496	May 20, 1959	9.2	33.8	24,440	33.8	24,460	
1960	1710	2,350	Mar. 22, 1960	9.6	62.1	45,090	-	-	

## 8385. Dry Creek near Bartley, Nebr.

Location.--Lat 40°23'30", long 100°23'05", in E<sup>1</sup>NE<sup>1</sup> sec.21, T.5 N., R.27 W., at center of Freedom subwatershed detention dam No. 2-A, 1 mile west of county road, 10 miles north-west of Bartley, and 10 miles south of Stockville.

Drainage area.--5.24 sq mi.

Records available.--August 1955 to June 1957.

Gage.--Water-stage recorder. Control is 8-inch drain, concrete drop outlet structure in dam, and earthen overflow spillway at left end of dam.

Extremes.--1955-57: Maximum discharge, 50 cfs May 14, 1957 (gage height, 5.25 ft, from floodmarks); no flow for most of time.

Remarks.--Detention reservoir is formed by earthfill dam, capacity, 84 acre-ft in sediment pool, 251 acre-ft in flood-detention pool; total capacity, 335 acre-ft; overall height of dam 23.5 ft.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1955	-	-	-	-	-	-	-	-	-	-	-	0	-
1956	0	0	0	0	0	0	0	0	0	0	0	0	0
1957	0	0	0	0	0	0	0	3.08	1.10	-	-	-	-

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1955	-	-	-	-	-	-	-	-	-	-	-	0	-
1956	0	0	0	0	0	0	0	0	0	0	0	0	0
1957	0	0	0	0	0	0	0	189	66	-	-	-	-

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean
		Discharge	Date				
1955	1440	-	-	0	-	-	-
1956	1440	0	-	0	0	0	0
1957	1510	50	May 14, 1957	-	-	-	-

8390. Medicine Creek at Maywood, Nebr.

Location.--Lat 40°39'20", long 100°36'40", in NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec.21, T.8 N., R.29 W., on right bank 150 ft downstream from bridge on county road, a quarter of a mile east of Maywood, and 5 miles upstream from Brushy Creek.

Drainage area.--207 sq mi, approximately, of which about 82 sq mi contributes directly to surface runoff.

Records available.--April 1951 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 2,614.44 ft above mean sea level, datum of 1929. Prior to Aug. 21, 1951, wire-weight gage at site 150 ft upstream at same datum.

Average discharge.--7 years (1951-58), 24.4 cfs (17,660 acre-ft per year).

Extremes.--1951-58: Maximum discharge observed, 2,120 cfs May 20, 1951 (gage height, 9.90 ft), from rating curve extended above 810 cfs; minimum daily, 7.6 cfs June 28, 1956.

Remarks.--Natural flow affected by irrigation development above station. Records of suspended sediment loads and water temperatures are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	-	-	-	64.6	63.5	39.1	22.3	37.1	-
1952	25.0	25.3	21.5	26.1	28.5	35.7	28.1	25.5	14.4	14.1	27.6	16.2	24.0
1953	21.0	24.8	23.6	29.0	26.7	28.2	27.2	23.5	16.7	13.9	15.2	13.8	21.9
1954	21.9	29.9	26.7	23.9	31.8	26.8	24.9	37.5	21.1	11.5	23.6	14.7	24.5
1955	21.4	23.8	24.4	26.4	28.6	28.9	25.5	33.9	23.6	13.0	10.9	13.5	22.8
1956	20.3	25.3	27.3	23.3	28.0	29.7	29.2	24.3	15.9	20.3	11.9	13.1	22.4
1957	19.1	31.0	26.3	25.1	30.2	32.3	36.1	39.5	33.4	20.1	14.4	21.6	27.4
1958	24.9	26.5	26.2	26.8	29.5	37.6	34.2	28.3	24.2	37.7	16.1	21.3	27.8
1959													
1960													

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	-	-	-	3,970	3,780	2,410	1,370	2,210	-
1952	1,540	1,500	1,320	1,610	1,640	2,190	1,670	1,560	859	867	1,700	964	17,420
1953	1,290	1,480	1,450	1,780	1,480	1,730	1,620	1,450	996	853	934	821	15,880
1954	1,340	1,780	1,640	1,470	1,770	1,650	1,480	2,310	1,260	708	1,450	875	17,730
1955	1,310	1,410	1,500	1,620	1,590	1,780	1,520	2,090	1,400	799	672	803	16,490
1956	1,250	1,500	1,680	1,430	1,610	1,830	1,740	1,490	945	1,250	731	780	16,240
1957	1,170	1,850	1,820	1,550	1,680	1,980	2,150	2,430	1,990	1,230	885	1,280	19,820
1958	1,530	1,580	1,610	1,650	1,640	2,310	2,040	1,740	1,440	2,320	990	1,270	20,120
1959													
1960													

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950								
1951	1210	-	-	-	-	-	-	-
1952	1240	349	Aug. 1, 1952	10	24.0	17,420	23.8	17,280
1953	1280	53	Mar. 14, 1953	10	21.9	15,880	22.7	16,420
1954	1340	290	May 15, 1954	9.3	24.5	17,730	23.7	17,190
1955	1390	185	June 17, 1955	8.2	22.8	16,490	23.1	16,700
1956	1440	314	July 5, 1956	7.6	22.4	16,240	22.7	16,450
1957	1510	240	Apr. 22, 1957	12	27.4	19,820	27.5	19,900
1958	1560	179	July 20, 1958	10	27.8	20,120	-	-
1959								
1960								

## 8395. Brushy Creek near Maywood, Nebr.

Location.--Lat 40°37'45", long 100°37'45", in SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec.28, T.8 N., R.29 W., on right bank 420 ft downstream from bridge on U. S. Highway 83, 2 miles south of Maywood, 2½ miles upstream from Prazier Creek, and 5 miles upstream from mouth.

Drainage area.--130 sq mi, approximately, of which about 72 sq mi contributes directly to surface runoff.

Records available.--April 1951 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 2,630.37 ft above mean sea level, datum of 1929. Prior to Aug. 14, 1951, wire-weight gage at site 150 ft upstream at same datum.

Average discharge.--7 years (1951-58), 1.84 cfs (1,330 acre-ft per year).

Extremes.--1951-58: Maximum discharge, 5,250 cfs July 5, 1956 (gage height, 19.41 ft), from rating curve extended above 1,500 cfs on basis of slope-area measurements at gage heights 18.82 and 19.41 ft; no flow at times in 1953-57.  
Maximum stage known, 30.4 ft June 21, 1947, from floodmarks (discharge unknown).

Remarks.--Records of suspended sediment loads and water temperatures are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	-	-	-	16.0	24.3	11.0	2.82	20.2	-
1952	0.86	0.88	0.67	0.74	1.78	4.88	0.85	.83	.43	4.19	.60	.31	1.43
1953	.54	.68	.64	.80	.75	.94	.82	1.03	.53	.19	3.43	.11	.88
1954	.36	.44	.57	.28	.62	.70	.59	5.81	6.15	.06	.96	.01	1.38
1955	.22	.37	.46	.51	.69	.97	.65	2.09	2.64	.09	.06	.01	.73
1956	.14	.29	.43	.39	.45	.31	.67	1.33	5.28	21.5	.12	0	2.60
1957	.11	.22	.36	.33	.46	.53	14.4	23.3	2.92	4.24	1.22	1.69	4.17
1958	.33	.64	.64	.67	.73	1.03	1.17	1.21	1.40	9.89	1.86	.88	1.72
1959													
1960													

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	-	-	-	986	1,450	677	173	1,200	-
1952	53	52	41	45	103	300	50	51	26	258	37	18	1,030
1953	33	41	39	49	42	58	49	63	32	12	211	6.5	636
1954	22	26	35	17	35	45	35	357	366	4.0	59	.8	1,000
1955	14	22	28	31	38	60	39	129	157	5.8	3.6	.8	528
1956	8.7	17	26	24	26	19	40	82	314	320	7.1	0	1,890
1957	6.7	13	22	20	26	33	856	1,440	174	261	75	101	3,030
1958	20	38	39	41	40	63	70	74	83	608	114	52	1,240
1959													
1960													

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean
		Discharge	Date				
1950							
1951	1210	2,270	Sept. 2, 1951	-	-	-	-
1952	1240	486	July 31, 1952	0.1	1.43	1,030	1.38
1953	1280	368	Aug. 10, 1953	0	.88	636	.84
1954	1340	1,350	May 15, 1954	0	1.38	1,000	1.36
1955	1390	191	May 18, 1955	0	.73	528	.71
1956	1440	5,250	July 5, 1956	0	2.60	1,880	2.59
1957	1510	4,390	Apr. 22, 1957	0	4.17	3,030	4.25
1958	1560	918	July 19, 1958	.1	1.72	1,240	-
1959							
1960							



## 8400. Fox Creek at Curtis, Nebr.

Location.--Lat 40°38'00", long 100°29'20", in SE 1/4 sec. 27, T.8 N., R.28 W., on left bank 50 ft upstream from bridge on State Highway 23 N., half a mile upstream from mouth, and 1 mile east of Curtis.

Drainage area.--77 sq mi, approximately.

Records available.--March 1951 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 2,519.58 ft above mean sea level, datum of 1929.

Average discharge.--7 years (1951-58), 7.77 cfs (5,630 acre-ft per year).

Extremes.--1951-58: Maximum discharge, 3,340 cfs May 31, 1951 (gage height, 15.35 ft); minimum daily, 1.5 cfs Aug. 16, 1956.

Maximum stage known, 27.3 ft June 21, 1947, from floodmarks (discharge not determined).

Remarks.--Records of suspended sediment loads and water temperatures are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	-	-	12.1	82.9	63.7	16.2	8.48	11.5	-
1952	8.47	9.17	9.08	9.45	9.11	11.3	8.95	9.12	7.28	8.22	6.52	5.56	8.53
1953	6.65	7.56	7.63	8.40	8.76	8.60	8.42	8.16	6.38	5.30	5.77	5.04	7.21
1954	6.34	7.57	7.90	8.19	9.18	9.28	8.29	12.2	7.15	4.52	5.54	4.48	7.55
1955	5.96	6.84	7.12	7.32	8.30	8.70	8.21	11.7	8.15	4.79	3.87	4.25	7.09
1956	4.98	6.29	7.00	7.32	8.30	8.09	8.38	9.55	7.44	8.26	3.90	3.08	6.88
1957	3.89	6.04	7.36	7.40	7.75	7.50	9.69	18.3	8.65	10.1	15.3	9.05	9.28
1958	6.85	6.90	7.78	7.73	7.86	9.26	9.05	8.04	7.94	10.6	4.54	7.93	7.87
1960													

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	-	-	721	5,100	3,790	996	521	683	-
1952	521	545	558	581	524	696	533	561	433	505	401	331	6,190
1953	409	450	469	516	486	529	501	502	379	326	355	300	5,220
1954	390	451	486	503	510	571	493	749	425	278	341	267	5,460
1955	366	407	438	450	461	535	489	718	485	294	238	253	5,130
1956	306	374	431	450	478	497	499	587	443	506	240	183	5,000
1957	239	359	452	455	431	461	577	1,130	515	623	940	538	6,720
1958	421	411	478	475	437	570	539	494	473	651	279	472	5,700
1959													
1960													

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950								
1951	1210	3,340	May 31, 1951	4.9	-	-	-	-
1952	1240	338	July 14, 1952	5.1	8.53	6,190	8.12	5,890
1953	1280	74	Aug. 11, 1953	4.4	7.21	5,220	7.21	5,220
1954	1340	777	May 16, 1954	3.9	7.55	5,460	7.39	5,350
1955	1390	724	May 26, 1955	2.4	7.09	5,130	6.95	5,030
1956	1440	395	May 27, 1956	1.5	6.88	5,000	6.80	4,940
1957	1510	1,210	Aug. 28, 1957	2.4	9.28	6,720	9.28	6,980
1958	1560	375	Sept. 19, 1958	3.4	7.87	5,700	-	-
1959								
1960								

## 8405. Dry Creek near Curtis, Nebr.

Location (revised).--Lat 40°38'33", long 100°26'40", in SW $\frac{1}{4}$ SE $\frac{1}{4}$  sec.24, T.8 N., R.28 W., on left bank 10 ft upstream from county road bridge,  $\frac{3}{4}$  miles upstream from mouth, and  $\frac{3}{4}$  miles east of Curtis.

Drainage area.--20 sq mi, approximately.

Records available.--March 1951 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 2,548.21 ft above mean sea level, datum of 1929 (Bureau of Reclamation bench mark). Prior to Aug. 23, 1951, wire-weight gage at same site and datum.

Average discharge.--7 years (1951-58), 0.50 cfs (362 acre-ft per year).

Extremes.--1951-58: Maximum discharge, 4,430 cfs June 8, 1951 (gage height, 13.15 ft, from floodmarks), from rating curve extended above 2,500 cfs; no flow for most days. Maximum stage known, 27.7 ft June 21, 1947, from floodmarks (discharge, 25,900 cfs at site  $2\frac{1}{4}$  miles upstream, on basis of slope-area measurement of peak flow).

Remarks.--Records of suspended sediment loads are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	-	-	1.77	19.6	36.7	11.1	0.14	1.40	-
1952	0	0	0	0	0	1.17	0	0	0	.39	.75	0	0.20
1953	0	0	0	0	0	0	0	0	0	.01	3.46	0	.29
1954	0	0	0	.18	.67	0	.007	1.34	.01	0	.26	1.26	.21
1955	0	0	0	0	.15	.21	0	.19	.77	0	0	0	.11
1956	0	0	0	0	.04	0	0	0	.30	3.93	0	0	.36
1957	0	0	0	0	0	0	.003	12.3	3.56	5.41	.13	1.11	1.90
1958	0	0	0	0	0	1.46	.38	.30	.09	2.33	0	.57	.43
1959													
1960													

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	-	-	105	1,200	2,180	683	8.3	83	-
1952	0	0	0	0	0	72	0	0	0	24	46	0	142
1953	0	0	0	0	0	0	0	0	0	.6	213	0	214
1954	0	0	0	11	37	0	.4	83	.6	0	16	7.5	156
1955	0	0	0	0	8.5	13	0	12	46	0	0	0	80
1956	0	0	0	0	2.2	0	0	0	18	242	0	0	262
1957	0	0	0	0	0	0	.2	759	212	333	8.1	66	1,380
1958	0	0	0	0	0	90	22	18	5.6	143	0	34	313
1959													
1960													

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950								
1951	1210	4,430	June 8, 1951	-	-	-	-	-
1952	1240	206	Aug. 11, 1952	0	0.20	142	0.20	142
1953	1280	328	Aug. 10, 1953	0	.29	214	.29	214
1954	1340	478	May 15, 1954	0	.21	156	.21	156
1955	1390	148	June 16, 1955	0	.11	80	.11	80
1956	1440	1,350	July 5, 1956	0	.36	262	.36	262
1957	1510	3,490	May 13, 1957	0	1.90	1,380	1.90	1,380
1958	1560	453	July 18, 1958	0	.43	313	-	-
1959								
1960								

## 8410. Medicine Creek above Harry Strunk Lake, Nebr.

Location.--Lat 40°30'10", long 100°19'20", in SW $\frac{1}{4}$  sec.7, T.6 N., R.26 W., on right bank a third of a mile downstream from top of Harry Strunk Lake flood-control pool,  $2\frac{1}{2}$  miles upstream from top of irrigation pool,  $3\frac{1}{2}$  miles southeast of Stockville, and  $13\frac{1}{2}$  miles upstream from Medicine Creek Dam.

Records available.--January 1950 to September 1960. Prior to October 1950, published as "above Medicine Creek Reservoir."

Gage.--Water-stage recorder and concrete control. Datum of gage is 2,380.94 ft above mean sea level, datum of 1929 (Bureau of Reclamation bench mark).

Average discharge.--10 years (1950-60), 70.7 cfs (51,180 acre-ft per year).

Extremes.--1950-60: Maximum discharge, 11,200 cfs May 13, 1957 (gage height, 19.45 ft), from rating curve extended above 3,200 cfs on basis of logarithmic plotting; minimum daily, 14 cfs Aug. 4, 5, 1955, Aug. 21, 1959.  
Maximum stage known since at least 1874, 24.4 ft June 22, 1947, from floodmark (discharge not determined).

Remarks.--Natural flow affected by irrigation development above station. Records of suspended sediment loads for the period April 1951 to September 1958 and water temperatures for the period October 1952 to September 1958 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	50.3	59.3	56.0	53.4	68.8	61.0	91.0	343	370	158	65.3	152	127
1952	61.0	63.2	59.8	56.9	67.5	93.1	66.1	62.6	42.7	50.6	53.3	37.2	59.5
1953	46.1	51.0	54.1	64.1	62.6	86.3	61.0	57.2	41.4	52.5	45.9	28.7	52.6
1954	44.2	59.7	55.8	57.9	70.6	59.7	56.2	89.6	53.2	25.5	53.9	28.8	54.8
1955	45.5	51.2	54.5	49.9	65.2	69.6	56.3	74.9	76.5	26.4	20.4	25.0	51.9
1956	40.5	47.5	46.0	48.5	58.2	64.3	63.2	67.2	45.0	108	41.1	27.2	54.8
1957	35.5	54.7	53.1	42.8	55.6	62.7	98.5	305	91.9	129	48.6	67.5	87.5
1958	51.7	58.5	57.8	57.8	60.1	80.3	77.3	67.9	60.3	120	46.9	52.6	66.0
1959	46.2	56.8	61.0	56.1	59.3	71.4	64.0	104	51.8	35.5	29.3	36.4	56.0
1960	54.9	56.8	59.7	59.4	193	371	71.9	90.2	105	44.8	29.3	30.0	96.9

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	3,090	3,530	3,440	3,280	3,820	3,750	5,410	21,070	22,010	9,720	4,020	9,050	92,190
1952	3,750	3,760	3,680	3,500	3,880	5,730	3,930	3,850	2,540	3,110	3,280	2,210	43,220
1953	2,840	3,030	3,330	3,940	3,480	4,080	3,630	3,520	2,460	3,230	2,820	1,710	38,070
1954	2,720	3,550	3,620	3,560	3,920	3,670	3,350	5,510	3,160	1,570	3,310	1,710	39,650
1955	2,790	3,060	3,350	3,620	3,620	4,280	3,350	4,600	4,550	1,620	1,250	1,490	37,570
1956	2,490	2,830	2,830	2,980	3,350	3,950	3,760	4,130	2,680	6,650	2,530	1,620	39,800
1957	2,180	3,250	3,260	2,630	3,090	3,860	5,860	18,780	5,470	7,950	2,990	4,020	63,340
1958	3,180	3,480	3,560	3,560	4,940	4,600	4,170	3,590	7,370	2,880	3,130	47,800	47,800
1959	2,840	3,380	3,750	3,450	3,290	4,390	3,810	6,380	3,080	2,180	1,800	2,170	40,520
1960	3,370	3,380	3,670	3,650	11,120	22,780	4,280	5,550	6,220	2,750	1,800	1,790	70,360

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	-	-
1951	1210	10,900	May 21, 1951	25	127	92,190	128	92,740
1952	1240	806	July 14, 1952	21	59.5	43,220	56.8	41,230
1953	1280	3,420	July 12, 1953	26	52.6	38,070	53.5	38,760
1954	1340	1,350	May 16, 1954	20	54.8	39,650	53.8	38,950
1955	1390	1,310	June 17, 1955	14	51.9	37,570	50.5	36,530
1956	1440	2,130	July 12, 1956	18	54.8	39,800	55.6	40,340
1957	1510	11,200	May 13, 1957	25	87.5	63,340	89.6	64,850
1958	1560	1,270	July 21, 1958	29	66.0	47,800	65.7	47,550
1959	1630	1,330	May 20, 1959	14	56.0	40,520	56.6	40,970
1960	1710	3,210	Mar. 22, 1960	21	96.9	70,360	-	-

## 8415. Mitchell Creek above Harry Strunk Lake, Nebr.

Location.--Lat 40°28'20", long 100°15'25", in NW¼SE¼, sec.22, T.6 N., R.26 W., on left bank at top of Harry Strunk Lake flood-control pool, 2½ miles southwest of Orafino, 9½ miles upstream from Medicine Creek Dam, and 14 miles northwest of Cambridge.

Drainage area.--53 sq mi, approximately.

Records available.--May 1950 to September 1960. Prior to October 1950, published as "above Medicine Creek Reservoir."

Gage.--Water-stage recorder and concrete control. Datum of gage is 2,376.95 ft above mean sea level, datum of 1929 (Bureau of Reclamation bench mark).

Average discharge.--10 years (1950-60), 2.50 cfs (1,810 acre-ft per year); median of yearly mean discharges, 1.1 cfs (800 acre-ft per year).

Extremes.--1950-60: Maximum discharge, 5,230 cfs May 20, 1951 (gage height, 17.35 ft), from rating curve extended above 1,200 cfs on basis of slope-area measurement of peak flow; no flow for most of each year.  
Flood of June 21, 1948, reached a stage of about 28 ft, from floodmarks (discharge not determined).

Remarks.--Records of suspended sediment loads for the period October 1951 to September 1957 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	0.15	0	0	0	0.01	0	2.09	44.0	36.8	19.7	0.75	9.60	9.47
1952	0	0	0	0	0	.70	.02	.003	0	.62	1.11	.003	.21
1953	0	0	0	0	.004	.01	0	.01	0	.83	.80	0	.14
1954	0	0	0	.003	1.16	.01	0	9.98	1.30	0	1.22	0	1.15
1955	0	0	0	0	.30	.43	0	4.84	8.79	0	1.05	0	1.28
1956	0	0	0	0	.13	0	0	.44	3.84	2.77	3.44	0	.89
1957	0	0	0	0	0	5.01	10.2	12.2	16.6	2.03	3.44	0	4.15
1958	0	0	0	0	.01	2.38	.63	0	.07	.57	.76	0	.43
1959	0	0	0	0	1.24	.01	.003	2.18	0	.03	0	.02	.29
1960	.06	0	0	0	18.6	40.3	.003	18.1	6.64	.07	0	0	6.98

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	9.3	0	0	0	0.4	0	125	2,700	2,190	1,210	46	571	6,850
1952	0	0	0	0	0	43	1.2	.2	0	38	68	.2	151
1953	0	0	0	0	.2	.4	0	.6	0	51	49	0	101
1954	0	0	0	.2	64	.4	0	614	77	0	75	0	831
1955	0	0	0	0	17	26	0	298	523	0	64	0	928
1956	0	0	0	0	7.5	0	0	27	228	170	211	0	644
1957	0	0	0	0	0	0	298	629	728	1,020	125	205	3,000
1958	0	0	0	0	.4	146	38	43	4.2	35	47	0	313
1959	0	0	0	0	69	.6	.2	134	0	2.0	0	1.2	207
1960	3.6	0	0	0	1,070	2,480	.2	1,110	395	4.2	0	0	5,060

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	-	-
1951	1210	5,230	May 20, 1951	0	9.47	6,850	9.45	6,840
1952	1240	111	Aug. 11, 1952	0	.21	151	.21	151
1953	1280	139	July 13, 1953	0	.14	101	.14	101
1954	1340	1,620	May 16, 1954	0	1.15	831	1.15	831
1955	1390	914	June 17, 1955	0	1.28	928	1.28	928
1956	1440	442	June 18, 1956	0	.89	644	.89	644
1957	1510	1,570	June 16, 1957	0	4.15	3,000	4.15	3,000
1958	1560	120	Mar. 28, 1958	0	.43	313	.43	313
1959	1630	306	May 20, 1959	0	.29	207	.29	211
1960	1710	3,350	May 19, 1960	0	6.98	5,060	-	-

8420. Harry Strunk Lake near Cambridge, Nebr.

Location.--Lat 40°22'40", long 100°13'00", in NE¼ sec.25, T.5 N., R.26 W., near right bank in control house at outlet tube of Medicine Creek Dam on Medicine Creek, 7 miles north-west of Cambridge.

Records available.--August 1949 to September 1960.

Gage.--Water-stage recorder. Datum of gage is at mean sea level, datum of 1929. Prior to Aug. 18, 1960, mercury-column pressure gage at same datum.

Extremes.--1949-60: Maximum contents observed, 55,750 acre-ft Mar. 23, 1960 (elevation, 2,374.1 ft); minimum observed since storage pool first filled, 14,400 acre-ft Sept. 20, 1955 (elevation, 2,347.45 ft).

Remarks.--Reservoir is formed by earthfill dam; storage began Aug. 8, 1949. Capacity, 33,860 acre-ft between elevations 2,335.0 (sill of outlet gates) and 2,366.1 ft (top of storage pool and crest of slot in spillway). Top of flood-control pool and crest of main spillway at elevation 2,386.2 ft (capacity, 90,920 acre-ft). Top of superstorage flood-control pool at elevation 2,400.0 ft (capacity, 148,400 acre-ft). Dead storage, 5,370 acre-ft. Figures given herein represent total contents. Water used for irrigation in Frenchman-Cambridge irrigation project.

Contents, in acre-feet, on last day of month

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951	34,880	36,780	38,680	39,600	41,790	42,080	43,560	48,270	47,840	44,360	42,580	38,770
1952	38,700	39,050	37,920	37,330	37,330	38,610	37,240	40,120	40,300	40,660	37,840	37,580
1953	37,660	38,960	39,400	39,050	38,010	37,920	37,840	37,660	36,320	34,200	28,810	25,670
1954	25,600	29,170	32,160	34,440	35,010	34,440	35,580	38,100	36,650	25,670	23,760	21,520
1955	23,440	25,740	28,160	30,860	33,570	35,580	37,660	38,870	38,520	28,380	17,150	15,080
1956	16,890	19,280	22,000	24,610	27,530	30,200	32,700	34,440	32,630	27,950	23,900	20,440
1957	20,320	22,690	25,340	27,530	30,200	33,090	38,350	42,910	42,910	41,680	39,490	39,850
1958	38,350	37,160	38,350	38,610	38,010	38,960	39,230	39,670	39,580	41,210	35,330	35,830
1959	35,990	37,410	38,780	39,140	40,300	41,120	39,760	39,230	38,180	28,860	22,750	23,190
1960	25,740	28,240	30,870	33,960	41,220	48,450	41,860	40,120	39,670	32,630	22,720	21,590

a Contents by capacity table used beginning Oct. 1, 1951; contents Oct. 31, 1951, by capacity table used prior to Oct. 1, 1951, was 39,510 acre-ft.

Note.--All readings at 8 a.m. October 1950 to July 1960, at 12 p.m. thereafter.

## KANSAS RIVER BASIN

8425. Medicine Creek below Harry Strunk Lake, Nebr.

Location.--Lat 40°22'20", long 100°13'20", at center of sec.25, T.5 N., R.26 W., on right bank half a mile downstream from Medicine Creek Dam and 6½ miles northwest of Cambridge.

Records available.--October 1949 to September 1960. Prior to October 1950, published as "below Medicine Creek Dam."

Gage.--Water-stage recorder and concrete control. Datum of gage is 2,295.26 ft above mean sea level, datum of 1929 (Bureau of Reclamation bench mark). Prior to Apr. 24, 1950, staff gage at site half a mile upstream at different datum.

Average discharge.--11 years (1949-60), 63.9 cfs (46,260 acre-ft per year), unadjusted.

Extremes.--1949-60: Maximum discharge, 1,300 cfs Mar. 23, 1960 (gage height, 5.97 ft); minimum daily, 0.1 cfs Nov. 13, 1952.

Remarks.--Flow regulated by Harry Strunk Lake (see preceding page).

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1950	#5.1	#12	#4.7	#5.2	5.26	4.29	3.79	3.93	3.08	3.95	4.23	5.02	#5.03
1951	3.38	3.20	4.77	15.6	17.3	39.8	50.1	230	439	255	87.4	235	115
1952	38.0	47.3	71.5	69.7	67.0	76.2	85.9	7.89	23.9	41.0	88.9	18.2	53.0
1953	24.9	19.4	47.8	67.5	74.1	66.8	58.7	58.4	56.5	67.9	127	73.1	61.8
1954	31.8	.83	3.68	6.94	52.5	61.3	26.9	57.4	58.8	204	89.6	58.1	54.5
1955	7.32	5.93	6.06	5.90	6.03	25.0	5.60	42.2	167	193	209	63.0	61.8
1956	9.64	6.62	5.49	6.06	6.77	6.92	7.20	34.2	63.2	176	108	70.9	42.0
1957	27.7	7.53	3.71	5.10	4.81	5.22	4.59	280	170	140	76.3	61.3	66.0
1958	74.8	72.7	31.0	52.3	73.9	69.4	81.3	68.3	57.7	80.4	137	25.0	68.7
1959	26.7	26.8	32.2	48.5	72.4	58.0	89.4	108	55.3	178	126	17.5	70.1
1960	4.93	5.33	5.60	5.42	64.9	337	185	133	139	155	175	42.6	105

\* Not previously published; estimated on basis of records for station at Cambridge.

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1950	#314	#714	#289	#320	292	264	226	241	183	243	260	299	#3,640
1951	208	191	293	959	959	2,450	2,980	14,150	26,120	15,670	5,370	13,990	83,340
1952	2,340	2,820	4,390	4,280	3,850	4,680	5,110	485	1,420	2,520	5,460	1,080	38,440
1953	1,530	1,150	2,930	4,150	4,120	4,110	3,490	3,590	3,360	4,170	7,790	4,350	44,740
1954	1,950	50	226	426	2,920	3,770	1,600	3,530	3,500	12,530	5,510	3,460	39,470
1955	450	353	373	363	335	1,540	333	2,590	9,950	11,840	12,840	3,750	44,720
1956	593	394	338	373	389	425	428	2,100	3,760	10,830	6,860	4,220	30,510
1957	1,700	448	228	314	267	321	273	17,200	10,090	8,590	4,690	3,650	47,770
1958	4,600	4,320	1,910	3,220	4,110	4,270	4,840	4,200	3,430	4,940	8,440	1,490	49,770
1959	1,640	1,590	1,980	2,980	4,020	3,570	5,320	6,620	3,290	10,970	7,750	1,040	50,820
1960	303	317	344	333	3,730	20,700	11,030	8,200	8,250	9,500	10,740	2,540	75,990

\* Not previously published; estimated on basis of records for station at Cambridge.

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	1176	49	May 28, 1950	-	#5.03	#3,640	#4.17	#3,020
1951	1210	818	Sept. 2, 1951	0.6	115	83,340	127	92,200
1952	1240	136	Aug. 10, 1952	3.0	53.0	38,440	47.5	34,500
1953	1280	203	July 31, 1953	.1	61.8	44,740	57.1	41,360
1954	1340	332	July 21, 1954	.5	54.5	39,470	53.1	38,420
1955	1390	540	June 23, 1955	2.2	61.8	44,720	62.0	44,870
1956	1440	310	July 28, 1956	.5	42.0	30,510	43.5	31,560
1957	1510	746	May 16, 1957	1.4	66.0	47,770	77.7	56,220
1958	1560	322	Aug. 5, 1958	5.2	68.7	49,770	61.0	44,150
1959	1630	344	July 11, 1959	5.1	70.1	50,820	64.3	46,520
1960	1710	1,300	Mar. 23, 1960	3.7	105	75,990	-	-

\* Not previously published.

## 8430. Medicine Creek at Cambridge, Nebr.

Location.--Lat 40°17'55", long 100°10'35", in NE $\frac{1}{4}$ SE $\frac{1}{4}$  sec.19, T.4 N., R.25 W., on left bank 100 ft upstream from highway bridge, three-quarters of a mile north of Cambridge,  $2\frac{1}{2}$  miles upstream from mouth, and  $7\frac{1}{2}$  miles downstream from Harry Strunk Lake.

Drainage area.--1,070 sq mi, approximately, of which about 680 sq mi contributes directly to surface runoff.

Records available.--December 1936 to September 1943 (published as "near Cambridge"), August 1944 to July 1957 in reports of Geological Survey. January 1925 to September 1931, December 1936 to September 1943, October 1944 to September 1949, and October 1950 to July 1957 in reports of State engineer.

Gage.--Water-stage recorder. Datum of gage is 2,252.66 ft above mean sea level, datum of 1929. Dec. 10, 1936, to Oct. 1, 1940, chain gage and Oct. 2, 1940, to Apr. 13, 1942, water-stage recorder at site 1.1 miles upstream at datum 8.49 ft higher. Apr. 14, 1942, to Sept. 30, 1943, water-stage recorder at site 1 mile upstream at datum 8.49 ft higher. Aug. 24, 1944, to June 21, 1947, water-stage recorder at site 2 miles downstream and Sept. 25, 1947, to Apr. 25, 1948, wire-weight gage at site  $1\frac{1}{2}$  miles downstream, both at datum 8.64 ft lower.

Extremes.--1936-43, 1944-57: Maximum discharge, 120,000 cfs June 22, 1947 (gage height, 28.59 ft, present site and datum, from floodmark), from rating curve extended above 39,000 cfs on basis of slope-area measurement of peak flow; minimum daily, 0.5 cfs June 19, 1950.

Remarks.--Natural flow regulated by irrigation development above station and by Harry Strunk Lake (formerly Medicine Creek Reservoir), see page 345; storage began Aug. 8, 1949. Records of water temperatures and suspended sediment loads for the period March 1951 to June 1957 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	3.57	3.75	5.01	17.2	17.9	39.6	48.9	228	436	243	87.5	258	116
1952	39.3	48.9	72.9	70.8	70.6	77.6	80.2	10.1	22.1	45.0	85.3	18.3	54.3
1953	26.4	19.6	44.3	72.3	77.6	69.2	62.7	71.4	58.5	63.7	119	71.1	63.0
1954	33.2	2.21	3.57	4.75	55.4	64.8	30.1	59.5	60.1	194	87.9	54.1	54.3
1955	7.09	5.75	5.95	4.23	5.24	27.1	6.13	43.3	180	181	208	62.7	61.8
1956	9.06	6.00	4.90	5.00	6.64	8.14	7.46	32.3	61.6	162	105	71.0	40.2
1957	28.4	8.20	3.61	3.85	5.24	5.95	5.03	292	180	147	-	-	-
1958													
1959													
1960													

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	219	223	308	1,060	993	2,440	2,910	14,050	25,940	14,930	5,390	15,350	83,800
1952	2,420	2,910	4,480	4,360	4,060	4,770	5,370	624	1,320	2,770	5,250	1,090	39,420
1953	1,620	1,160	2,720	4,440	4,310	4,260	3,730	4,390	3,480	3,920	7,320	4,230	45,580
1954	2,040	132	220	292	3,080	3,980	1,790	3,660	3,570	11,930	5,400	3,220	39,320
1955	436	342	366	260	291	1,660	365	2,660	10,710	11,130	12,760	3,730	44,710
1956	557	357	301	307	382	500	444	1,990	3,670	9,980	6,460	4,230	29,180
1957	1,750	498	222	236	291	366	299	17,930	10,700	9,040	-	-	-
1958													
1959													
1960													

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	5.93	4,280
1951	1210	1,360	Sept. 2, 1951	2.0	116	83,800	128	92,660
1952	1240	570	July 13, 1952	3.9	54.3	39,420	48.4	35,110
1953	1280	1,950	May 28, 1953	2.4	63.0	45,580	58.7	42,470
1954	1340	312	July 22, 1954	1.2	54.3	39,320	52.6	38,080
1955	1390	570	June 23, 1955	1.8	61.8	44,710	61.9	44,780
1956	1440	306	July 29, 1956	3.5	40.2	29,180	41.9	30,420
1957	1510	a936	June 16, 1957	-	-	-	-	-
1958								
1959								
1960								

a Maximum during period October to July.

## 8435. Republican River at Cambridge, Nebr.

Location.--Lat 40°17'05", long 100°08'35", in NW¼SE¼ sec.28, T.4 N., R.25 W., on left bank 400 ft south of U. S. Highways 6 and 34, half a mile downstream from Medicine Creek, 1 mile east of Cambridge, and 1.3 miles upstream from Cambridge diversion dam.

Drainage area.--14,300 sq mi, approximately, of which a large area does not contribute directly to surface runoff.

Records available.--September 1945 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 2,239.07 ft above mean sea level, datum of 1929. Prior to July 13, 1948, staff gage at site 150 ft upstream at same datum. July 13, 1948, to Sept. 25, 1950, chain gage at present site and datum.

Average discharge.--15 years (1945-60), 407 cfs (294,700 acre-ft per year).

Extremes.--1945-60: Maximum discharge, 160,000 cfs June 22, 1947 (gage height, 16.7 ft, from floodmarks), from rating curve extended above 12,000 cfs on basis of slope-area measurement of peak flow; minimum daily, 6.4 cfs Aug. 14, 1949.

Maximum stage known, 17.6 ft May 31 to June 1, 1935, from information by local resident (discharge, about 280,000 cfs).

Remarks.--Natural flow affected by irrigation development above station and since 1949, by regulation from upstream reservoirs. Records of chemical analyses and water temperatures for the period December 1950 to September 1958 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	162	206	252	234	391	372	365	1,286	1,360	1,103	586	1,935	687
1952	345	399	271	323	578	667	695	664	139	160	98.9	25.5	363
1953	81.3	147	217	367	366	432	455	262	127	171	150	74.3	237
1954	39.8	124	132	112	243	197	133	206	115	202	140	62.8	142
1955	98.9	103	106	99.6	156	264	145	147	561	220	255	94.0	189
1956	56.4	117	98.8	137	175	173	163	103	390	356	195	81.0	170
1957	61.3	142	144	111	170	184	286	1,624	1,352	482	338	190	425
1958	219	289	197	286	511	671	756	669	504	469	332	250	428
1959	186	287	380	364	501	510	660	553	272	352	239	126	370
1960	150	176	187	145	524	1,684	719	1,087	740	299	279	135	511

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	9,960	12,250	15,470	14,390	21,710	22,890	21,720	79,100	80,950	67,840	36,050	115,100	497,400
1952	21,190	23,760	16,680	19,880	33,250	41,040	41,380	40,840	8,280	9,870	6,080	1,520	263,800
1953	5,000	8,770	13,340	22,570	20,310	26,570	27,070	16,100	7,560	10,510	9,200	4,420	171,400
1954	2,450	7,400	8,140	6,890	13,490	12,110	7,890	12,640	6,750	12,430	8,590	3,730	102,500
1955	6,080	6,140	6,520	6,120	8,670	16,240	8,610	9,040	34,590	13,540	15,690	5,590	136,800
1956	3,470	6,990	6,080	8,430	10,080	10,660	9,680	6,310	23,190	21,890	11,960	4,820	123,600
1957	3,770	8,470	8,980	6,820	9,450	11,310	16,990	99,890	80,460	29,660	20,790	11,300	307,800
1958	13,460	17,210	12,090	17,600	28,360	41,240	44,980	41,130	29,990	28,830	20,430	14,850	310,200
1959	11,450	17,060	23,380	23,630	27,810	31,390	39,240	33,980	16,170	21,650	14,720	7,530	†268,000
1960	9,200	10,460	11,520	8,940	30,160	103,600	42,790	66,840	44,030	18,380	17,130	8,030	371,100

† Corrected.

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	-	279,900
1951	1210	11,000	Sept. 4, 1951	53	687	497,400	387	†521,400
1952	1240	1,580	May 9, 1952	14	363	263,800	316	229,200
1953	1280	2,250	May 28, 1953	18	237	171,400	224	162,300
1954	1340	1,060	Aug. 18, 1954	9.0	142	102,500	143	105,300
1955	1390	5,200	June 17, 1955	40	189	136,800	186	134,600
1956	1440	3,960	July 6, 1956	19	170	123,600	176	128,100
1957	1510	5,720	May 25, 1957	28	425	307,800	455	329,400
1958	1560	2,420	July 21, 1958	94	428	310,200	441	319,300
1959	1630	1,530	May 20, 1959	78	370	†268,000	342	247,300
1960	1710	9,080	Mar. 22, 1960	102	511	371,100	-	-

† Corrected.



## 8440. Muddy Creek at Arapahoe, Nebr.

Location.--Lat 40°18'20", long 99°54'40", in NW $\frac{1}{4}$ NW $\frac{1}{4}$  sec.22, T.4 N., R.23 W., on left bank 20 ft downstream from bridge on U. S. Highways 6 and 34, a quarter of a mile west of Arapahoe, and  $\frac{1}{2}$  miles upstream from mouth.

Drainage area.--243 sq mi.

Records available.--December 1950 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 2,143.92 ft above mean sea level, datum of 1929, supplementary adjustment of 1960. Prior to Jan. 11, 1951, wire-weight gage at same site and datum.

Average discharge.--9 years (1951-60), 13.4 cfs (9,700 acre-ft per year).

Extremes.--1950-60: Maximum discharge, 7,280 cfs June 16, 1957 (gage height, 24.62 ft); no flow Aug. 26 to Sept. 2, 1953, July 23, 29, Aug. 4, 1955.  
A stage of about 31 ft occurred June 22, 1947 (discharge not determined).

Remarks.--Natural flow affected by irrigation development above station and return flow from irrigated areas.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	4.67	8.42	6.57	7.04	120	90.8	105	29.4	64.1	-
1952	6.12	7.71	6.03	5.53	9.79	11.8	8.76	15.5	3.52	6.68	35.5	2.01	9.96
1953	3.21	4.81	5.28	5.70	8.06	7.59	6.53	25.2	6.06	2.31	4.42	.93	6.89
1954	1.35	4.39	4.79	4.32	8.02	6.75	6.82	45.6	3.66	7.71	38.6	1.88	11.3
1955	2.94	4.82	5.15	4.86	9.20	7.07	4.25	10.2	22.2	3.28	3.08	2.39	6.58
1956	2.83	4.12	3.78	4.47	5.78	6.78	7.34	7.74	10.0	3.23	8.20	2.13	5.53
1957	2.36	3.67	3.55	3.36	5.44	5.96	40.6	72.6	179	30.5	6.45	32.3	32.0
1958	7.75	5.94	5.42	6.55	6.97	25.3	9.14	25.6	7.57	28.9	7.83	3.35	11.8
1959	5.15	5.79	5.23	4.27	31.1	10.9	7.20	11.3	6.18	7.14	7.39	3.67	8.63
1960	4.84	6.18	6.34	5.58	31.2	130	8.50	18.0	100	16.0	5.32	4.92	28.1

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	287	468	404	419	7,380	5,400	6,480	1,810	3,810	-
1952	376	459	371	340	563	726	521	965	210	411	2,180	119	7,230
1953	197	266	324	350	447	467	389	1,550	361	142	272	56	4,840
1954	83	261	295	266	446	415	406	2,800	218	474	2,380	118	8,160
1955	180	287	317	299	511	435	253	627	1,320	202	189	142	4,760
1956	174	245	232	275	333	417	437	476	597	199	504	127	4,020
1957	145	219	219	207	302	366	2,420	4,460	10,650	1,880	397	1,920	23,180
1958	477	353	333	402	387	1,560	544	1,570	451	1,780	481	200	8,540
1959	317	345	322	262	1,730	670	428	693	368	439	454	218	6,250
1960	298	368	390	343	1,800	8,000	506	1,110	5,980	985	327	293	20,400

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950									
1951	1210	4,840	May 21, 1951	-	-	-	38.2	27,660	
1952	1240	2,180	Aug. 11, 1952	0.2	9.96	7,230	9.41	6,830	
1953	1280	748	May 28, 1953	0	6.69	4,840	6.45	4,670	
1954	1340	3,360	May 16, 1954	.4	11.3	8,160	11.5	8,310	
1955	1390	669	June 17, 1955	0	6.58	4,760	6.39	4,630	
1956	1440	239	June 16, 1956	.5	5.53	4,020	5.43	3,950	
1957	1510	7,280	June 16, 1957	1.0	32.0	23,180	32.8	23,760	
1958	1560	676	July 19, 1958	2.1	11.8	8,540	11.5	8,360	
1959	1650	255	May 26, 1959	1.2	8.63	6,250	8.73	6,320	
1960	1710	2,600	Mar. 22, 1960	2.6	28.1	20,400	-	-	

## 8445. Republican River near Orleans, Nebr.

Location.--Lat 40°07'50", long 99°29'50", in NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec.19, T.2 N., R.19 W., on right bank 18 ft downstream from bridge on State Highway 89, 200 ft downstream from Chicago, Burlington & Quincy Railroad Co. bridge, 2 miles west of Orleans, 2 $\frac{1}{4}$  miles upstream from Sappa Creek, and 23 miles upstream from Harlan County Dam.

Drainage area.--15,400 sq mi, approximately, of which a large area does not contribute directly to surface runoff.

Records available.--October 1947 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 1,972.57 ft above mean sea level, datum of 1929. Prior to June 2, 1948, wire-weight gage at same site and datum.

Average discharge.--13 years (1947-60), 385 cfs (278,700 acre-ft per year).

Extremes.--1947-60: Maximum discharge, 40,600 cfs June 22, 1948 (gage height, 11.25 ft), from rating curve extended above 29,000 cfs; maximum gage height, 12.60 ft Mar. 22, 1960 (backwater from ice); no flow at times in 1952-57.

Maximum flood known occurred June 1, 1935. Flood of June 23, 1947, reached a stage of 14.00 ft, from floodmark (discharge not determined).

Remarks.--Natural flow affected by irrigation development above station and regulation by upstream reservoirs. Records of chemical analyses and water temperatures for the period December 1949 to July 1953 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	161	204	228	209	359	382	386	528	1,685	1,233	552	2,026	746
1952	332	399	284	311	689	763	775	733	145	181	85.7	13.4	392
1953	35.0	122	190	392	422	447	423	440	181	99.9	29.0	28	231
1954	.52	85.6	101	93.9	242	205	148	270	80.2	12.1	107	.47	111
1955	27.3	73.4	97.8	75.8	120	276	169	68.8	508	41.8	3.51	2.90	121
1956	8.58	62.7	58.7	127	147	197	160	54.8	234	130	48.8	23	102
1957	3.03	83.8	99.4	73.2	170	189	336	518	1,934	488	163	201	438
1958	203	297	216	248	510	709	793	741	463	414	194	187	414
1959	167	281	378	324	514	629	700	555	263	86.7	54.1	59.8	333
1960	137	175	210	126	505	1,720	814	1,124	1,241	264	106	64.3	540

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	9,910	12,160	14,020	12,880	19,930	23,470	22,990	93,930	100,300	75,840	33,960	120,500	539,900
1952	20,420	23,740	17,470	19,100	39,650	46,890	48,120	45,080	8,620	11,100	5,270	795	284,300
1953	2,150	7,290	11,680	24,110	23,420	27,510	25,170	27,080	10,760	6,140	1,780	17	187,100
1954	.32	5,090	6,190	5,780	13,460	12,580	8,780	16,590	4,770	748	6,570	28	80,620
1955	1,680	4,370	6,020	4,660	6,890	16,970	10,070	4,230	30,220	2,570	216	172	87,870
1956	528	3,730	3,490	7,840	8,450	12,110	9,530	3,370	13,900	7,970	3,000	13	73,930
1957	186	4,990	6,050	4,500	9,460	11,610	19,960	93,350	115,100	30,020	10,010	11,930	317,200
1958	12,450	17,850	13,310	15,270	28,320	43,590	47,170	45,540	27,560	25,450	11,940	11,140	299,400
1959	10,260	18,740	23,250	19,910	28,540	38,650	41,660	34,130	15,660	5,330	3,330	3,560	241,000
1960	8,400	10,390	12,940	7,750	29,030	105,700	48,430	69,100	73,820	16,250	6,490	3,830	392,100

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-			-	-	-	415	300,800
1951	1210	11,600	May 21, 1951	65	746	539,900	781	565,400
1952	1240	3,260	July 14, 1952	0	392	284,300	336	243,700
1953	1280	5,160	May 28, 1953	0	231	167,100	217	157,300
1954	1340	2,330	May 16, 1954	0	111	80,620	112	81,370
1955	1390	5,160	June 18, 1955	0	121	87,870	115	83,550
1956	1440	2,400	June 20, 1956	0	102	73,930	107	77,410
1957	1510	12,300	June 17, 1957	0	438	317,200	483	349,400
1958	1560	2,140	July 23, 1958	68	414	299,400	423	306,200
1959	1630	a2,000	Mar. 1, 1959	6.0	333	241,000	307	222,500
1960	1710	a10,000	Mar. 22, 1960	37	540	392,100	-	-

a About; occurred during period of ice breakup.

## 8449. South Fork Sappa Creek near Achilles, Kans.

Location.--Lat 39°40'37", long 100°43'18", on west line of sec.29, T.4 S., R.30 W., at downstream side of highway bridge, 5.5 miles southeast of Achilles, 14 miles southwest of Oberlin, and 20.2 miles upstream from confluence with North Fork.

Drainage area.--434 sq mi, approximately.

Records available.--July 1959 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 2,722.42 ft above mean sea level, datum of 1929.

Extremes.--1959-60: Maximum discharge, 4,120 cfs Mar. 20, 1960 (gage height, 9.03 ft), from rating curve extended above 600 cfs; no flow at times in each year.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1959	-	-	-	-	-	-	-	-	-	0	0.05	0	-
1960	0	0	0	0	4.67	243	6.52	3.47	71.6	1.70	.03	0	27.8

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1959	-	-	-	-	-	-	-	-	-	0	2.8	0	-
1960	0	0	0	0	269	14,930	388	213	4,260	104	1.8	0	20,170

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1959	1710	-	-	-	-	-	-	-	-
1960	1710	4,120	Mar. 20, 1960	0	27.8	20,170	-	-	-

## 8450. Sappa Creek near Oberlin, Kans.

Location.--Lat 39°47'07", long 100°34'28", in NE $\frac{1}{4}$  sec.21, T.3 S., R.29 W., 0.3 mile downstream from confluence of North and South Forks,  $3\frac{1}{2}$  miles southwest of Oberlin, and at mile 107.8.

Drainage area.--1,040 sq mi, approximately, of which an unknown portion is noncontributing

Records available.--October 1928 to September 1932, October 1943 to September 1960.

Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Altitude of gage is 2,570 ft (from topographic map).

Mar. 18, 1929, to June 30, 1929, staff gage at site 7 miles downstream at datum 2,522.98 ft above mean sea level, datum of 1929. June 22, 1944, to Jan. 15, 1945, wire-weight gage 150 ft below previous site at datum 2.20 ft lower. Jan. 16, 1945, to Sept. 30, 1955, water-stage recorder and concrete control 100 ft above previous wire-weight gage site at datum 2,522.50 ft above mean sea level, datum of 1929. Oct. 1, 1955, to May 21, 1958, and Jan. 5 to May 19, 1959, wire-weight gage at bridge on U. S. Highway 83, 4.1 miles below present site at different datum.

Average discharge.--21 years (1929-32, 1944-60), 23.7 cfs (17,160 acre-ft per year).

Extremes.--1928-32, 1943-60: Maximum discharge, 10,600 cfs July 16, 1944 (gage height, 15.28 ft, site and datum then in use, from floodmark), from rating curve extended above 4,200 cfs on basis of peak flow over dam; no flow at times.

Remarks.--Some diversions above station for irrigation.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1.94	0.88	2.08	1.42	2.65	3.05	3.95	52.4	234	448	58.7	197	84.2
1952	15.9	13.8	8.60	8.90	9.29	11.4	15.7	14.8	6.22	9.30	2.34	.62	9.75
1953	.54	.51	.09	.15	.18	.40	.34	.64	16.1	11.1	3.90	0	16.7
1954	0	.14	.14	.07	.26	.15	.21	33.0	5.47	.65	27.1	17.0	7.09
1955	.13	0	.02	0	.004	.10	.17	.05	.13	47.3	1.37	.08	4.19
1956	0	0	0	0	0	0	0	0	0	91.3	74.3	.11	14.0
1957	.26	0	0	0	0	.01	1.96	189	235	69.7	22.0	37.8	46.4
1958	.12	.25	.48	.45	1.42	3.84	15.6	21.5	4.31	35.0	30.1	.14	9.47
1959	.10	.14	.28	.33	18.1	3.22	3.15	.71	12.6	.06	.34	3.03	3.37
1960	.05	.12	.10	.08	15.3	403	20.3	12.1	94.1	12.6	.32	.08	46.9

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	119	52	128	87	147	188	235	3,220	13,900	27,580	5,610	11,710	60,980
1952	976	819	529	547	535	702	936	912	370	572	144	37	7,080
1953	33	30	5.8	8.9	10	24	20	10,070	956	684	240	0	12,080
1954	0	8.1	8.7	4.2	15	9.1	12	2,030	325	40	1,670	1,010	5,130
1955	8.1	0	1.0	0	.2	6.3	10	.32	7.9	2,910	84	4.8	3,040
1956	0	0	0	0	0	0	0	0	0	5,610	4,570	6.7	10,190
1957	16	0	0	0	0	8	118	1,600	13,950	4,280	1,350	2,250	33,560
1958	7.1	15	30	27	23	236	927	1,320	256	2,150	1,850	8.5	6,850
1959	6.1	8.3	17	20	1,000	198	187	43	752	4.0	21	180	2,440
1960	3.4	7.3	6.1	5.2	880	24,800	1,210	742	5,600	775	20	4.8	34,050

## KANSAS RIVER BASIN

Yearly discharge, in cubic feet per second, of Sappa Creek near Oberlin, Kans.

Year	WSP	Water year ending Sept. 30				Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean
		Discharge	Date				
1950	-	-	-	-	-	-	14.3
1951	1210,1340	6,800	July 12, 1951	0.1	84.2	60,980	87.0
1952	1240	144	July 15, 1952	0	9.75	7,080	6.64
1953	1280,1340	9,440	May 28, 1953	0	16.7	12,080	16.6
1954	1340	868	Aug. 17, 1954	0	7.09	5,130	7.08
1955	1330	1,180	July 5, 1955	0	4.19	3,040	4.18
1956	1440	4,780	July 6, 1956	0	14.0	10,190	14.1
1957	1510	2,040	May 30, 1957	0	46.4	33,560	46.4
1958	1560	523	Aug. 1, 1958	0	9.47	6,850	9.44
1959	1630	462	June 22, 1959	0	3.37	2,440	3.35
1960	1710	6,430	Mar. 20, 1960	0	46.9	34,050	-

8452. Sappa Creek near Beaver City, Nebr.

Location.--Lat 40°02'15", long 99°53'45", in SW<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub> sec.14, T.1 N., R.23 W., on right bank 200 ft downstream from bridge on U. S. Highway 283, 7 miles southwest of Beaver City, and at mile 42.6.

Drainage area.--1,500 sq mi, approximately.

Records available.--October 1936 to September 1960. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 2,154.63 ft above mean sea level, datum of 1929, supplementary adjustment of 1960. Prior to Sept. 11, 1945, chain gage at site 200 ft upstream at datum 2.56 ft higher.

Average discharge.--24 years (1936-60), 44.1 cfs (31,930 acre-ft per year); median of yearly mean discharges, 33 cfs (23,900 acre-ft per year).

Extremes.--1936-60: Maximum discharge, 5,690 cfs Mar. 23, 1960 (gage height, 20.03 ft); no flow at times in many years.

Remarks.--Diversions above station for irrigation. Records of suspended sediment loads for the periods April 1947 to September 1951 and February to September 1952 and water temperatures for the periods January 1949 to September 1951 and February to September 1952 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	8.57	9.05	8.8	7.6	11.4	9.79	8.71	69.6	252	412	196	277	106
1952	39.5	28.1	20.4	13.1	20.9	22.9	40.6	84.6	19.4	38.5	20.6	1.70	30.7
1953	.82	1.33	2.52	4.10	5.49	5.53	5.21	91.5	95.1	88.4	15.1	1.09	26.4
1954	.09	1.49	1.86	3.13	6.63	3.27	2.95	26.4	13.4	3.05	54.1	11.0	10.7
1955	.02	0	.11	.32	6.00	3.00	1.15	2.32	2.92	15.2	.21	.35	2.62
1956	0	0	0	0	.59	.34	.02	.4	40.6	25.8	62.0	11.9	11.9
1957	.92	.25	0	0	0	.01	1.83	130	373	125	9.78	68.9	59.0
1958	1.94	1.86	2.75	2.44	3.72	6.06	23.6	23.1	15.7	86.2	89.2	1.62	21.8
1959	.07	1.06	2.24	1.32	16.6	11.3	8.98	7.92	13.3	26.1	1.36	0	7.63
1960	0	0	0	0	7.80	359	45.8	25.5	224	21.1	6.98	1.34	57.8

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	527	539	541	466	631	602	578	4,280	14,980	25,320	12,080	16,500	77,040
1952	2,450	1,670	1,260	1,180	1,200	1,410	2,420	5,820	1,150	2,370	1,270	101	22,280
1953	50	79	155	252	305	340	310	5,620	5,660	5,430	927	54	19,130
1954	5.4	89	114	192	368	201	175	1,620	798	188	3,330	656	7,740
1955	1.0	0	6.5	20	333	185	68	142	174	933	13	21	1,900
1956	0	0	0	0	34	21	1.0	24	2,420	1,590	3,810	708	8,610
1957	57	15	0	0	0	.6	109	7,890	22,180	7,680	602	4,100	42,730
1958	119	110	169	150	207	372	1,400	1,420	937	5,300	5,490	96	15,770
1959	4.2	64	137	81	921	635	535	457	790	1,720	84	0	5,520
1960	0	0	0	0	448	2,050	2,720	1,570	13,350	1,300	429	80	41,950

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean
		Discharge	Date				
1950	-	-	-	-	-	-	67.0
1951	1210	2,170	July 16, 1951	5	106	77,040	112
1952	1240	1,130	Apr. 30, 1952	0.8	30.7	22,280	23.7
1953	1280	1,150	May 31, 1953	0	26.4	19,130	26.3
1954	1340	1,040	Aug. 17, 1954	0	10.7	7,740	10.4
1955	1390	318	July 9, 1955	0	2.62	1,900	2.61
1956	1440	1,020	June 17, 1956	0	11.9	8,610	12.0
1957	1510	2,130	June 16, 1957	0	59.0	42,730	59.5
1958	1560	925	Aug. 16, 1958	0	21.8	15,770	21.5
1959	1630	677	July 16, 1959	0	7.63	5,520	7.35
1960	1710	5,690	Mar. 23, 1960	0	57.8	41,950	-

## 8460. Beaver Creek at Ludell, Kans.

Location.--Lat 39°51', long 100°58', in SE $\frac{1}{4}$  sec.25, T.2 S., R.33 W., on left bank near downstream side of county bridge just west of Ludell, 6 miles downstream from Little Beaver Creek and at mile 129.5.

Drainage area.--1,460 sq mi.

Records available.--October 1928 to September 1932, September 1945 to September 1953.  
Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 2,753.93 ft above mean sea level, datum of 1929. Mar. 18, 1929, to June 30, 1932, staff gage at railroad bridge 120 ft upstream at datum 1.7 ft higher. Sept. 18, 1945, to Oct. 4, 1946, wire-weight gage at present site and datum.

Average discharge.--12 years (1928-32, 1945-53), 17.6 cfs (12,740 acre-ft per year).

Extremes.--1928-32, 1945-53: Maximum discharge, 3,300 cfs Sept. 8, 1930 (gage height, 15.0 ft, from floodmarks, datum then in use), from rating curve extended above 21 cfs by logarithmic plotting on basis of velocity-area study and parallel rating defined to 1,500 cfs; no flow for several days in nearly every year.

Remarks.--Flood peaks at Ludell affected by storage in city lake at Atwood.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	0.25	0.43	2.24	4.35	6.60	6.71	9.56	51.1	344	321	56.4	212	84.6
1952	19.3	17.0	13.6	13.2	17.1	20.5	24.9	33.9	11.9	3.40	.38	.05	14.6
1953	.06	.16	.30	.21	.46	3.26	4.72	8.89	1.97	.11	2.33	0	1.89

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	15	25	138	268	366	413	569	3,140	20,490	19,760	3,470	12,600	61,250
1952	1,190	1,010	835	811	982	1,260	1,480	2,080	707	209	23	30	10,590
1953	3.8	9.5	18	13	26	201	281	547	117	6.9	143	0	1,370

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	13.6	9,820
1951	1210	2,140	July 13, 1951	0	84.6	61,250	88.6	64,110
1952	1240	225	May 22, 1952	0	14.6	10,590	10.5	7,530
1953	1280	77	May 27, 1953	0	1.89	1,370	-	-

## 8465. Beaver Creek at Cedar Bluffs, Kans.

Location--Lat 39°59', long 100°35', in NE $\frac{1}{4}$  sec.10, T.1 S., R.29 W., on right bank 100 ft downstream from bridge on U. S. Highway 83, a quarter of a mile north of Cedar Bluffs, and 1 $\frac{1}{4}$  miles south of Kansas-Nebraska State line.

Drainage area--1,710 sq mi, approximately.

Records available--October 1945 to September 1960. Monthly discharge only for some periods, published in WSP 1310.

Gage--Water-stage recorder. Datum of gage is 2,520.33 ft above mean sea level, datum of 1929.

Average discharge--15 years (1945-60), 29.0 cfs (21,000 acre-ft per year).

Extremes--1945-60: Maximum discharge, 7,940 cfs June 11, 1960 (gage height, 18.71 ft); no flow at times.

Revisions--Some periods for the water years 1947 and 1950 were revised in WSP 1510; the resulting revised records as summarized herewith supersede those published in WSP 1310.

Month	Mean	Acre-feet	Momentary maximum		Minimum day
			Discharge	Date	
October 1946.....	231	14,220	-	-	-
Calendar year 1946....	33.9	24,500	-	-	-
Water year 1946-47....	43.3	31,360	1,830	Oct. 8, 1946	0
July 1950.....	82.8	5,090	-	-	-
Water year 1949-50....	22.0	15,940	1,250	July 24, 1950	.6

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	0.34	0.43	2.81	4.94	8.32	7.20	9.10	56.6	275	391	97.8	421	106
1952	37.2	25.3	18.7	16.3	20.1	25.5	35.2	49.4	18.4	6.75	1.30	.21	21.1
1953	.22	.37	.40	.46	.85	1.93	4.07	9.62	2.43	9.20	2.16	0	2.67
1954	0	.05	.12	.12	.30	.20	.06	19.2	1.18	.27	1.59	0	1.95
1955	0	0	0	0	.004	0	0	0	.06	1.40	0	.56	.17
1956	.36	0	0	0	0	0	.02	.12	9.28	39.7	25.8	.01	6.36
1957	0	0	0	0	0	0	13.2	432	198	151	22.9	41.9	72.4
1958	8.77	4.93	7.09	6.71	7.72	14.9	34.1	37.0	31.5	65.8	97.1	9.63	27.3
1959	1.75	4.28	8.51	5.31	20.6	18.7	19.1	14.4	14.8	7.08	2.87	0	9.68
1960	0	0	.06	.05	11.2	369	61.7	33.4	278	29.6	4.34	.84	65.8

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	21	25	173	304	462	443	542	3,480	16,380	24,040	6,020	25,070	76,960
1952	2,280	1,510	1,150	1,000	1,160	1,560	2,100	3,030	977	415	80	12	15,270
1953	14	22	24	29	47	119	242	592	144	566	133	0	1,930
1954	0	3.0	7.5	7.3	16	12	3.6	1,180	70	18	98	0	1,410
1955	0	0	0	0	.2	0	0	0	5.4	86	0	33	123
1956	22	0	0	0	0	0	1.0	7.1	552	2,440	1,590	.6	4,610
1957	0	0	0	0	0	0	786	26,590	11,810	9,300	1,410	2,500	52,400
1958	540	293	436	413	429	912	2,050	2,280	1,880	4,040	5,970	573	19,800
1959	106	255	511	326	1,150	1,150	1,140	887	878	436	177	0	7,020
1960	0	0	4.0	3.4	642	22,720	3,670	2,050	16,550	1,820	267	50	47,780

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	19.3	13,950
1951	1510	1210	3,980	July 14, 1951	0	106	76,960	81,680
1952	1240	233	May 23, 1952	0	21.1	15,270	14.3	10,390
1953	1280	305	July 13, 1953	0	2.67	1,930	2.60	1,880
1954	1340	272	May 18, 1954	0	1.95	1,410	1.94	1,400
1955	1390	78	July 13, 1955	0	.17	12*	.20	145
1956	1440	512	July 7, 1956	0	6.36	4,610	6.33	4,590
1957	1510	4,620	May 30, 1957	0	72.4	52,400	74.1	53,660
1958	1560	652	Aug. 17, 1958	6	27.3	19,800	28.8	19,400
1959	1630	254	June 23, 1959	0	9.68	7,020	8.48	6,150
1960	1710	7,940	June 11, 1960	0	65.8	47,780	-	-

8470. Beaver Creek near Beaver City, Nebr.

Location.--Lat 40°07'12", long 99°53'31", in SW<sup>1</sup>/<sub>4</sub> sec. 23, T.2 N., R.23 W.; on left bank 400 ft downstream from bridge on U. S. Highway 283,  $\frac{3}{4}$  miles west of Beaver City, and at mile 24.7.

Drainage area.--2,060 sq mi, approximately.

Records available.--October 1936 to September 1960. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 2,162.96 ft above mean sea level, datum of 1929, supplementary adjustment of 1960. Prior to Aug. 13, 1947, chain or wire-weight gages and Aug. 13, 1947, to Nov. 14, 1957, water-stage recorder, at site 400 ft upstream at datum 2.0 ft higher. Nov. 15, 1957, to Sept. 22, 1958, water-stage recorder at site 3.6 miles upstream at different datum.

Average discharge.--24 years (1936-60), 33.9 cfs (24,540 acre-ft per year); median of yearly mean discharges, 27 cfs (19,500 acre-ft per year).

Extremes.--1936-60: Maximum discharge, 3,800 cfs July 19, 1944 (gage height, 13.8 ft, from floodmark, site and datum then in use); no flow at times in most years.

Remarks.--Small diversions above station for irrigation. Records of suspended sediment loads and water temperatures for the period December 1950 to September 1953 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	8.7	5.4	5.0	6.6	12.2	10.9	13.0	67.9	215	450	166	430	116
1952	55.5	39.4	28.3	27.6	32.3	31.6	52.5	89.9	29.9	26.9	5.94	2.33	35.3
1953	.88	1.20	2.01	4.03	4.10	5.39	5.53	8.34	20.5	17.1	4.92	.72	6.24
1954	.22	.31	.86	1.15	1.96	1.23	1.23	12.2	3.92	8.45	16.6	.03	4.04
1955	.01	.04	.23	.14	1.36	.94	.55	.45	.14	.93	0	0	.39
1956	0	0	.04	.13	.30	.20	.20	.16	12.2	13.4	.38		2.33
1957	.12	.05	.10	.11	.12	.24	5.32	106	256	130	24.9	35.4	46.7
1958	9.74	7.72	5.28	4.53	6.83	11.3	36.6	48.6	28.8	70.1	88.8	13.0	27.9
1959	1.53	1.90	4.29	3.26	20.4	26.3	21.9	18.2	17.4	9.37	.86	.03	10.4
1960	.40	.44	.56	.34	7.57	222	87.3	42.3	274	41.9	13.4	1.61	57.5

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	534	319	307	407	678	672	774	4,180	12,780	27,700	10,210	25,570	84,130
1952	5,420	2,340	1,740	1,700	1,960	1,960	3,120	530	1,780	1,650	365	139	25,590
1953	54	71	124	248	288	331	329	513	1,220	1,050	302	43	4,510
1954	1.4	18	53	71	109	76	75	749	233	519	1,020	2.0	2,920
1955	.6	2.4	14	8.5	75	58	33	28	8.5	57	0	0	285
1956	0	0	2.2	7.7	17	12	12	9.9	38	747	823	23	1,690
1957	7.3	3.0	6.1	6.9	6.5	14	317	6,530	15,250	8,000	1,530	2,110	33,780
1958	599	459	324	278	379	693	2,180	2,990	1,720	4,310	5,460	771	20,160
1959	94	113	264	201	1,130	1,620	1,300	1,120	1,030	576	53	2.0	7,500
1960	24	26	35	21	436	13,630	5,190	2,600	16,310	2,580	826	96	41,770

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean
		Discharge	Date				
1950	-	-	-	-	-	-	42.4
1951	1210	2,430	July 17, 1951	2	116	84,130	125
1952	1240	800	May 16, 1952	.3	35.3	25,590	25.3
1953	1260	388	July 20, 1953	0	6.24	4,510	5.99
1954	1340	451	Aug. 17, 1954	0	4.04	2,920	3.97
1955	1390	29	July 16, 1955	0	.39	285	.37
1956	1440	202	July 12, 1956	0	2.33	1,690	2.36
1957	1510	1,640	July 16, 1957	0	46.7	33,780	48.5
1958	1560	290	Aug. 21, 1958	1.0	27.9	20,160	26.6
1959	1630	184	June 4, 1959	0	10.4	7,500	9.83
1960	1710	2,810	June 13, 1960	.1	57.5	41,770	-

## 8475. Sappa Creek near Stamford, Nebr.

Location.--Lat 40°08'00", long 99°33'15", in NW<sup>1</sup>/<sub>4</sub> NW<sup>1</sup>/<sub>4</sub> sec.23, T.2 N., R.20 W., on left bank 40 ft south of Chicago, Burlington & Quincy Railroad track, 500 ft downstream from bridge on county highway, 2 miles east of Stamford, and 5½ miles upstream from mouth.

Drainage area.--3,840 sq mi, approximately.

Records available.--October 1945 to September 1960. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 1,981.31 ft above mean sea level, datum of 1929.

Average discharge.--15 years (1945-60), 87.8 cfs (63,560 acre-ft per year); median of yearly mean discharges, 75 cfs (54,300 acre-ft per year).

Extremes.--1945-60: Maximum discharge, 7,430 cfs June 22, 1947 (gage height, 20.10 ft), from rating curve extended above 4,800 cfs; no flow at times in many years.

Remarks.--Natural flow affected by irrigation development above station. Records of suspended sediment loads for the period March 1947 to September 1953 and water temperatures for the period November 1949 to September 1953 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	28.1	19.6	18.0	15.4	20.9	31.3	28.2	142	450	891	387	708	229
1952	117	86.5	60.4	54.6	55.8	71.1	106	254	68.8	167	36.9	6.98	90.9
1953	1.41	4.10	6.74	10.4	15.5	14.0	18.3	71.6	196	130	25.2	4.53	41.0
1954	0	.91	2.62	2.14	13.5	7.86	5.62	44.2	25.7	5.92	72.9	29.7	17.7
1955	0	0	0	0	8.35	5.53	.67	1.58	8.63	11.3	0	2.93	3.21
1956	0	0	0	0	0	0	0	0	45.5	22.1	72.1	21.3	13.5
1957	.07	0	0	0	0	0	4.05	221	760	275	33.9	96.1	116
1958	16.7	8.30	2.74	4.10	5.69	15.1	75.9	87.7	53.7	196	176	18.1	55.6
1959	1.78	2.67	6.65	3.58	22.0	49.7	34.3	52.4	34.9	34.5	0	0	20.2
1960	0	0	0	0	13.3	*486	164	84.1	508	83.6	25.1	1.75	*114

\* Revised; revised daily discharge for the periods thus affected are available and will be published in a future water-supply paper.

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1,730	1,170	1,110	949	1,160	1,920	1,680	8,740	26,760	54,790	23,770	42,160	165,900
1952	7,220	5,150	3,720	3,360	5,210	4,370	6,300	15,610	4,090	10,270	2,270	415	65,980
1953	87	244	415	659	863	864	972	4,400	11,640	8,020	1,550	32	29,730
1954	0	54	161	151	748	483	346	2,710	1,530	364	4,490	1,770	12,790
1955	0	0	0	0	464	340	40	97	513	696	0	174	2,320
1956	0	0	0	0	0	0	0	0	2,710	1,360	4,430	1,270	9,770
1957	4.4	0	0	0	0	0	241	13,580	45,210	16,890	2,080	5,720	83,730
1958	1,050	494	168	252	318	928	4,520	5,400	3,200	12,060	10,820	1,080	40,290
1959	109	159	409	220	1,220	3,050	2,040	3,220	2,070	2,120	0	0	14,620
1960	0	0	0	0	768	*29,880	9,760	5,170	30,230	5,140	1,540	104	*82,590

\* Revised. See footnote to preceding table.

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	-	-
1951	1210	4,260	July 19, 1951	3.0	229	165,900	119	86,300
1952	1240	2,250	July 15, 1952	1.6	90.9	65,980	246	178,000
1953	1280	1,050	June 2, 1953	0	41.0	29,730	59.8	50,640
1954	1340	901	Aug. 18, 1954	0	17.7	12,790	40.3	29,200
1955	1390	220	June 19, 1955	0	3.21	2,320	17.4	12,570
1956	1440	654	June 19, 1956	0	13.5	9,770	3.21	2,320
1957	1510	3,080	June 17, 1957	0	116	83,730	13.5	9,770
1958	1560	1,020	July 17, 1958	0	55.6	40,290	118	85,410
1959	1630	657	July 17, 1959	0	20.2	14,620	54.2	39,270
1960	1710	3,780	Mar. 24, 1960	0	*114	*82,590	19.3	13,940

\* Revised.



## 8480. Prairie Dog Creek at Norton, Kans.

Location.--Lat 39°50', long 99°53', on west line of sec.2, T.3 S., R.23 W., on left bank 5 ft downstream from bridge on U. S. Highway 283, half a mile south of Norton, and at mile 66.0.

Drainage area.--721 sq mi.

Records available.--October 1943 to September 1960. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 2,217.91 ft above mean sea level, datum of 1929. Apr. 13 to May 7, 1944, wire-weight gage at same site and datum.

Average discharge.--17 years (1943-60), 44.8 cfs (32,430 acre-ft per year).

Extremes.--1944-60: Maximum discharge, 37,500 cfs May 28, 1953 (gage height, 25.6 ft), from rating curve extended above 14,000 cfs on basis of main channel velocity-area study and computation of peak flow over road; no flow at times in 1946, 1954-57, 1959-60.

Remarks.--Some diversion above station for irrigation. Records of chemical analyses for the period September 1957 to June 1958, suspended sediment loads for the period March 1947 to September 1952, and water temperatures for the period December 1948 to September 1952 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	15.6	16.0	12.6	9.5	13.9	13.4	11.4	123	388	648	97.0	385	145
1952	30.5	20.9	14.4	15.7	17.8	14.7	19.4	43.5	11.4	36.9	13.7	1.87	20.1
1953	1.36	2.75	4.00	5.76	6.73	7.76	9.10	438	42.1	82.0	26.6	2.88	53.2
1954	.94	2.54	4.48	5.27	10.5	6.51	17.3	148	24.7	5.91	20.4	7.76	21.4
1955	.47	.97	2.67	2.20	3.33	6.06	3.96	.88	58.7	20.7	4.57	5.64	9.13
1956	.02	.28	.45	1.12	11.5	4.63	1.49	7.47	11.6	61.1	23.9	.10	10.4
1957	1.18	.33	.17	1.27	.35	7.58	149	656	135	15.4	26.1		82.4
1958	6.15	4.87	5.08	6.29	6.13	11.5	16.2	21.8	19.0	173	31.7	4.63	25.8
1959	3.36	4.81	5.98	4.92	19.1	13.1	10.9	8.19	24.2	15.7	.03	.007	9.10
1960	.05	.02	.77	2.81	28.4	265	28.8	26.7	116	15.8	1.88	.12	40.7

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	962	952	774	587	770	823	678	7,540	23,100	39,850	5,960	22,940	104,900
1952	1,880	1,240	885	968	1,030	904	1,150	2,670	680	2,270	843	111	14,630
1953	84	184	246	354	374	477	541	26,950	2,500	5,040	630	171	38,530
1954	58	151	275	324	584	400	1,030	9,090	1,470	3,630	250	462	15,460
1955	29	58	164	135	185	373	236	54	3,490	1,270	281	336	6,610
1956	1.0	17	27	69	661	284	88	460	693	3,760	1,470	5.8	7,540
1957	72	0	20	11	71	22	451	9,180	39,040	8,280	948	1,560	59,660
1958	378	290	313	387	341	708	964	1,340	1,130	10,620	950	275	18,700
1959	207	286	368	302	1,060	805	648	504	1,440	964	2.0	.4	6,590
1960	3.4	1.2	47	173	1,630	16,320	1,710	1,640	6,900	971	116	6.9	29,520

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	71.7	51,940
1951	1210	14,400	July 12, 1951	0.6	145	104,900	147	106,300
1952	1240	1,570	May 1, 1952	.7	20.1	14,630	15.3	11,120
1953	1280	37,500	May 28, 1953	.6	53.2	38,530	53.2	38,520
1954	1340	1,540	May 17, 1954	0	21.4	15,460	21.0	15,220
1955	1390	657	June 17, 1955	0	9.13	6,610	8.85	6,400
1956	1440	1,120	July 6, 1956	0	10.4	7,540	10.4	7,580
1957	1510	14,300	June 16, 1957	0	82.4	59,660	83.6	60,540
1958	1560	1,120	July 20, 1958	1.0	25.8	18,700	25.7	18,580
1959	1630	636	July 14, 1959	0	9.10	6,590	7.98	5,780
1960	1710	5,380	Mar. 22, 1960	0	40.7	29,520	-	-

## 8485. Prairie Dog Creek near Woodruff, Kans.

Location.--Lat 39°59'00", long 99°28'30", in NW $\frac{1}{4}$  sec.9, T.1 S., R.19 W., on left bank at downstream side of bridge on U. S. Highway 383, 1 mile south of Kansas-Nebraska State line, 2 $\frac{1}{2}$  miles west of Woodruff, and 33 miles upstream from mouth.

Drainage area.--980 sq mi, approximately.

Records available.--October 1928 to September 1932, October 1944 to September 1960. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 2,016.20 ft above mean sea level, datum of 1929. Mar. 19, 1929, to June 30, 1932, chain gage at site 200 ft downstream at different datum. May 11, 1945, to May 7, 1951, water-stage recorder at site 18 miles downstream from present gage at datum 73.12 ft lower. May 8, 1951, to Feb. 19, 1952, wire-weight gage at site 21 miles downstream at datum 82.94 ft lower. Feb. 20, 1952, to Sept. 30, 1954, water-stage recorder and Oct. 1, 1954, to Oct. 6, 1955, wire-weight gage, at site 18 miles downstream at datum 71.29 ft lower.

Average discharge.--20 years (1928-32, 1944-60), 57.9 cfs (41,920 acre-ft per year).

Extremes.--1928-32, 1944-60: Maximum discharge, 15,000 cfs June 23, 1947 (gage height, 21.04 ft, site and datum then in use), from rating curve extended above 6,500 cfs on basis of contracted-opening measurement of 11,300 cfs; no flow Oct. 29, 1945, and at times in 1948, 1950, 1954-60.

Remarks.--Natural flow affected by irrigation development above station.

## Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	31.3	15.7	14.0	13.5	20.2	18.5	15.7	181	502	1,070	199	402	208
1952	49.6	38.7	25.0	21.9	24.1	26.0	36.6	70.2	14.4	60.4	40.3	5.53	34.6
1953	1.91	6.45	6.72	10.2	15.8	12.1	8.75	386	111	130	37.3	5.69	61.6
1954	3.55	8.12	10.1	7.59	17.4	12.0	26.0	185	42.6	1.38	52.9	29.0	33.1
1955	0	.78	2.45	2.60	20.2	8.29	1.67	.12	109	17.5	.59	74.7	19.5
1956	.34	0	0	0	6.53	4.29	.05	3.26	21.1	53.2	8.62	.01	8.15
1957	0	4.46	0	0	0	0	23.2	211	837	137	9.98	21.7	103
1958	3.44	5.22	5.55	5.72	8.61	14.4	20.3	27.5	21.3	163	29.9	4.43	26.1
1959	.75	3.78	4.94	3.04	21.0	14.6	12.6	23.8	37.2	14.2	0	.08	11.2
1960	0	0	0	0	16.3	240	36.6	106	158	16.0	.52	0	48.0

## Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1,930	934	862	832	1,120	1,140	936	11,150	29,860	65,780	12,250	23,930	150,700
1952	3,050	2,300	1,540	1,350	1,380	1,600	2,180	4,310	860	3,710	2,480	329	25,090
1953	117	384	414	625	875	747	521	23,710	6,580	7,980	2,300	339	44,590
1954	218	483	620	467	966	738	1,550	11,360	2,530	85	3,250	1,730	23,990
1955	0	46	150	160	1,120	510	100	7.3	6,490	1,080	36	4,440	14,140
1956	21	0	0	0	376	264	3.0	200	1,250	3,270	530	.6	5,910
1957	0	27	0	0	0	0	1,380	12,970	49,790	8,410	614	1,290	74,480
1958	211	310	342	351	478	831	1,210	1,690	1,270	10,040	1,840	264	18,890
1959	46	225	304	187	1,170	899	748	1,460	2,210	871	0	4.6	8,120
1960	0	0	0	0	937	14,780	2,180	6,520	9,380	985	32	0	34,810

## Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	maximum Date						
1950	-	-	-	-	-	-	71.9	-	52,080
1951	1210	8,560	July 14, 1951	3.9	208	150,700	213	153,900	
1952	1240	1,410	July 14, 1952	-	34.6	25,090	26.3	19,110	
1953	1280	11,300	May 29, 1953	-	61.6	44,590	62.1	45,000	
1954	1340	1,000	Aug. 17, 1954	0	33.1	23,990	31.6	22,860	
1955	1390	948	Sept. 20, 1955	0	19.5	14,140	19.3	15,960	
1956	1440	964	July 8, 1956	0	8.15	5,910	8.16	5,920	
1957	1510	8,910	June 16, 1957	0	103	74,480	104	75,320	
1958	1560	906	July 22, 1958	.1	26.1	18,890	25.7	18,600	
1959	1630	725	June 23, 1959	0	11.2	8,120	10.4	7,550	
1960	1710	4,480	Mar. 23, 1960	0	48.0	34,810	-	-	

## 8490. Harlan County Reservoir near Republican City, Nebr.

Location.--Lat 40°04'10", long 99°12'30", in sec.11, T.1 N., R.17 W., at left end of spillway on upstream side of Harlan County Dam on Republican River, 2 miles southeast of Republican City and 8 miles southeast of Alma.

Drainage area.--20,750 sq mi, approximately, of which a large area does not contribute directly to surface runoff.

Records available.--November 1952 to September 1960.

Gage.--Water-stage recorder. Gage is referred to mean sea level, datum of 1929.

Extremes.--1952-60: Maximum contents, 497,700 acre-ft Apr. 6, 1960 (elevation, 1,955.67 ft); minimum since normal use of water started, 110,300 acre-ft Oct. 22, to Nov. 6, 1953 (elevation, 1,922.00 ft).

Remarks.--Reservoir is formed by earthfill dam with gravity-type concrete spillway section; Storage began Nov. 14, 1952. Capacity, 348,800 acre-ft between elevations 1,885.0 (spill of outlet gates) and 1,946.0 ft (top of storage pool). Top of flood-control pool at elevation 1,973.5 ft. (capacity, 850,000 acre-ft). Top of super-storage flood-control pool at elevation 1,975.5 ft (capacity, 896,800 acre-ft). Dead storage, 1,300 acre-ft. Figures given herein represent total contents. Water used for irrigation in the Bostwick Irrigation project.

Contents, in acre-feet, at 12 p.m. on last day of month, of Harlan County Reservoir near Republican City, Nebr.

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951												
1952												
1953	-	6,350	12,320	20,020	16,600	41,730	62,660	103,600	130,100	135,800	123,800	113,800
1954	110,300	116,600	122,300	127,800	143,800	153,600	162,100	189,300	188,400	163,100	163,000	156,500
1955	155,200	156,000	160,300	163,900	173,500	189,100	195,100	186,600	221,200	202,200	168,000	163,000
1956	160,000	161,000	163,100	170,000	178,900	190,000	196,200	189,400	190,700	175,100	152,300	139,300
1957	132,700	134,400	139,400	145,000	152,400	163,600	186,000	293,300	487,200	368,200	344,800	350,100
1958	334,400	348,100	349,600	354,200	367,700	372,900	350,900	363,200	347,700	369,500	333,200	325,200
1959	312,600	316,700	318,100	317,200	325,300	345,400	352,200	361,900	345,300	313,600	274,300	262,800
1960	268,500	273,500	282,500	289,600	318,700	481,500	402,000	355,500	383,800	339,400	312,100	302,400

a Contents interpolated.

8495. Republican River below Harlan County Dam, Nebr.

Location.--Lat 40°04'45", long 99°10'05", in SW $\frac{1}{4}$  sec.6, T.1 N., R.16 W., on left bank 1.4 miles west of Naponee, 1.4 miles upstream from Turkey Creek, and 2.8 miles downstream from Harlan County Dam.

Drainage area.--20,760 sq mi, approximately, of which a large area does not contribute directly to surface runoff.

Records available.--December 1952 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 1,863.38 ft above mean sea level, datum of 1929 (Corps of Engineers bench mark).

Average discharge.--7 years (1953-60), 290 cfs (210,000 acre-ft per year), unadjusted.

Extremes.--1952-60: Maximum discharge, 4,320 cfs June 25, 1957 (gage height, 8.65 ft); minimum daily, 1.5 cfs Apr. 28, 29, 1957.

Maximum flood known occurred June 1, 1935 (discharge, about 260,000 cfs, from slope-area measurement near Bloomington).

Remarks.--Flow regulated by Harlan County Reservoir (see preceding station).

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952													
1953		-	67.4	243	471	35.4	27.6	29.7	53.9	204	174	97.2	-
1954	21.6	6.88	7.08	5.72	8.91	7.75	13.2	21.4	71.4	278	171	101	60.1
1955	16.7	8.20	9.70	9.08	12.6	12.9	17.0	144	37.0	243	404	146	89.4
1956	10.9	7.84	8.09	7.90	9.07	9.13	9.75	91.3	146	273	326	148	87.8
1957	44.6	8.97	8.05	8.50	12.1	7.76	8.72	25.7	396	2,719	364	125	315
1958	478	36.6	173	180	280	686	1,328	654	662	407	793	210	488
1959	278	144	314	366	497	350	568	504	488	386	410	134	372
1960	10.3	12.2	15.9	13.0	15.9	36.4	2,400	2,069	1,494	955	328	72.6	616

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952													
1953	-	-	4,140	14,930	26,170	2,170	1,640	1,830	3,210	12,540	10,680	5,780	-
1954	1,530	410	436	351	495	477	787	1,320	4,250	17,090	10,540	6,010	43,500
1955	1,030	488	596	558	700	791	1,010	8,840	2,200	14,960	24,850	8,660	64,680
1956	668	467	497	486	521	561	580	5,610	8,690	16,780	20,060	8,810	63,730
1957	2,740	534	495	522	671	477	519	1,580	23,540	67,200	22,390	7,430	228,100
1958	26,940	2,180	10,650	11,070	15,570	42,190	78,300	40,200	39,400	25,000	48,760	12,490	353,400
1959	17,080	8,560	19,290	22,520	27,630	21,540	35,570	30,960	29,030	23,730	25,210	7,950	269,100
1960	636	724	976	799	914	2,240	142,800	127,200	88,920	57,480	20,180	4,320	447,200

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950								
1951								
1952								
1953	-	-	-	-	-	-	112	81,130
1954	1340	378	July 22, 1954	3.6	60.1	43,500	60.0	43,430
1955	1390	932	June 4, 1955	6.0	89.4	64,680	88.7	64,200
1956	1440	590	July 31, 1956	4.2	87.8	63,730	90.7	65,870
1957	1510	4,320	June 25, 1957	1.5	315	228,100	365	264,100
1958	1560	1,860	Apr. 19, 1958	18	488	353,400	495	358,500
1959	1630	1,530	Oct. 8, 1959	15	372	269,100	313	226,500
1960	1710	4,190	May 16, 1960	8.3	616	447,200	-	-

## 8500. Turkey Creek at Naponee, Nebr.

Location.--Lat 40°04'30", long 99°08'20", in SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec.4, T.1 N., R.16 W., on upstream side of bridge on county road at Naponee, three-quarters of a mile upstream from mouth.

Drainage area.--138 sq mi (revised).

Records available.--April 1948 to December 1953.

Gage.--Wire-weight gage. Datum of gage is 1,870.00 ft above mean sea level, datum of 1929 (Corps of Engineers bench mark). Prior to June 18, 1948, staff gage at same site and datum.

Average discharge.--5 years (1948-53), 15.5 cfs (11,220 acre-ft per year).

Extremes.--1948-53: Maximum discharge, 1,920 cfs Sept. 20, 1950 (gage height, 9.50 ft), from rating curve extended above 1,200 cfs; minimum daily, 2.1 cfs Aug. 11, 1953.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	17.0	12.0	11.3	11.0	12.8	15.7	15.4	26.0	17.3	41.9	10.2	14.7	17.2
1952	13.7	13.6	13.0	16.6	17.0	15.6	15.0	14.2	9.38	22.6	8.29	7.69	13.9
1953	9.00	11.4	10.1	11.8	12.6	13.3	13.4	21.6	22.6	8.22	5.07	6.06	12.1
1954	7.94	10.5	11.6	-	-	-	-	-	-	-	-	-	-

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1,050	717	697	676	714	964	914	1,600	1,030	2,580	628	873	12,440
1952	843	807	801	1,020	980	962	893	873	558	1,390	510	458	10,100
1953	554	678	620	724	698	817	795	1,330	1,340	505	312	361	8,730
1954	488	623	716	-	-	-	-	-	-	-	-	-	-

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	15.5	-	11,230
1951	1210	a635	July 11, 1951	4.1	17.2	12,440	17.2	-	12,430
1952	1240	a906	July 14, 1952	6.1	13.9	10,100	13.1	-	9,500
1953	1280	a368	May 28, 1953	2.1	12.1	8,730	12.0	-	8,710
1954	1280	-	-	-	-	-	-	-	-

a Observed.

## 8502. Cottonwood Creek near Bloomington, Nebr.

Location.--Lat 40°05'10", long 99°03'55", in NW $\frac{1}{4}$  sec.6, T.1 N., R.15 W., on right bank 50 ft downstream from bridge on county road, 1 mile upstream from mouth, and 1½ miles west of Bloomington.

Drainage area.--15.6 sq mi (revised).

Records available.--April 1948 to September 1956.

Gage.--Water-stage recorder. Datum of gage is 1,846.20 ft above mean sea level, datum of 1929. Prior to June 29, 1949, staff gage at same site at datum 1.01 ft higher. June 29 to Aug. 4, 1949, staff gage at same site at present datum.

Average discharge.--8 years (1948-56), 5.30 cfs (3,840 acre-ft per year).

Extremes.--1948-56: Maximum discharge, 1,100 cfs June 4, 1955 (gage height, 6.65 ft), from rating curve extended above 51 cfs on basis of slope-area measurements at gage heights 4.71 and 6.65 ft; minimum daily, 2.4 cfs Sept. 23, 24, 1953.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1948	-	-	-	-	-	-	5.17	5.11	7.75	4.50	3.64	3.75	-
1949	5.13	5.44	5.03	5.21	6.52	4.97	5.89	6.56	14.8	4.71	4.29	4.87	6.10
1950	5.25	4.84	4.99	4.40	5.09	5.11	4.66	5.03	4.33	4.36	4.70	4.54	4.77
1951	5.23	4.92	4.97	4.97	5.24	5.36	5.45	6.29	7.57	6.46	4.65	5.46	5.55
1952	5.89	5.40	4.93	4.63	5.86	4.97	4.89	4.78	3.75	6.48	4.44	4.07	5.01
1953	4.64	4.79	5.02	5.07	5.76	5.00	5.37	5.46	4.65	4.13	5.72	5.52	4.75
1954	4.82	4.69	4.40	4.56	4.98	4.80	5.77	7.20	4.86	3.69	4.71	5.60	5.09
1955	4.76	4.98	5.24	5.42	6.62	5.71	5.47	4.86	15.5	4.78	3.94	6.75	6.15
1956	4.75	4.75	5.53	5.40	5.86	5.43	5.84	5.48	5.01	4.18	3.78	4.09	5.01

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1948	-	-	-	-	-	-	308	314	481	277	224	226	-
1949	316	324	309	321	362	306	351	403	881	289	264	290	4,420
1950	323	288	307	271	283	314	277	309	258	268	289	270	3,460
1951	322	293	306	305	291	330	324	387	450	397	286	325	4,020
1952	362	322	303	285	337	305	291	294	223	398	273	242	3,640
1953	285	285	309	312	320	308	319	336	276	254	229	210	3,440
1954	296	291	332	280	276	295	331	443	289	227	290	333	3,680
1955	293	296	322	333	368	351	322	299	923	294	242	402	4,440
1956	292	283	340	332	337	334	348	337	298	257	233	244	3,640

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1948	1440	a1220	June 27, 1948	3.3	-	-	-	-	-
1949	1440	542	June 24, 1949	3.5	6.10	4,420	6.06	-	4,380
1950	1440	21	(c)	3.5	4.77	3,460	4.78	-	3,460
1951	1210	256	June 6, 1951	3.9	5.55	4,020	5.64	-	4,080
1952	1240	492	July 13, 1952	3.2	5.01	3,640	4.86	-	3,530
1953	1280	48	Aug. 19, 1953	2.4	4.75	3,440	4.81	-	3,480
1954	1340	317	Sept. 8, 1954	3.1	5.09	3,680	5.08	-	3,680
1955	1390	1,100	June 4, 1955	3.3	6.15	4,440	6.15	-	4,450
1956	1440	27	Sept. 5, 1956	3.3	5.01	3,640	-	-	-

a Observed.

b Period April to September.

c May 4, Sept. 28, 1950.



8510. Center Creek at Franklin, Nebr.

Location--Lat 40°06'12", long 98°58'45", in northwest corner of NE $\frac{1}{4}$  sec.35, T.2 N., R.15 W., on downstream guardrail of bridge on State Highway 3, 1 mile northwest of Franklin and 3 miles upstream from mouth.

Drainage area--146 sq mi, of which 57.4 sq mi contributes directly to surface runoff (revised).

Records available--April 1948 to September 1956.

Gage--Wire-weight gage. Datum of gage is 1,859.18 ft above mean sea level, datum of 1929 (Bureau of Reclamation bench mark). Prior to Dec. 19, 1952, staff gage at site 1.5 miles downstream at datum 31.11 ft lower.

Average discharge--8 years (1948-56), 6.78 cfs (4,910 acre-ft per year).

Extremes--1948-56: Maximum discharge, 3,150 cfs Sept. 20, 1950 (gage height, 6.8 ft, from floodmark, site and datum then in use), from rating curve extended above 420 cfs on basis of slope-area measurement of peak flow; no flow at times in 1948-50.

Remarks--Two small diversions above station for irrigation.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	3.96	4.44	4.17	5.23	4.37	8.61	8.20	7.51	4.84	44.8	2.61	4.21	8.65
1952	4.72	6.00	3.42	6.47	8.02	8.07	5.82	4.17	1.27	9.66	1.56	1.82	5.08
1953	3.36	3.10	3.92	7.05	7.89	9.71	8.58	8.02	5.93	4.11	3.80	4.23	5.79
1954	5.20	6.79	7.82	5.91	6.31	6.40	6.92	7.86	5.16	3.48	5.22	5.56	6.05
1955	6.24	6.95	7.20	6.98	8.51	8.23	8.91	5.33	11.7	5.21	4.32	6.19	7.13
1956	6.37	7.61	8.04	7.48	7.74	8.17	7.57	7.04	6.80	4.99	3.62	4.59	6.66
1957													
1958													
1959													
1960													

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	244	264	256	321	243	529	488	462	288	2,750	160	251	6,260
1952	290	357	210	398	461	496	346	256	75	594	96	96	3,680
1953	207	184	241	434	438	597	510	493	353	253	233	252	4,200
1954	320	404	481	363	351	394	412	483	307	214	321	351	4,380
1955	384	414	443	429	473	506	530	327	698	321	266	368	5,160
1956	392	453	494	460	445	502	451	433	405	307	222	273	4,840
1957													
1958													
1959													
1960													

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	7.44	5,390
1951	1210	815	July 11, 1951	0.8	8.65	6,260	8.78	6,350
1952	1240	a211	July 14, 1952	.4	5.06	3,680	4.75	3,450
1953	1280	a14	Mar. 4, 1953	.8	5.79	4,200	6.59	4,770
1954	1340	-	-	2.6	6.05	4,380	6.10	4,420
1955	1390	-	-	2.6	7.13	5,160	7.26	5,260
1956	1440	all	Mar. 12, 1956	2.4	6.66	4,840	-	-
1957								
1958								
1959								
1960								

a Observed.

8515. Thompson Creek at Riverton, Nebr.

Location.--40°05'25", long 98°45'45", in NW 1/4 sec.2, T.1 N., R.13 W., on left bank 8 ft downstream from bridge on State Highway 3, at west edge of Riverton, half a mile upstream from mouth.

Drainage area.--295 sq mi.

Records available.--March 1948 to September 1956.

Records available. --March 1948 to September 1958.  
Gage. --Water-stage recorder. Datum of gage is 1,753.38 ft above mean sea level, datum of 1929. Prior to Oct. 1, 1948, staff gage at site 200 ft downstream at datum 2.16 ft higher. Oct. 1, 1948, to July 11, 1950, at present site at datum 1.32 ft higher than present datum.

Average discharge, --8 years (1948-56), 30.2 cfs (21,860 acre-ft per year).

Average discharge--8 years (1948-56), 30.2 cfs (21,800 acre-ft per year).  
Extremes--1948-56: Maximum discharge, 12,200 cfs July 9, 1950 (gage height, 13.22 ft, present datum), by slope-area measurement; minimum daily, 8.1 cfs Dec. 19, 1951.

Remarks.--Natural flow affected by irrigation development above station.

Monthly and yearly mean discharge, in cubic feet per second

Water Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	25.2	25.3	17.9	24.6	26.7	25.5	25.1	43.8	88.8	154	21.2	24.6	40.3
1952	23.5	28.0	19.0	23.0	24.9	22.9	22.4	22.1	19.4	47.0	18.2	17.4	24.0
1953	21.1	19.6	21.9	26.4	25.0	24.6	25.5	22.4	19.7	15.9	17.0	18.9	21.5
1954	21.1	24.0	25.7	22.1	26.9	22.6	23.4	29.6	20.9	18.4	32.2	20.5	24.0
1955	21.9	23.5	22.4	24.0	29.8	25.4	28.3	28.4	92.7	23.0	22.8	52.8	32.7
1956	23.1	23.1	23.1	22.4	25.7	23.6	23.3	23.7	21.0	25.9	19.9	18.7	22.8

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1,550	1,500	1,100	1,520	1,480	1,570	1,500	2,690	5,280	8,240	1,300	1,470	29,200
1952	1,450	1,670	1,170	1,410	1,430	1,410	1,330	1,360	1,160	2,690	1,120	1,040	17,440
1953	1,300	1,160	1,350	1,620	1,390	1,520	1,520	1,380	1,170	978	1,040	1,130	15,560
1954	1,300	1,430	1,580	1,360	1,490	1,390	1,390	1,820	1,250	1,130	1,080	1,220	17,340
1955	1,350	1,390	1,580	1,480	1,650	1,580	1,680	1,750	5,520	1,410	1,400	3,310	23,750
1956	1,420	1,370	1,420	1,380	1,480	1,450	1,390	1,460	1,250	1,590	1,220	1,110	16,540

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	36.2	26,230
1951	1210	2,530	July 11, 1951	13	-	29,200	40.5	29,340
1952	1240	2,660	July 14, 1952	8.1	24.0	17,440	23.4	16,960
1953	1280	53	June 7, 1953	12	21.5	15,560	22.2	16,060
1954	1340	375	Aug. 1, 1954	16	24.0	17,340	23.7	17,150
1955	1390	3,160	June 4, 1955	17	32.7	23,710	32.9	23,800
1956	1440	287	July 5, 1956	14	22.8	16,540	-	-

8520. Elm Creek at Amboy, Nebr.

Location.--Lat 40°05'20", long 98°26'07" (revised), in NE1/4 sec.3, T.1 N., R.10 W., on right bank 8 ft downstream from bridge on U. S. Highway 136 (formerly State Highway 3) at east edge of Amboy, 200 ft east of Chicago, Burlington & Quincy Railroad track, 2½ miles upstream from mouth, and 4½ miles east of Red Cloud.

Drainage area.--39.2 sq mi (revised).

Records available.--April 1948 to December 1953.

Gage.--Water-stage recorder. Datum of gage is 1,665.33 ft above mean sea level, datum of 1929. Prior to Feb. 10, 1949, staff gage at same site and Feb. 10, 1949, to July 16, 1952, wire-weight gage at upstream side of bridge, both at datum 1.00 ft higher.

Average discharge.--5 years (1948-53), 22.3 cfs (16,140 acre-ft per year)

Extremes.--1948-53: Maximum discharge observed, 3,860 cfs Sept. 20, 1950 (gage height, 9.45 ft, present datum); minimum daily, 11 cfs Aug. 24, 1949, Aug. 30, 1953.

Monthly and yearly mean discharge, in cubic feet per second

[illegible]

Monthly and yearly discharge, in acre-feet

[illegible]

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	-	15,960
1951	1210	1,950	July 14, 1951	14	26.2	18,980	22.0	18,890
1952	1240	1,060	July 14, 1952	12	19.6	14,240	26.1	14,080
1953	1280	964	June 8, 1953	11	17.5	12,660	19.4	12,920
1954	1280	-	-	-	-	-	17.8	-

## 8525. Courtland Canal at Nebraska-Kansas State line

Location.--Lat 40°00'15", long 98°07'55", in SW $\frac{1}{4}$ SE $\frac{1}{4}$  sec.32, T.1 N., R.7 W., on left bank a quarter of a mile upstream from Nebraska-Kansas State line and 3 $\frac{1}{2}$  miles southwest of Superior, Nebr.

Records available.--October 1954 to September 1960.

Gage.--Water-stage recorder and concrete Parshall flume. Datum of gage is 1,612.46 ft above mean sea level, datum of 1929.

Average discharge.--6 years (1954-60), 40.5 cfs (29,320 acre-ft per year).

Extremes.--1954-60: Maximum discharge, 738 cfs Oct. 22, 1957 (gage height, 4.57 ft); no flow for many days in each year.

Remarks.--Canal diverts from Republican River at Courtland Diversion Dam in sec.7, T.1 N., R.9 W. Water is used for irrigation in Nebraska and Kansas; figures published herein represent that portion which flows into Kansas.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952													
1953													
1954													
1955	0	0	0	0	0	0	0	12.9	26.7	44.4	104	43.5	†19.5
1956	0	0	0	0	0	0	0	39.3	52.7	76.0	117	45.9	27.7
1957	12.8			0	0	0	0	0	21.2	144	123	16.1	26.8
1958	464	.22	0	0	0	0	3.70	237	62.1	47.0	128	32.2	82.5
1959	2.90	0	0	0	0	0	0	10.1	40.6	187	195	75.6	43.1
1960	.81	0	0	0	0	0	0	0	26.1	193	231	62.5	43.2

† Corrected.

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952													
1953													
1954													
1955	0	0	0	0	0	0	0	793	1,590	2,730	6,420	2,590	14,120
1956	0	0	0	0	0	0	0	2,420	3,140	4,670	7,180	2,730	20,140
1957	789	0	0	0	0	0	0	0	1,260	8,870	7,560	958	19,440
1958	28,520	13	0	0	0	0	220	14,550	3,700	2,890	7,900	1,920	59,710
1959	179	0	0	0	0	0	0	622	2,420	11,510	11,990	4,500	31,220
1960	50	0	0	0	0	0	0	0	1,560	11,840	14,170	3,720	31,340

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950								
1951								
1952								
1953								
1954								
1955	1390	132	Aug. 10, 1955	0	†19.5	14,120	19.5	14,120
1956	1440	1175	Aug. 2, 1956	0	27.7	20,140	28.8	20,930
1957	1510	283	July 22, 1957	0	26.8	19,440	65.2	47,180
1958	1560	738	Oct. 22, 1957	0	82.5	59,710	43.3	31,360
1959	1630	255	July 18, 1959	0	43.1	31,220	42.9	31,090
1960	1710	537	Aug. 3, 1960	0	43.2	31,340	-	-

† Corrected.

a Maximum daily.



8530. Republican River near Guide Rock, Nebr.

Location.--Lat 40°04'05", long 98°22'25", in SW 1/4 sec. 7, T.1 N., R.9 W., on left bank 300 ft upstream from Willow Creek, a quarter of a mile downstream from Courtland diversion dam, and 2 miles southwest of Guide Rock.

Drainage area.--22,060 sq mi, approximately, of which a large area does not contribute directly to surface runoff.

Records available.--August 1950 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 1,624.13 ft above mean sea level, datum of 1929. Prior to Oct. 1, 1959, at datum 5.00 ft higher.

Average discharge.--10 years (1950-60), 484 cfs (350,400 acre-ft per year); median of yearly mean discharges, 410 cfs (297,000 acre-ft per year).

Extremes.--1950-60: Maximum discharge, 29,200 cfs June 16, 1957 (gage height, 15.73 ft); minimum daily, 6.5 cfs May 5, 1955.

Maximum flood known occurred June 1 or 2, 1935 (discharge, about 250,000 cfs, based on slope-area measurements near Bloomington and Hardy).

Remarks.--Natural flow affected by irrigation development above station, by regulation of upstream reservoirs, and since Nov. 14, 1952, by storage in Harlan County Reservoir (see p. 358).

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1950	-	-	-	-	-	-	-	-	-	-	-	840	-
1951	362	294	307	340	476	560	506	2,112	3,619	4,298	1,425	3,602	1,495
1952	633	656	503	588	948	1,077	1,120	1,355	273	909	136	41.8	685
1953	51.2	127	129	253	574	135	85.7	67.4	153	86.6	87.1	†103	151
1954	65.7	85.9	93.2	81.5	108	80.1	68.1	215	68.6	54.1	126	75.3	91.8
1955	75.1	64.0	66.5	60.8	165	118	65.2	88.9	659	87.6	94.8	361	157
1956	81.0	78.3	68.6	79.1	90.2	98.3	75.6	32.0	103	175	84.4	83.0	87.4
1957	53.0	56.0	65.2	43.9	101	96.5	111	302	2,061	2,508	328	184	494
1958	45.3	129	244	251	392	844	1,416	546	655	497	1,002	359	532
1959	358	212	372	416	651	527	674	748	578	255	85.3	137	416
1960	110	91.8	96.1	78.6	134	385	2,484	2,511	1,846	924	108	62.5	735

† Corrected.

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1950	-	-	-	-	-	-	-	-	-	-	-	49,990	-
1951	22,280	17,470	18,860	20,890	26,430	34,450	30,080	129,900	215,400	264,300	87,650	214,400	1,082,000
1952	38,950	37,840	30,950	36,130	54,530	66,210	66,620	83,290	16,220	55,910	8,380	2,490	497,500
1953	3,150	7,580	7,930	15,570	31,850	8,310	5,100	4,140	9,130	5,330	5,360	6,120	109,600
1954	4,040	5,110	5,730	3,780	6,030	4,930	4,050	13,240	4,080	3,330	7,760	4,360	66,440
1955	4,620	3,810	4,090	3,740	9,180	7,280	3,880	5,470	39,240	5,390	5,830	21,490	114,000
1956	4,980	4,660	4,220	4,860	5,190	6,040	4,500	1,970	6,140	10,750	5,190	4,940	63,440
1957	3,260	3,530	4,010	2,700	5,590	5,930	6,580	18,560	22,650	154,210	20,200	10,980	358,000
1958	2,780	7,700	14,990	15,440	21,790	51,920	84,250	33,550	38,830	30,580	61,620	21,350	384,800
1959	22,020	12,600	22,890	25,590	36,170	32,430	40,100	45,970	34,470	15,680	5,120	8,170	301,200
1960	6,760	5,460	5,910	4,840	7,720	23,660	147,800	154,400	109,800	56,910	8,630	3,720	553,500

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	1210	-	-	-	-	-	-	-
1951	1210	14,500	May 22, 1951	99	1,495	1,082,000	1,562	1,131,000
1952	1240	7,980	July 14, 1952	15	685	497,500	563	408,400
1953	1280	2,720	June 8, 1953	14	151	109,600	146	105,800
1954	1340	3,010	May 23, 1954	8.3	91.8	66,440	88.5	64,080
1955	1390	10,200	June 5, 1955	6.5	157	114,000	159	115,400
1956	1440	2,700	July 5, 1956	-	87.4	63,440	82.9	60,180
1957	1510	29,200	June 16, 1957	11	494	358,000	515	372,900
1958	1560	3,020	Aug. 17, 1958	13	532	384,800	576	416,800
1959	1630	5,560	July 4, 1959	15	416	301,200	362	261,800
1960	1710	5,640	June 23, 1960	13	735	533,500	-	-

8535. Republican River near Hardy, Nebr.

Location.--Lat 40°00', long 97°56', in sec.6, T.1 S., R.5 W., in Kansas, on downstream side of right pier of highway bridge,  $1\frac{1}{4}$  miles southwest of Hardy and at mile 145.1.

Drainage area.--22,400 sq mi, approximately, of which a large area does not contribute directly to surface runoff.

Records available.--June 1904 to September 1915 (no winter records), April 1931 to September 1960. Prior to May 1932, published as "at Bostwick." Records for June 1896 to November 1903 published as "near Superior" in 18th to 22nd Ann. Repts., inclusive, Pt. 4, and WSP 75, 84, and 99, have been found to be unreliable and should not be used.

Gage.--Water-stage recorder. Datum of gage is 1,501.46 ft above mean sea level, datum of 1929. Prior to May 19, 1932, chain gages at site at Bostwick 20 miles upstream at different datum.

Average discharge.--29 years (1913-14, 1932-60), 744 cfs (538,600 acre-ft per year).

Extremes.--1904-15, 1931-60: Maximum discharge, about 225,000 cfs June 2, 1935 (gage height, 19.4 ft), based on records for stations upstream; no flow Aug. 9-19, 1934. Maximum stages since at least 1895, that of June 2, 1935, and 17.00 ft June 24, 1947 (discharge, 100,000 cfs, based on records for upstream stations).

Remarks.--Natural flow affected by irrigation development above station and by storage in Bonny, Enders, and Harlan County Reservoirs, and by Harry Strunk and Swanson Lakes. Records of chemical analyses for the periods October 1950 to September 1951 and August 1956 to September 1957 and water temperatures for the period August 1956 to September 1957 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	571	336	334	358	529	642	650	2,024	4,548	4,884	1,630	3,805	1,695
1952	797	667	558	628	998	1,148	1,367	1,580	539	1,159	191	80.1	810
1953	59.9	158	138	278	659	171	126	114	360	115	97.4	162	199
1954	88.6	120	124	64.9	126	95.2	89.5	295	113	57.0	161	76.3	118
1955	71.5	72.6	90.1	81.5	163	144	83.6	88.3	744	105	91.1	476	183
1956	116	93.1	76.3	80.0	103	129	87.5	48.2	183	275	97.8	80.8	114
1957	54.8	63.4	67.4	51.8	103	105	124	370	2,522	2,474	437	245	553
1958	80.5	143	243	248	354	851	1,442	615	720	648	1,135	748	603
1959	396	225	373	445	658	553	663	1,117	658	398	136	180	483
1960	164	119	125	91.9	177	664	2,415	2,523	2,031	1,005	180	114	800

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	35,140	20,020	20,560	21,990	29,370	39,490	38,660	124,400	270,600	300,300	100,200	226,400	1,227,000
1952	49,020	39,660	34,310	38,640	57,390	70,600	81,360	97,150	32,070	71,270	11,760	4,770	588,000
1953	5,680	9,410	8,480	17,080	36,600	10,540	7,480	7,040	21,410	7,070	5,990	9,860	144,400
1954	5,450	7,130	7,590	3,990	7,000	5,850	5,330	18,130	6,740	5,500	9,820	4,540	85,170
1955	4,390	4,320	5,540	5,010	9,050	8,850	4,980	5,430	44,260	6,440	5,600	28,320	132,200
1956	7,160	5,540	4,690	4,920	5,900	7,940	5,200	2,970	10,880	16,920	6,010	4,810	82,940
1957	3,370	3,770	4,150	3,190	5,740	6,470	7,360	22,760	50,000	52,100	26,870	14,600	400,400
1958	4,950	8,520	14,970	15,270	19,630	52,330	85,810	37,830	42,830	39,850	69,810	44,480	436,300
1959	24,330	13,400	22,910	27,350	36,520	33,990	39,460	68,670	39,120	24,470	8,390	10,740	349,400
1960	10,080	7,070	7,700	5,650	10,200	40,830	43,700	155,100	20,900	61,770	11,070	6,790	580,900

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	909	658,100	
1951	1210	18,600	June 2, 1951	120	1,695	1,227,000	1,766	1,278,000	
1952	1240	10,700	July 15, 1952	37	810	588,000	670	496,600	
1953	1280	6,380	June 8, 1953	24	199	144,400	198	143,000	
1954	1340	2,190	May 24, 1954	17	118	85,170	109	79,250	
1955	1390	8,400	June 6, 1955	13	183	132,200	187	135,300	
1956	1440	2,710	July 6, 1956	27	114	82,940	106	76,840	
1957	1510	38,900	June 17, 1957	32	553	400,400	577	417,500	
1958	1560	6,960	Sept. 6, 1958	54	603	436,300	647	468,500	
1959	1630	5,410	July 5, 1959	66	483	349,400	433	315,600	
1960	1710	8,070	Mar. 28, 1960	58	800	580,900	-	-	

## 8538. White Rock Creek near Burr Oak, Kans.

Location.--Lat 39°53'55", long 98°15'05", in NE $\frac{1}{4}$  sec.7, T.2 S., R.8 W., on right bank 500 ft upstream from highway bridge,  $\frac{3}{4}$  miles northeast of Burr Oak, and 39 miles upstream from mouth.

Drainage area.--224 sq mi.

Records available.--October 1957 to September 1960.

Gage.--Water-stage recorder and concrete control. Datum of gage is 1,601.5 ft above mean sea level (levels by Bureau of Reclamation).

Extremes.--1957-60: Maximum discharge, 2,280 cfs Mar. 27, 1960 (gage height, 16.93 ft); no flow at times in 1957-59.

Maximum stage known since at least 1869, 32.6 ft July 9, 1950, from floodmark 300 ft downstream and information by local resident.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1958	0.006	0.134	0.36	0.47	1.03	3.85	10.6	5.32	3.33	84.9	36.5	30.3	14.9
1959	.020	.120	.38	.64	16.0	4.30	1.29	101	12.1	14.7	.007	15.9	13.9
1960	66.7	.41	.62	.99	5.18	123	71.2	51.3	177	6.97	38.1	1.65	45.3

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1958	0.4	8.0	22	29	57	236	630	327	198	5,220	250	1,800	10,780
1959	1.2	7.1	24	39	888	264	77	6,190	720	903	.4	944	10,060
1960	4,100	24	38	61	298	7,560	4,240	3,150	10,530	429	340	98	32,870

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1958	1560	1,190	July 18, 1958	0	14.9	10,780	14.9	10,780
1959	1630	1,230	May 4, 1959	0	13.9	10,060	19.6	14,190
1960	1710	2,280	Mar. 27, 1960	.03	45.3	32,870	-	-

## 8539. Lovewell Reservoir near Lovewell, Kans.

Location.--Lat 39°54', long 98°02', in SE $\frac{1}{4}$  sec.6, T.2 S., R.6 W., at north end of Lovewell Dam on White Rock Creek, 3 miles northwest of Lovewell and 20 miles upstream from mouth.

Drainage area.--342 sq mi.

Records available.--May 1957 to September 1960. Monthly records only for May to September 1957.

Gage.--Water-stage recorder. Datum of gage is at mean sea level (levels by Bureau of Reclamation). Prior to June 15, 1960, water-stage recorder at south end of dam at same datum.

Extremes.--1957-60: Maximum elevation, 1,586.42 ft June 24, 1960 (contents, 54,220 acre-ft); minimum since irrigation pool was first filled, 1,563.70 ft Oct. 1, 2, 1957.

Remarks.--Reservoir is formed by earthfill dam. Closure was made May 29, 1957. Total capacity of 186,290 acre-ft consists of the following: dead storage, 5,050 acre-ft below elevation 1,562.07 ft; irrigation pool, 36,640 acre-ft between elevations 1,562.07 and 1,582.6 ft; flood control pool, 50,460 acre-ft between elevations 1,582.6 and 1,595.3 ft; surcharge, 94,140 acre-ft between elevations 1,595.3 and 1,610.3 ft. Storage in reservoir is derived from White Rock Creek and from diversion from Republican River through upper Courtland Canal. Releases are made into White Rock Creek and for irrigation into lower Courtland Canal. Figures given herein represent total contents.

Contents, in acre-feet, on last day of month

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1957	-	-	-	-	-	-	-	0	13,540	6,090	6,440	6,350
1958	28,920	28,410	28,040	27,810	28,130	28,550	29,600	41,930	41,300	47,280	45,920	41,480
1959	40,710	39,920	39,750	39,690	40,500	41,590	41,390	44,440	40,620	32,850	20,280	21,750
1960	28,920	27,610	27,650	28,110	27,410	41,100	41,360	43,140	50,580	33,250	29,960	28,290

8540. White Rock Creek at Lovewell, Kans.

Location.--Lat 39°53'10", long 96°01'20" in NW¼ sec.17, T.2 S., R.6 W., on right bank 1,400 ft east of Lovewell Dam, 2.5 miles northwest of Lovewell, and 19.5 miles upstream from mouth.

Drainage area.--342 sq mi; at site prior to June 15, 1960, 358 sq mi.

Records available.--October 1945 to September 1960. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder and concrete control. Datum of gage is 1,531.52 ft above mean sea level (Bureau of Reclamation bench mark) May 21, 1946, to Sept. 13, 1947, wire-weight gage and Sept. 14, 1947, to Apr. 23, 1951, water-stage recorder, at site 3 miles downstream at datum 1,513.95 ft above mean sea level, datum of 1929 (Corps of Engineers bench mark). Apr. 24, 1951, to Nov. 8, 1952, wire-weight gage and Nov. 9, 1952, to June 14, 1960, water-stage recorder, at site 2 miles downstream at datum 1,519.53 ft above mean sea level, datum of 1929.

Average discharge.--15 years (1945-60), 56.3 cfs (40,760 acre-ft per year).

Extremes.--1945-60; Maximum discharge, 23,300 cfs July 10, 1950 [gage height, 21.62 ft, site and datum then in use], from rating curve extended above 5,200 cfs on basis of logarithmic plotting and discharge measurement of 20,800 cfs made at site 6 miles upstream; no flow at times in 1948, 1953-60.

Remarks.--Flow regulated by Lovewell Reservoir beginning May 29, 1957 (see preceding page). Diversions above station for irrigation. Records of suspended sediment loads and water temperatures for the period February 1950 to September 1953 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	18.2	12.9	9.7	8.6	23.4	51.6	78.4	139	856	610	154	165	191
1952	50.9	27.5	24.2	22.6	22.3	57.4	108	95.3	65.7	23.5	6.10	4.62	42.4
1953	4.67	8.77	8.24	9.76	9.91	8.11	8.00	29.6	74.5	.14	2.10	72.9	19.6
1954	13.5	8.53	24.5	1.12	4.10	2.50	3.68	194	82.5	1.69	22.9	8.34	30.9
1955	25.6	.56	1.26	1.36	79.7	3.75	1.20	1.43	307	11.9	.15	45.5	39.1
1956	.70	0	0	0	8.19	.28	1.78	1.61	325	219	5.53	1.51	46.8
1957	.16	.31	.01	0	0	5.51	23.1	142	297	118	19.8	14.9	51.6
1958	0	0	0	.10	.10	.74	.56	.53	.72	3.60	2.59	205	17.6
1959	1.90	.09	.46	.10	5.11	1.52	1.25	152	55.9	.43	.15	.36	18.5
1960	2.09	.10	.12	.09	28.8	29.5	155	56.8	81.6	101	26.8	45.8	43.7

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	11,170	770	595	530	1,300	3,170	4,670	8,570	50,920	37,540	9,440	9,810	138,500
1952	3,130	1,640	1,490	1,390	1,280	3,530	6,420	5,860	3,910	1,440	375	275	30,740
1953	287	522	506	600	550	499	476	1,820	4,430	8.7	129	4,340	14,170
1954	851	508	1,510	69	228	154	219	11,950	4,910	104	1,410	496	22,370
1955	1,570	33	77	84	4,430	230	71	88	18,280	734	9.5	2,710	28,520
1956	43	0	0	0	471	17	108	99	19,360	13,460	340	90	33,990
1957	10	19	.4	0	0	204	1,370	8,760	17,690	7,230	1,210	888	37,370
1958	0	0	0	0	5.6	45	39	33	43	222	159	12,190	12,740
1959	117	5.4	28	6.1	284	93	74	9,380	3,330	27	9.3	21	13,370
1960	128	6.1	7.3	5.6	1,650	1,810	9,200	3,490	4,850	6,220	1,650	2,720	31,740

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	138	99,620
1951	1210	9,800	June 7, 1951	4	191	138,500	183	132,200
1952	1240	1,790	June 27, 1952	3.7	42.4	30,740	35.5	25,800
1953	1280	1,460	May 27, 1953	0	19.6	14,170	21.7	15,700
1954	1340	2,630	May 31, 1954	0	30.9	22,370	29.3	21,200
1955	1390	4,330	June 19, 1955	0	39.1	28,520	36.8	26,680
1956	1440	5,660	June 23, 1956	0	46.8	33,990	46.8	33,970
1957	1510	1,160	May 16, 1957	0	51.6	37,370	51.6	37,340
1958	1560	2,650	Sept. 4, 1958	0	17.6	12,740	17.8	12,890
1959	1630	631	June 2, 1959	0	18.5	13,370	18.5	13,370
1960	1710	780	Apr. 12, 1960	0	43.7	31,740	-	-

## 8545. Republican River at Scandia, Kans.

Location.--Lat 39°48'00", long 97°47'20", on north line of sec.17, T.3 S., R.4 W., at downstream side of bridge on U. S. Highway 36 at Scandia, 4 miles downstream from Dry Creek and at mile 125.2.

Drainage area.--22,930 sq mi, approximately, of which a large area does not contribute directly to surface runoff.

Records available.--August 1919 to September 1925, August 1928 to September 1944, October 1950 to September 1960. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 1,422.91 ft above mean sea level, datum of 1929 (levels by Corps of Engineers). Prior to Mar. 31, 1938, staff, chain, or wire-weight gages at site 700 ft downstream at same datum. Mar. 31, 1938, to Apr. 29, 1952, wire-weight gage at present site and datum.

Average discharge.--32 years (1919-25, 1928-44, 1950-60), 767 cfs (555,300 acre-ft per year).

Extremes.--1919-25, 1928-44, 1950-60: Maximum discharge, 215,000 cfs June 2, 1935 (gage height, 17.8 ft, from floodmarks), from rating curve extended above 30,000 cfs on basis of velocity-area studies; no flow Aug. 9-21, 1934.

Maximum stages known since at least 1895 are those of June 2, 1935; 15.0 ft June 24, 1947 (discharge, 78,500 cfs, from indirect measurement of peak flow); and 14.2 ft June 20, 1915 (from floodmark).

Remarks.--Natural flow affected by irrigation development above station and by storage in five reservoirs in Colorado and Nebraska, and in Kansas, Lovewell Reservoir (see p. 367). Records of chemical analyses for the period October 1957 to September 1958 and water temperatures for the period October 1957 to September 1958, are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	896	360	354	402	571	739	725	2,459	5,739	5,158	2,686	5,888	2,002
1952	809	735	590	653	1,012	1,160	1,347	1,585	702	1,027	199	84.9	825
1953	53.7	149	141	298	723	185	115	186	416	102	92.5	209	218
1954	73.7	133	167	66.9	137	95.9	87.8	526	352	57.4	198	85.8	165
1955	91.1	78.2	92.3	87.8	258	143	82.1	80.0	1,125	147	87.4	542	232
1956	125	90.8	74.0	79.7	113	132	90.8	55.2	697	608	119	87.4	189
1957	57.2	66.1	68.7	58.0	113	121	208	638	2,842	2,869	551	295	643
1958	93.8	159	242	247	338	913	1,402	647	725	781	1,083	1,393	669
1959	419	238	378	438	741	587	636	1,426	798	456	185	194	540
1960	262	140	134	96.4	269	951	2,575	2,716	2,296	1,236	263	231	930

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	55,080	21,390	21,780	24,700	31,690	45,450	43,130	151,200	341,500	378,600	103,700	231,400	1,450,000
1952	49,750	43,740	36,280	40,130	58,190	71,350	80,150	97,450	41,760	63,160	12,220	5,050	599,200
1953	3,300	8,840	8,690	18,350	40,180	11,360	6,840	11,440	24,730	6,240	5,690	12,420	158,100
1954	4,530	7,910	10,240	4,110	7,610	5,890	5,220	32,330	20,930	3,530	12,160	5,110	119,600
1955	5,600	4,650	5,680	5,400	14,300	8,790	4,890	4,920	66,970	9,020	5,370	32,260	167,800
1956	7,700	5,400	4,550	4,900	6,530	8,120	5,400	3,390	41,450	37,390	7,330	5,200	137,400
1957	3,520	3,930	4,220	3,570	6,280	7,450	12,010	39,230	157,100	176,400	33,900	17,540	465,200
1958	5,770	9,470	14,870	15,170	18,750	56,140	83,450	39,800	43,140	48,010	66,610	82,910	484,100
1959	25,740	14,130	23,220	26,920	41,160	36,110	37,820	87,680	47,470	28,010	11,380	11,510	391,200
1960	16,110	8,300	8,250	5,920	15,490	58,450	153,200	167,000	136,600	75,990	16,160	13,730	675,200

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950								
1951	1210	38,100	July 11, 1951	120	2,002	1,450,000	2,046	1,481,000
1952	1240	8,920	July 15, 1952	45	825	599,200	875	490,300
1953	1280	7,720	June 8, 1953	18	218	158,100	221	159,900
1954	1340	4,800	June 9, 1954	23	165	119,600	156	112,800
1955	1390	8,800	June 6, 1955	21	232	167,800	234	169,600
1956	1440	8,950	June 22, 1956	37	189	137,400	181	131,400
1957	1510	22,000	June 18, 1957	30	643	465,200	668	483,600
1958	1560	19,100	Sept. 5, 1958	61	669	484,100	714	517,100
1959	1630	5,540	July 5, 1959	78	540	391,200	498	360,700
1960	1710	9,750	Mar. 27, 1960	60	930	675,200	-	-

## 8558. Buffalo Creek near Jamestown, Kans.

Location.--Lat 39°37'00", long 97°51'20", on west line of sec.14, T.5 S., R.5 W., at downstream side of highway bridge, 1.1 miles north of Jamestown and 21 miles upstream from mouth.

Drainage area.--330 sq mi, approximately.

Records available.--July 1959 to September 1960.

Gage.--Water-stage recorder. Altitude of gage is 1,400 ft (from topographic map).

Extremes.--1959-60: Maximum discharge, 4,800 cfs Mar. 27, 1960; no flow at times in 1959. Flood in 1948 reached a stage of about 18.5 ft, the highest since at least 1898, from information by local resident.

Remarks.--Some diversions above station for irrigation.

Monthly and yearly mean discharge, in cubic feet per second, of Buffalo Creek near Jamestown, Kans.

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1959	-	-	-	-	-	-	-	-	-	2.41	0	0	-
1960	59.2	4.85	0.63	0.64	75.4	415	170	34.0	71.6	9.16	69.9	6.67	76.6

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1959	-	-	-	-	-	-	-	-	-	148	0	0	-
1960	3,640	288	38	39	4,340	25,500	10,140	2,090	4,260	563	4,300	397	55,600

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1959	1630	-	-	-	-	-	-	-	-
1960	1710	4,900	Mar. 27, 1960	0	76.6	55,600	-	-	-

8560. Republican River at Concordia, Kans.

Location.--Lat 39°35'30", long 97°39'30", near center of sec.28, T.5 S., R.3 W., near center of stream on downstream side of bridge on U. S. Highway 81, 1 mile north of Concordia, 3.4 miles downstream from Buffalo Creek, and at mile 102.4.

Drainage area.--23,540 sq mi, approximately, of which a large part is probably noncontributing.

Records available.--October 1945 to September 1960. Monthly discharge only for some periods, published in WSP 1310. Gage-height records collected at nearby sites since 1931 are contained in reports of U. S. Weather Bureau.

Gage.--Water-stage recorder. Datum of gage is 1,333.62 ft above mean sea level, datum of 1929. Prior to Oct. 8, 1947, wire-weight gage at same site and datum.

Average discharge.--15 years (1945-60), 904 cfs (654,500 acre-ft per year).

Extremes.--1945-60: Maximum discharge, 75,000 cfs June 25, 1947 (gage height, 14.90 ft); minimum, 8.0 cfs Sept. 2, 3, 1953.

Maximum stages known since at least 1895 are those of June 2, 1935, about 18 ft, from information furnished by U. S. Weather Bureau, present site and datum (discharge, about 207,000 cfs, on basis of records for stations upstream); that of June 25, 1947; and about 60,000 cfs June 21, 1915 (14.1 ft, from information by U. S. Weather Bureau, present site and datum).

Remarks.--Natural flow affected by irrigation development above station and by storage in six reservoirs in Colorado, Nebraska, and Kansas.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1,354	587	383	415	578	935	1,047	2,796	7,019	9,062	2,043	4,143	2,339
1952	950	784	631	685	1,026	1,253	1,824	1,723	724	991	2,430	88.5	909
1953	48.2	159	149	244	750	228	146	285	459	108	78.3	230	236
1954	65.9	137	187	67.1	138	96.0	81.1	584	458	42.6	207	90.2	180
1955	61.2	63.8	74.1	67.2	235	161	92.0	73.0	1,132	140	52.2	393	211
1956	156	79.8	65.0	75.7	104	115	87.4	49.5	628	619	93.6	56.8	176
1957	37.3	59.4	58.5	37.8	82.2	113	206	915	2,782	560	505	342	651
1958	107	158	237	231	329	919	1,397	875	684	901	1,132	1,960	744
1959	447	253	343	398	701	633	635	1,601	771	504	205	208	558
1960	319	153	126	80.5	327	1,448	2,785	2,810	2,416	1,313	403	245	1,035

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	83,260	23,010	23,570	25,500	32,120	57,470	62,300	171,900	417,700	424,700	125,600	246,500	1,694,000
1952	58,450	46,670	38,820	42,110	59,000	77,080	108,600	106,900	43,070	60,920	14,150	5,260	660,000
1953	2,960	9,450	9,170	14,960	41,670	14,010	8,710	17,540	27,500	6,490	4,810	13,680	170,800
1954	4,050	8,150	11,480	4,130	7,640	5,900	4,850	35,890	27,280	2,620	12,710	5,370	130,000
1955	4,990	3,800	4,550	4,150	13,040	9,900	5,470	4,490	67,350	8,580	3,210	23,410	152,900
1956	8,340	4,750	3,990	4,650	5,970	7,060	5,200	3,060	37,360	38,060	5,760	3,380	127,600
1957	2,290	3,530	3,600	2,320	4,570	6,950	12,280	56,280	165,500	63,000	31,060	20,340	471,700
1958	6,580	9,420	14,600	14,190	18,270	56,540	83,110	53,830	40,680	55,420	69,630	116,700	539,000
1959	27,490	15,030	21,110	24,480	38,940	38,910	37,780	98,420	45,870	30,980	12,580	21,390	404,000
1960	19,620	9,080	7,740	4,950	18,800	89,020	165,700	172,800	143,800	80,760	24,780	14,570	751,600

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	1,395	-	1,003,000
1951	1210	33,600	July 13, 1951	150	2,339	1,694,000	2,359	-	1,708,000
1952	1240	7,020	July 15, 1952	44	909	660,000	741	-	537,600
1953	1280	5,860	June 8, 1953	10	236	170,800	239	-	172,900
1954	1340	3,780	May 31, 1954	18	180	130,000	165	-	119,700
1955	1590	7,550	June 6, 1955	21	211	152,900	216	-	156,700
1956	1440	6,220	June 23, 1956	24	176	127,600	185	-	119,800
1957	1510	24,000	June 18, 1957	13	651	471,700	681	-	432,900
1958	1560	16,400	Sept. 6, 1958	81	744	539,000	790	-	572,000
1959	1630	5,430	May 7, 1959	124	558	404,000	520	-	385,800
1960	1710	13,800	Mar. 28, 1960	45	1,035	751,600	-	-	-

8566. Republican River at Clay Center, Kans.

Location.--Lat 39°21', long 97°08', in SW $\frac{1}{4}$  sec.17, T.8 S., R.3 E., on downstream side of center pier of bridge on State Highway 15, 1 mile south of Clay Center, 4 miles downstream from Five Creeks, and at mile 42.1.

Drainage area.--24,570 sq mi, approximately, of which a large area is noncontributing.

Records available.--June 1917 to September 1960. Monthly discharge only for some periods, published in WSP 1310. Prior to February 1934, published as "at Wakefield." Gage-height records collected in this vicinity August 1904 to October 1917 are contained in reports of U. S. Weather Bureau.

Gage.--Water-stage recorder. Datum of gage is 1,159.21 ft above mean sea level, datum of 1929. June 21, 1917, to Feb. 14, 1934, chain gage at Wakefield, 15 $\frac{1}{2}$  miles downstream at datum 39.88 ft lower. Feb. 8, 1934, to June 2, 1935, water-stage recorder, June 3, 1935, to May 7, 1936, chain gage, May 8, 1936, to Jan. 18, 1949, water-stage recorder, and Jan. 19 to Sept. 22, 1949, wire-weight gage, all at present site and datum.

Average discharge.--43 years (1917-60), 1,087 cfs (787,000 acre-ft per year).

Extremes.--1917-60: Maximum discharge, 195,000 cfs June 3, 1935 (gage height, 25.74 ft, from floodmarks), from rating curve extended above 61,000 cfs on basis of velocity-area studies; no flow for part of Aug. 10, 1934; minimum daily, 1 cfs Aug. 9-11, 1934.

Maximum stages known since at least 1895 are those of June 3, 1935, and 26.2 ft June 21, 1915, from information furnished by U. S. Weather Bureau, site and datum then in use; 24.8 ft May 29, 1903, from information furnished by U. S. Weather Bureau, at site and datum then in use.

Remarks.--Natural flow affected by irrigation development above station and by storage in six reservoirs in Colorado, Nebraska, and Kansas. Records of suspended sediment loads and water temperatures for the period October 1957 to September 1960 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	2,723	548	449	467	604	996	1,459	5,125	10,610	11,540	2,585	4,920	3,346
1952	1,197	1,079	873	739	1,063	1,488	2,603	2,004	881	1,073	272	148	1,118
1953	69.9	162	168	222	743	339	189	588	657	251	90.3	190	302
1954	61.5	142	243	76.4	161	118	92.1	527	791	42.5	569	110	245
1955	76.7	66.2	71.7	789	214	204	115	55.7	1,200	180	34.0	378	221
1956	216	92.3	63.1	83.5	111	153	112	52.7	668	762	81.3	22.3	202
1957	16.1	47.8	50.4	28.0	78.5	113	308	1,066	2,576	2,856	626	436	687
1958	163	177	244	235	352	987	1,449	1,523	944	1,532	1,279	4,791	1,138
1959	639	365	361	412	741	815	708	2,460	957	625	249	306	721
1960	743	247	195	317	515	2,477	3,332	3,428	2,950	1,726	562	471	1,415

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	167,400	32,580	27,620	28,700	33,520	61,250	86,840	192,200	631,100	709,800	158,900	292,800	2,423,000
1952	73,630	64,200	53,670	45,420	61,120	91,480	154,900	123,200	52,410	65,950	16,720	8,810	811,500
1953	4,300	9,630	10,310	13,650	41,290	20,850	11,240	36,160	39,070	15,420	5,550	11,320	218,800
1954	3,780	8,430	14,950	4,700	8,930	7,260	5,480	32,380	47,070	2,610	34,960	6,540	177,100
1955	4,720	3,940	4,410	4,850	11,880	12,540	6,830	3,430	71,400	11,060	2,090	22,520	159,700
1956	13,300	5,490	3,880	5,130	6,390	9,410	6,630	3,240	39,770	46,830	5,000	1,330	146,400
1957	989	2,840	3,100	1,720	4,360	7,320	18,310	65,560	153,300	175,600	38,470	25,950	497,500
1958	10,050	10,560	15,010	14,470	19,560	60,680	86,250	95,630	56,140	94,180	78,640	285,100	824,300
1959	39,280	21,730	22,180	25,310	41,160	50,080	42,120	151,300	56,970	38,450	15,300	18,230	522,100
1960	45,690	14,700	11,970	19,510	29,630	152,300	198,300	210,800	175,600	106,100	34,560	28,020	1,027,000

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	1,836	1,329,000
1951	1210	51,500	July 12, 1951	170	3,346	2,423,000	3,297	2,387,000
1952	1240	6,630	Apr. 13, 1952	73	1,118	811,500	887	644,200
1953	1280	6,540	May 28, 1953	24	302	218,800	306	221,700
1954	1340	5,000	June 1, 1954	21	245	177,100	225	163,000
1955	1390	5,990	June 21, 1955	18	221	159,700	234	169,300
1956	1440	4,260	June 24, 1956	8.0	202	146,400	180	130,400
1957	1510	17,000	June 20, 1957	3.8	687	497,500	727	526,200
1958	1560	55,900	Sept. 5, 1958	85	1,138	824,300	1,204	871,800
1959	1630	9,640	May 6, 1959	114	721	522,100	706	511,300
1960	1710	25,300	Mar. 28, 1960	70	1,415	1,027,000	-	-

## 8570. Republican River at Milford, Kans.

Location.--Lat 39°09'53", long 96°54'56", in SW $\frac{1}{4}$  sec.19, T.10 S., R.5 E., near right bank on downstream side of pier of highway bridge at southwest city limits of Milford, at mile 18.6.

Drainage area.--24,900 sq mi, approximately, of which a large area is noncontributing.

Records available.--April 1895 to October 1905, October 1950 to September 1960. Monthly discharge only for some periods, published in WSP 1310. Published as "at Junction" or "at Junction City" 1895-1905.

Gage.--Water-stage recorder. Datum of gage is 1,093.60 ft above mean sea level, datum of 1929. Apr. 26, 1895, to Oct. 31, 1905, staff or chain gages 14.4 miles downstream at Junction City at datum 38.92 ft lower. Nov. 14, 1950, to Dec. 18, 1951, wire-weight gage at present site and datum.

Average discharge.--20 years (1895-1905, 1950-60), 1,233 cfs (892,700 acre-ft per year).

Extremes.--1895-1905, 1950-60: Maximum discharge, 115,000 cfs May 29, 1903 (gage height, 19.6 ft, from floodmark, site and datum then in use), from rating curve extended above 28,000 cfs on basis of records for upstream stations; minimum, 9.0 cfs Oct. 12, 1956. Maximum stage known since at least 1869, 25.18 ft June 3, 1935, from floodmark, present site and datum (discharge, about 171,000 cfs, on basis of records for upstream stations).

Remarks.--Natural flow affected by irrigation development above station and by storage in six reservoirs in Colorado, Nebraska, and Kansas. Records of chemical analyses and water temperatures for the period October 1955 to September 1958 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	5,548	600	503	517	669	1,115	1,485	5,436	11,440	13,700	2,895	6,280	3,863
1952	1,478	1,116	936	800	1,211	1,590	2,985	2,253	942	1,174	331	169	1,248
1953	112	198	189	222	729	389	219	586	593	287	105	172	514
1954	78.5	155	273	83.0	187	131	109	521	1,089	97.5	648	127	292
1955	97.9	84.7	82.9	106	285	214	125	101	1,288	180	35.9	357	244
1956	328	96.4	69.9	84.5	128	182	122	71.6	770	749	115	25.7	227
1957	21.0	53.9	53.4	34.2	84.1	129	358	1,134	2,553	2,357	611	504	709
1958	183	227	253	375	961	1,385	1,591	1,080	1,874	1,252	5,779		1,258
1959	760	417	386	440	788	875	777	2,455	974	674	342	424	777
1960	963	300	219	435	710	2,850	3,502	3,635	3,166	1,833	591	514	1,561

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	218,200	35,710	30,950	31,800	37,170	68,550	88,340	211,300	680,400	842,300	178,000	373,700	2,796,000
1952	90,880	66,410	57,560	49,190	69,670	97,770	177,600	138,500	56,050	72,210	20,340	10,080	906,200
1953	6,870	11,780	11,610	13,630	40,510	23,930	13,050	36,040	35,260	17,660	6,440	10,220	227,000
1954	4,830	9,210	16,620	5,100	10,400	8,080	6,510	32,050	64,820	6,000	39,850	7,570	211,200
1955	6,020	5,040	5,100	6,520	15,810	13,170	7,440	6,190	76,650	11,080	2,210	21,220	176,400
1956	20,150	5,730	4,300	5,190	7,350	9,940	7,260	4,410	45,800	46,040	7,070	1,530	164,800
1957	1,290	3,210	3,280	2,100	4,670	7,940	21,110	68,500	51,900	181,800	37,580	29,990	513,400
1958	11,270	10,520	13,960	15,570	20,840	59,110	82,420	97,840	63,040	115,200	76,970	43,900	910,600
1959	46,730	24,800	23,720	27,050	43,770	53,820	46,220	50,900	57,930	41,420	21,030	25,240	562,600
1960	59,200	17,840	13,470	26,740	40,820	175,200	208,400	223,500	188,400	112,700	36,320	30,600	1,133,000

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950									
1951	1210	62,900	July 12, 1951	230	3,863	2,796,000	3,766	2,726,000	
1952	1240	8,150	Apr. 13, 1952	108	1,248	906,200	994	721,600	
1953	1280	6,080	May 28, 1953	42	514	227,000	314	227,600	
1954	1340	8,870	June 2, 1954	30	292	211,200	271	196,500	
1955	1390	6,800	June 21, 1955	20	244	176,400	263	190,400	
1956	1440	6,100	June 5, 1956	14	227	164,800	196	142,400	
1957	1510	15,300	Sept. 21, 1957	9.0	709	513,400	748	541,500	
1958	1560	43,900	Sept. 6, 1958	120	1,258	910,600	1,340	870,100	
1959	1630	9,530	May 6, 1959	170	777	562,600	771	557,900	
1960	1710	22,500	Mar. 28, 1960	85	1,561	1,133,000	-	-	



## 8580. Rose Creek near Wallace, Kans.

Location.--Lat 38°53', long 101°38', in NE $\frac{1}{4}$  sec.34, T.13 S., R.39 W., on right bank at downstream side of highway bridge, 1 mile upstream from mouth and 2 $\frac{1}{2}$  miles southwest of Wallace.

Drainage area.--28.5 sq mi.

Records available.--April 1946 to September 1953, water years 1957-60 (annual maximum).

Gage.--Water-stage recorder. Datum of gage is 3,296.11 ft above mean sea level, datum of 1929. Prior to July 11, 1947, wire-weight gage at same site and datum.

Average discharge.--7 years (1946-53), 4.60 cfs (3,330 acre-ft per year).

Extremes.--1946-53: Maximum discharge, 3,870 cfs Aug. 31, 1949 (gage height, 11.0 ft), on basis of slope-area measurement of peak flow; no flow for part of each day July 31 to Aug. 2, 1952, June 30, 1953.

Flood in 1939 or 1940 reached a stage of about 10.4 ft, from information by local resident (discharge, about 2,750 cfs).

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	4.4	4.3	4.7	5.5	4.8	3.3	5.2	4.8	10.6	7.5	4.7	3.9	5.3
1952	3.82	4.42	4.05	4.72	4.66	5.05	4.77	4.36	1.67	.31	.61	1.91	3.36
1953	2.44	2.38	3.70	3.92	3.70	3.41	4.16	2.79	.94	.22	6.67	.56	2.91

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	270	254	292	335	268	202	311	296	629	460	290	230	3,840
1952	235	263	249	290	268	310	284	268	100	19	38	114	2,440
1953	150	142	227	241	206	209	247	172	56	13	410	34	2,110

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	5.78	4,180	
1951	1210	81	June 30, 1951	1	5.3	3,840	5.20	3,770	
1952	1240	10	May 30, 1952	.1	3.36	2,440	3.04	2,210	
1953	1280	150	Aug. 5, 1953	.1	2.91	2,110	-	-	

## 8585. North Fork Smoky Hill River near McAllaster, Kans.

Location.--Lat 39°01', long 101°21', in NW $\frac{1}{4}$  sec.17, T.12 S., R.36 W., at upstream side of bridge on U. S. Highway 40, 3 miles east of McAllaster.

Drainage area.--670 sq mi, approximately.

Records available.--October 1946 to September 1953, July 1959 to September 1960. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 3,070.27 ft above mean sea level, datum of 1929. Jan. 12 to July 17, 1947, wire-weight gage and July 18, 1947 to Sept. 30, 1953, water-stage recorder, at site 2 miles upstream at datum 15.75 ft higher.

Average discharge.--8 years (1946-53, 1959-60), 8.86 cfs (6,410 acre-ft per year).

Extremes.--1946-53, 1959-60: Maximum discharge, 12,200 cfs June 6, 1951 (gage height, 10.95 ft in gage well, 11.8 ft from outside gage, from floodmarks, site and datum then in use), from rating curve extended above 250 cfs on basis of contracted-opening measurement of peak flow; no flow at times in most years.

Maximum stage known, about 16 ft (former site and datum), date unknown, from information by local resident.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1.69	1.99	2.08	2.35	1.98	1.42	1.31	23.7	295	150	21.1	3.59	42.2
1952	1.72	1.51	1.37	2.19	2.93	3.41	6.56	4.03	.87	.24	.14	.44	2.11
1953	.07	.08	.65	.83	2.24	1.65	1.81	.88	.15	1.35	5.87	.19	1.31
1959	-	-	-	-	-	-	-	-	-	-	0	0	-
1960	0	.02	.39	.45	1.57	21.4	5.11	9.50	12.0	.22	0	-	4.23

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	104	118	128	144	110	87	78	1,460	17,530	9,250	1,300	214	30,520
1952	106	90	84	135	169	209	390	248	52	15	8.5	26	1,530
1953	4.4	5.0	40	51	124	101	108	54	8.7	83	361	11	951
1959	-	-	-	-	-	-	-	-	-	0	0	0	-
1960	0	1.4	24	28	90	1,320	304	584	713	14	0	0	3,080

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	6.64	4,810	
1951	1210	12,200	June 6, 1951	0.4	42.2	30,520	42.1	30,450	
1952	1240	22	Sept. 1, 1952	0	2.11	1,530	1.79	1,300	
1953	1280	278	Aug. 3, 1953	0	1.31	951	-	-	
1959	1630	-	-	0	-	-	-	-	
1960	1710	164	Mar. 19, 1960	0	4.23	3,080	-	-	

## 8595. Ladder Creek below Chalk Creek, near Scott City, Kans.

Location.--Lat 38°47', long 100°52', in SW $\frac{1}{4}$  sec. 34, T.14 S., R.32 W., near left bank on downstream side of county highway bridge,  $1\frac{1}{4}$  miles upstream from mouth, 5 miles downstream from Chalk Creek, and 23 miles northeast of Scott City.

Drainage area.--1,460 sq mi, approximately.

Records available.--April 1951 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 2,639.73 ft above mean sea level, datum of 1929. Prior to Oct. 17, 1951, wire-weight gage at same site and datum.

Average discharge.--9 years (1951-60), 14 cfs (10,140 acre-ft per year).

Extremes.--1951-60: Maximum discharge, 8,650 cfs June 11, 1951 (gage height, 12.32 ft, from floodmark); from rating curve extended above 4,200 cfs on basis of contracted-opening and flow-over-road measurement of peak flow; no flow at times.  
Maximum stage known, 16.1 ft Aug. 6, 1933, caused by dam failure at Lake McBride.

Remarks.--Occasional regulation at low flow by Lake McBride (capacity, 930 acre-ft), 10 miles above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	-	-	11.8	150	878	119	35.6	14.2	-
1952	14.5	17.8	17.0	16.0	12.7	15.0	13.7	8.38	4.82	3.31	.81	.19	10.1
1953	.18	.84	4.13	5.98	7.16	7.28	9.41	7.15	1.41	4.31	17.7	1.30	5.58
1954	.59	1.85	7.01	5.40	8.46	4.43	3.09	3.56	2.06	.01	4.71	6.17	3.92
1955	1.40	1.18	1.80	9.97	10.2	4.80	7.14	3.71	34.6	7.58	7.83	.91	7.53
1956	.01	0	.24	.41	.51	.65	2.46	53.6	3.09	25.3	.07	0	7.30
1957	0	0	0	.08	2.92	3.31	8.57	93.3	36.7	257	46.8	73.6	44.0
1958	8.99	5.37	3.33	3.61	3.94	8.10	15.3	124	16.4	147	39.3	7.08	32.5
1959	3.38	3.83	5.25	4.75	6.79	7.89	7.33	4.80	.72	.02	5.95	.02	4.23
1960	11.3	2.99	3.46	3.75	6.53	65.0	22.2	10.2	6.23	.40	1.81	0	11.2

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	-	-	703	9,220	52,230	7,300	2,190	845	-
1952	892	1,060	1,050	984	728	923	816	515	287	19	50	12	7,340
1953	11	50	254	368	398	448	560	440	84	265	1,090	78	4,050
1954	36	110	431	332	470	273	184	219	123	.8	290	367	2,840
1955	86	70	111	613	565	295	425	228	2,060	466	481	54	5,450
1956	.8	0	15	25	30	40	146	3,300	1841	560	4.2	0	5,300
1957	0	0	0	5.2	162	204	510	5,730	2,180	5,820	2,880	4,380	31,870
1958	553	319	205	222	219	498	908	7,630	973	9,020	2,410	421	23,380
1959	208	228	323	292	377	491	436	295	43	1.4	366	1.0	3,060
1960	6.95	177	213	231	378	4,000	1,320	630	371	24	111	0	8,150

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950								
1951	1210	8,650	June 11, 1951	0	-	-	-	-
1952	1240	47	July 22, 1952	0	10.1	7,340	6.40	4,650
1953	1280	222	Apr. 29, 1953	0	5.58	4,050	5.94	4,310
1954	1340	70	June 2, 1954	0	3.92	2,840	3.49	2,530
1955	1390	2,990	June 17, 1955	0	7.53	5,450	7.19	5,200
1956	1440	7,400	May 30, 1956	0	7.30	5,300	7.28	5,290
1957	1510	2,630	May 28, 1957	0	44.0	31,870	45.5	32,950
1958	1560	1,280	July 21, 1958	1.3	32.3	23,380	31.9	23,060
1959	1630	217	Aug. 22, 1959	0	4.23	3,060	4.68	3,390
1960	1710	400	Mar. 20, 1960	0	11.2	8,150	-	-

## 8600. Smoky Hill River at Elkader, Kans.

Location.--Lat 38°48', long 100°51', in sec.34, T.14 S., R.32 W., near left bank at downstream side of bridge on U. S. Highway 83 at Elkader, 0.1 mile downstream from Ladder Creek, 24 miles north of Scott City, and at mile 430.9.

Drainage area.--3,560 sq mi, approximately.

Records available.--October 1939 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 2,624.62 ft above mean sea level, datum of 1929.

Average discharge.--21 years (1939-60), 52.3 cfs (37,860 acre-ft per year).

Extremes.--1939-60: Maximum discharge, 21,100 cfs June 17, 1955 (gage height, 9.02 ft); no flow at times in most years.  
Maximum stage known, 13.2 ft May 30, 1938, from floodmark (discharge, 71,000 cfs, on basis of slope-area measurement of peak flow).

Remarks.--Occasional regulation at low flow by Lake McBride (capacity, 930 acre-ft), 11 miles above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	23.1	20.4	18.6	18.4	22.3	21.9	23.0	265	2,410	503	145	25.7	290
1952	22.5	34.3	25.6	30.1	21.5	27.7	33.0	15.3	5.54	3.57	1.30	1.14	18.4
1953	.18	1.64	6.69	6.25	6.03	7.57	11.7	6.99	6.62	14.9	29.8	1.46	8.37
1954	1.27	1.98	7.62	5.56	9.09	4.05	3.61	3.66	.94	0	3.24	9.29	4.16
1955	1.29	1.16	2.76	10.1	15.5	5.71	7.65	13.2	486	72.2	30.8	2.12	53.6
1956	.01	0	.19	.41	.63	.58	1.83	78.3	42.4	205	.27	0	27.8
1957	0	0	0	0	2.56	2.28	7.57	387	270	992	109	122	160
1958	11.1	5.93	3.98	5.10	8.94	35.0	54.3	217	25.4	290	75.5	5.50	62.3
1959	2.60	3.71	5.37	6.97	20.2	21.0	17.8	9.49	.75	2.25	10.5	.02	8.33
1960	21.0	2.34	3.49	2.79	7.12	158	44.5	80.4	15.5	.50	8.64	0	28.9

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1,420	1,220	1,150	1,130	1,240	1,350	1,370	16,320	43,400	30,900	8,920	1,530	210,000
1952	1,380	2,040	1,570	1,850	1,240	1,710	1,970	942	329	220	80	68	13,400
1953	11	98	412	384	335	465	696	430	394	915	1,830	87	6,060
1954	78	118	468	342	505	249	215	225	56	0	199	553	3,010
1955	79	69	170	618	862	351	455	810	28,920	4,440	1,900	126	38,800
1956	.6	0	12	25	36	36	109	4,810	2,520	12,600	17	0	20,170
1957	0	0	0	0	142	140	450	23,810	16,050	60,990	6,700	7,270	115,600
1958	684	353	238	313	496	2,150	3,230	13,340	1,510	17,830	4,640	327	45,110
1959	160	221	330	429	1,120	1,290	1,060	583	45	138	647	1.4	6,020
1960	1,290	139	215	171	410	9,700	2,650	4,940	923	31	531	0	21,000

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	89.8	65,000
1951	1210	19,700	June 11, 1951	12	290	210,000	292	211,200
1952	1240	442	July 22, 1952	0	18.4	13,400	12.3	8,930
1953	1280	460	Aug. 16, 1953	0	8.37	6,060	8.57	6,200
1954	1340	36	Aug. 31, 1954	0	4.16	3,010	3.68	2,660
1955	1390	21,100	June 17, 1955	0	53.6	38,800	53.2	38,490
1956	1440	9,680	July 3, 1956	0	27.8	20,170	27.8	20,150
1957	1510	15,100	July 11, 1957	0	160	115,600	161	116,800
1958	1560	3,360	July 22, 1958	2.0	62.3	45,110	61.5	44,550
1959	1630	330	Aug. 22, 1959	0	8.33	6,020	9.62	6,960
1960	1710	1,850	May 16, 1960	0	28.9	21,000	-	-

8605. Hackberry Creek near Gove, Kans.

Location.--Lat 38°57', long 100°29', in sec.1, T.13 S., R.29 W., near center of stream on downstream side of pier of bridge on State Highway 23, half a mile south of Gove.

Drainage area.--426 sq mi.

Records available.--December 1946 to September 1953.

Average discharge.--6 years (1947-53), 28.7 cfs (20,780 acre-ft per year).

Gage.--Water-stage recorder. Datum of gage is 2,592.72 ft above mean sea level, datum of 1929. Prior to Mar. 3, 1948, wire-weight gage at same site and datum.

Extremes.--1946-53: Maximum discharge, 18,200 cfs June 7, 1951 (gage height, 19.0 ft), from rating curve extended above 5,200 cfs on basis of slope-area measurement of peak flow; no flow for many days in nearly every year.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	2.75	1.81	2.40	2.05	2.04	1.74	2.82	141	825	155	46.0	7.63	98.8
1952	3.06	2.90	2.28	3.01	2.52	3.82	4.49	2.61	.38	.10	.05	.01	2.10
1953	0	.14	.38	.41	.36	.47	.32	.40	.05	.22	2.69	0	.46

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	169	108	147	126	113	107	168	8,660	49,100	9,540	2,830	454	71,520
1952	188	173	139	185	145	235	267	160	23	6.0	34	.6	1,520
1953	0	8.1	24	25	20	29	19	25	2.8	13	165	0	331

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	48.5	35,140
1951	1210	18,200	June 7, 1951	0.6	98.8	71,520	98.9	71,600
1952	1240	14	Mar. 28, 1952	0	2.10	1,520	1.46	1,060
1953	1280	117	Aug. 7, 1953	0	.46	331	-	-

## 8610. Smoky Hill River near Arnold, Kans.

Location.--Lat 38°48'30", long 100°00'40", near center of sec.29, T.14 S., R.24 W., on left bank 0.5 mile downstream from highway bridge, 6 miles upstream from headwaters of Cedar Bluff Reservoir, 12 miles north of Arnold, and at mile 376.6.

Drainage area.--5,220 sq mi, approximately.

Records available.--February 1950 to September 1960. Prior to October 1950, published as "near Ransom."

Gage.--Water-stage recorder. Datum of gage is 2,191.13 ft above mean sea level, datum of 1929. Prior to June 25, 1951, water-stage recorder and wire-weight gage at site 7 miles downstream at datum 2,139.26 ft above mean sea level (levels by Bureau of Reclamation). June 26, 1951, to Feb. 21, 1952, staff gage and Feb. 22, 1952, to Dec. 14, 1955, water-stage recorder (high water only) and staff gage, at site a quarter of a mile upstream from present site at datum 5 ft lower than present datum.

Average discharge.--10 years (1950-60), 131 cfs (94,840 acre-ft per year).

Extremes.--1950-60: Maximum discharge, 23,800 cfs June 11, 1951 (gage height, 12.57 ft, site and datum then in use); no flow at times in 1952-57, 1959-60.  
Flood of May 30, 1938, reached a stage of 19.0 ft, present site and datum, from information by local resident.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	106	43.0	42.5	28.9	51.1	39.9	39.8	620	4,331	965	284	80.8	550
1952	36.0	52.5	32.2	57.4	46.1	54.0	80.1	46.7	8.24	1.98	71.6	34.6	34.6
1953	.06	.95	1.83	8.64	6.66	10.2	9.02	8.80	.27	29.7	71.6	4.21	12.8
1954	5.10	6.33	10.2	5.91	19.4	6.19	4.46	13.0	2.11	.31	.90	2.01	6.25
1955	.76	.10	.06	.15	.30	.30	13.2	59.9	661	142	26.3	37.4	78.0
1956	4.46	.92	.84	.77	1.89	1.07	.58	157	53.9	220	1.64	.03	37.4
1957	26.9	1.23	.11	.06	.16	2.27	34.2	934	1,334	905	98.6	353	309
1958	23.6	17.7	11.6	12.6	14.1	57.5	116	344	82.6	536	133	8.02	114
1959	2.79	3.60	12.9	10.4	26.2	28.5	23.3	17.8	19.8	4.71	43.4	2.50	16.3
1960	116	12.3	9.96	5.58	28.4	584	108	337	89.3	11.1	452	28.0	150

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	6,510	2,560	2,620	1,780	2,840	2,390	2,370	38,140	257,700	59,330	17,450	4,810	398,500
1952	2,210	3,130	1,980	3,530	2,650	3,320	4,770	2,870	491	122	47	20	25,140
1953	3.8	56	112	531	370	626	537	541	16	1,830	4,400	251	9,270
1954	313	377	626	363	1,080	380	265	800	125	19	55	120	4,520
1955	47	6.0	4.0	8.9	17	18	783	3,680	39,340	8,710	1,620	2,230	56,460
1956	275	55	51	47	109	66	35	9,670	3,210	13,510	101	1.8	27,130
1957	1,660	73	6.5	3.8	8.9	139	2,030	57,460	79,370	55,630	6,060	21,010	223,500
1958	1,450	1,050	712	776	781	3,540	6,910	21,130	4,920	32,950	8,150	477	82,850
1959	171	214	795	638	1,450	1,750	1,380	1,100	1,180	290	2,670	149	11,790
1960	7,130	734	613	343	1,630	35,900	6,450	20,700	5,310	683	27,790	1,660	108,900

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	-	-
1951	1210	23,800	June 11, 1951	15	550	398,500	544	394,100
1952	1240	802	Apr. 20, 1952	0	34.6	25,140	24.8	17,990
1953	1280	1,840	Aug. 7, 1953	0	12.8	9,270	14.4	10,420
1954	1340	98	Sept. 9, 1954	0	6.25	4,520	4.51	3,260
1955	1390	16,200	June 17, 1955	0	78.0	56,460	78.4	56,790
1956	1440	8,270	May 30, 1956	0	37.4	27,130	39.2	28,490
1957	1510	20,400	June 16, 1957	0	309	223,500	311	224,900
1958	1560	6,420	July 5, 1958	3.8	114	82,850	112	80,810
1959	1630	1,650	Aug. 15, 1959	0	16.3	11,790	26.4	19,080
1960	1710	16,400	Aug. 24, 1960	0	150	108,900	-	-

## 8615. Cedar Bluff Reservoir near Ellis, Kans.

Location.--Lat 38°47', long 99°43', in SW $\frac{1}{4}$  sec.36, T.14 S., R.22 W., on control house structure of outlet works conduit at dam on Smoky Hill River, 18 miles southwest of Ellis.

Drainage area.--5,530 sq mi, approximately.

Records available.--November 1950 to September 1960. Month-end contents only prior to August 1960.

Gage.--Water-stage recorder and servo-manometer follower. Datum of gage is at mean sea level (levels by Bureau of Reclamation). Prior to Aug. 20, 1960, mercury-column gage at same site and datum.

Extremes.--1950-60: Maximum contents, 269,400 acre-ft July 2, 1951, July 4, 5, 1957 (elevation, 2,154.90 ft); minimum contents since irrigation pool was first filled, 93,960 acre-ft Mar. 26-30, 1955 (elevation, 2,127.35 ft).

Remarks.--Reservoir is formed by compacted earthfill dam; storage began Nov. 13, 1950; dam was completed in 1951. Total capacity, 870,400 acre-ft, consisting of the following; dead storage, 8,260 acre-ft below elevation 2,090 ft (sill of trashrack structure); irrigation pool, 176,800 acre-ft between elevations 2,090 and 2,144 ft (sill of non-gated orifice in spillway); flood control pool, 191,900 acre-ft between elevations 2,144 and 2,166 ft (crest of uncontrolled spillway); and uncontrolled storage, 493,400 acre-ft between elevations 2,166 and 2,200 ft. Reservoir is used to store water for flood control, irrigation, and recreation. Figures given herein represent total contents.

Cooperation.--Records furnished by Bureau of Reclamation.

Contents, in acre-feet, on last day of month

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951	-	1,509	3,690	5,575	8,170	9,308	9,209	33,165	257,440	239,330	216,375	179,985
1952	178,600	180,700	181,700	181,700	167,100	149,800	151,000	149,500	140,400	134,800	130,700	125,400
1953	122,400	120,300	120,600	121,900	121,100	122,100	121,900	121,100	116,400	117,400	117,600	113,700
1954	110,200	110,000	110,000	109,500	110,400	108,800	108,600	115,200	112,300	107,900	104,100	100,500
1955	97,950	96,470	95,210	94,790	94,580	94,170	95,420	100,500	136,200	139,300	134,300	131,500
1956	129,400	127,800	127,000	127,300	128,100	127,300	125,400	126,700	126,000	135,900	129,900	123,900
1957	123,100	121,900	121,100	120,300	120,600	121,100	123,600	180,700	257,400	231,400	206,400	208,600
1958	194,800	192,700	189,900	188,900	188,900	193,800	193,100	202,000	188,500	202,700	192,000	186,800
1959	184,400	183,000	182,700	182,700	184,400	185,400	185,400	189,600	187,500	185,400	182,400	179,000
1960	184,400	182,700	181,300	182,700	184,100	214,900	187,200	189,600	186,100	183,700	202,900	193,200

8620. Smoky Hill River at Cedar Bluff Dam, Kans.

Location.--Lat 38°47'30", long 99°43'20", in W $\frac{1}{2}$  sec.36, T.14 S., R.22 W., on right bank a quarter of a mile downstream from Cedar Bluff Dam and 14 miles southwest of Ellis.

Drainage area.--5,530 sq mi, approximately.

Records available.--February 1952 to September 1960.

Gage.--Water-stage recorder and concrete control. Datum of gage is 2,059.14 ft above mean sea level (levels by Bureau of Reclamation).

Average discharge.--8 years (1952-60), 71.1 cfs (51,470 acre-ft per year).

Extremes.--1952-60: Maximum discharge, 2,010 cfs July 5, 1957 (gage height, 4.89 ft); no flow at times.

Remarks.--Flow completely regulated by Cedar Bluff Reservoir (see preceding page).

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	287	321	80.1	93.0	83.4	26.8	19.2	23.9	-
1952	8.27	0	0	0	0	0	0	0	18.4	1.10	7.06	7.19	3.50
1953	23.9	8.86	2.79	3.51	3.50	4.32	3.44	4.61	4.35	15.9	17.9	12.7	8.88
1954	11.7	4.84	4.28	3.62	0	0	0	7.27	2.81	12.3	25.9	16.7	7.53
1955	.67	0	0	0	0	0	.59	23.5	18.4	11.3	20.7	22.0	8.13
1956	12.6	.15	0	0	0	0	0	0	776	1,480	414	626	277
1957	173	58.8	33.2	18.8	13.9	26.5	193	270	250	349	295	25.9	143
1958	2.44	0	0	0	0	2.11	5.56	19.7	3.85	5.68	9.28	4.08	143
1959	2.76	3.11	2.10	1.00	.23	134	543	406	133	4.94	56.8	118	117
1960	2.76	3.11	2.10	1.00	.23	134	543	406	133	4.94	56.8	118	117

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	16,500	19,710	4,770	5,720	4,960	1,650	1,180	1,420	-
1952	508	0	0	0	0	0	0	0	1,090	68	434	428	2,530
1953	1,470	527	172	216	195	266	204	283	259	978	1,100	758	6,430
1954	720	288	263	223	0	0	0	447	167	758	1,590	992	5,450
1955	41	0	0	0	0	0	351,450	1,200	696	1,280	1,310	5,910	5,910
1956	772	8.7	0	0	0	0	0	0	46,200	91,020	25,480	37,230	200,700
1957	10,610	5,500	2,040	1,160	770	1,630	11,480	16,630	14,890	21,480	18,140	1,540	103,900
1958	150	0	0	0	0	27	126	342	1,170	237	349	552	2,950
1959	170	185	129	61	13	8,230	32,300	24,970	7,920	304	3,490	7,020	84,790
1960	170	185	129	61	13	8,230	32,300	24,970	7,920	304	3,490	7,020	84,790

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950								
1951								
1952	1240	475	Mar. 5-7, 1952	-	-	-	-	-
1953	1280	65	June 7, 1953	0	3.50	2,530	5.79	4,190
1954	1340	87	Oct. 24, 25, 1953	1.0	8.88	6,430	7.64	5,530
1955	1390	61	July 29-30, 1955	0	7.53	5,450	5.83	4,220
1956	1440	300	May 22, 1956	0	8.13	5,910	9.14	6,650
1957	1510	2,010	July 5, 1957	0	277	200,700	298	216,100
1958	1580	1,520	Oct. 1, 1957	9.5	143	103,900	121	87,870
1959	1630	36	Aug. 11, 1959	0	4.08	2,950	4.54	3,290
1960	1710	1,480	Apr. 22, 1960	0	117	84,790	-	-

## 8625. Smoky Hill River near Ellis, Kans.

Location.--Lat 38°46', long 99°34', on west line between secs.4 and 5, T.15 S., R.20 W., on downstream end of first pier from right abutment of highway bridge, 11.5 miles south of Ellis and at mile 346.3.

Drainage area.--5,630 sq mi, approximately.

Records available.--December 1941 to September 1952.

Gage.--Water-stage recorder. Datum of gage is 1,992.73 ft above mean sea level (levels by Bureau of Reclamation). Prior to June 20, 1942, wire-weight gage at same site and datum.

Average discharge.--10 years (1942-52), 131 cfs (94,840 acre-ft per year).

Extremes.--1941-52: Maximum discharge, 11,600 cfs May 2, 1944 (gage height, 10.70 ft); no flow at times in 1943, 1946.

Remarks.--Flow regulated by Cedar Bluff Reservoir (see p. 378) since November 1950. Records of suspended sediment loads for the period March 1947 to November 1950 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	225	32.8	8.82	5.37	2.64	21.0	38.1	397	1,006	1,347	717	674	375
1952	34.7	8.23	6.46	33.7	304	336	117	126	88.0	31.9	22.1	26.2	93.7

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	13,830	1,950	542	207	146	1,290	2,270	24,420	59,850	82,830	44,070	40,130	271,500
1952	2,130	490	397	2,070	17,460	20,680	6,940	7,740	5,240	1,960	1,360	1,560	68,030

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean		Acre-feet	
		Discharge	Date							
1950	-	-	-	-	-	-	-	302	-	218,700
1951	1210	9,290	May 21, 1951	1.1	375	271,500	357	-	-	258,200
1952	1240	614	May 1, 1952	1.7	93.7	68,030	-	-	-	-

## 8633. Big Creek near Ogallah, Kans.

Location.--Lat 38°54'40", long 99°44'40", on west line of sec.23, T.13 S., R.22 W., on downstream side of bridge on State Highway 147, 5 miles south of Ogallah, 9.0 miles upstream from Ogallah Creek, and 10 miles west of Ellis.

Drainage area.--347 sq mi.

Records available.--October 1955 to September 1960.

Gage.--Water-stage recorder. Altitude of gage is 2,260 ft (from topographic map). Prior to July 13, 1960, wire-weight gage and crest-stage gages at same site and datum.

Average discharge.--5 years (1955-60), 33.9 cfs (23,540 acre-ft per year).

Extremes.--1955-60: Maximum discharge, 18,500 cfs June 16, 1957 (gage height, 19.02 ft), from rating curve extended above 3,000 cfs on basis of slope-area measurement of peak flow; no flow for many days in 1956, Aug. 11-13, 1959, and part of Aug. 23, 1960.

Maximum stages known since at least 1914, that of June 16, 1957. Flood in August 1950 reached a stage of 14 ft, from information by local resident.

Remarks.--Records of chemical analyses for the period October 1955 to September 1958, suspended sediment loads for the period October 1955 to September 1959, and water temperatures for the period October 1955 to September 1958 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1956	0.52	1.04	0.87	1.14	2.08	1.55	0.95	0.53	0.19	9.68	8.43	0	2.27
1957	7.30	.35	.25	.28	.66	.78	7.89	214	706	91.5	7.52	166	99.8
1958	6.48	3.68	3.25	2.84	2.92	6.70	31.6	106	12.1	69.5	23.0	2.93	22.8
1959	2.42	2.53	2.46	2.67	4.06	3.72	3.50	2.38	3.02	5.02	18.1	5.98	4.67
1960	48.1	3.90	4.42	3.32	5.98	128	17.1	54.7	46.3	4.35	148	9.04	39.9

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1956	32	62	53	70	119	95	56	32	11	595	518	0	1,640
1957	486	9.1	15	17	36	48	459	13,140	42,030	5,630	462	9,880	72,220
1958	399	219	200	175	162	412	1,880	6,500	721	4,270	1,410	175	16,520
1959	149	151	152	164	225	229	208	147	180	309	1,110	358	3,380
1960	2,960	232	272	204	337	7,900	1,020	3,360	2,750	268	9,120	538	28,960

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean		Acre-feet	
		Discharge	Date							
1956	1440	346	Aug. 10, 1956	0	2.27	1,640	2.77	-	-	2,010
1957	1510	18,500	June 16, 1957	0	99.8	72,220	100	-	-	72,530
1958	1560	2,200	May 17, 1958	1.1	22.8	16,520	22.3	-	-	16,160
1959	1630	408	Aug. 17, 1959	0	4.67	3,380	8.83	-	-	6,390
1960	1710	3,120	Mar. 22, 1960	.2	39.9	28,960	-	-	-	-



## 8635. Big Creek near Hays, Kans.

Location.--Lat 38°51', long 99°19', in SW $\frac{1}{4}$  sec.10, T.14 S., R.18 W., on right bank at downstream side of county highway bridge, half a mile upstream from Custer Island Park Dam, 3 miles southeast of Hays, and 49 miles upstream from mouth.

Drainage area.--594 sq mi, approximately.

Records available.--April 1946 to September 1960.

Gage.--Water-stage recorder and concrete control. Datum of gage is 1,955.13 ft above mean sea level, datum of 1929. Prior to Nov. 20, 1947, wire-weight gage at same site and datum.

Average discharge.--14 years (1946-60), 54.2 cfs (39,240 acre-ft per year).

Extremes.--1946-60: Maximum discharge, 22,400 cfs June 17, 1957 (gage height, 22.07 ft); no flow at times.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	114	12.2	9.09	9.05	9.12	11.6	13.3	380	1,805	320	62.3	123	238
1952	23.8	22.2	17.7	19.4	16.6	21.0	34.7	35.8	7.93	5.19	3.84	3.50	17.7
1953	3.39	4.76	4.41	4.34	6.76	7.15	6.34	6.35	2.36	37.6	2.88	.52	7.28
1954	2.18	2.99	2.83	2.85	3.85	2.85	2.10	80.3	10.8	1.77	4.58	4.68	10.3
1955	19.2	1.51	1.48	1.37	1.46	1.49	4.07	17.6	66.2	7.84	.97	53.8	14.7
1956	3.52	1.38	1.56	1.66	2.23	1.87	2.64	2.05	1.74	25.2	1.04	1.74	3.92
1957	1.32	1.33	.36	1.21	1.88	1.26	5.70	2.39	1021	256	28.2	189	145
1958	13.6	12.9	10.5	7.84	7.46	21.3	67.7	174	22.5	244	118	42.0	62.6
1959	12.0	12.3	10.1	8.91	14.6	11.2	12.4	101	18.3	13.0	10.4	10.6	19.7
1960	55.3	12.7	9.60	8.13	16.9	173	50.9	137	64.9	9.28	145	19.0	59.0

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	7,020	724	559	556	507	714	793	23,370	107,400	19,690	3,830	7,300	172,500
1952	1,480	1,320	1,090	1,190	956	1,290	2,060	2,200	472	319	236	208	12,800
1953	208	283	271	267	375	440	377	391	140	2,310	177	31	5,270
1954	134	178	174	175	214	175	125	4,940	646	109	281	278	7,430
1955	1,180	90	91	84	81	92	242	1,080	3,940	482	60	3,200	10,620
1956	217	82	96	102	128	115	157	126	104	1,550	64	104	2,840
1957	81	79	22	75	105	77	339	14,700	60,740	15,720	1,730	11,260	104,900
1958	836	768	647	482	414	1,310	4,030	10,730	1,340	15,010	7,260	2,500	45,330
1959	737	732	622	548	812	691	735	6,200	1,090	798	638	632	14,240
1960	3,400	754	590	500	972	10,620	3,030	8,450	3,860	570	8,940	1,130	42,820

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet		
		Discharge	Date							
1950	-	-	-	-	-	-	53.6	-	38,820	-
1951	1210	-	-	-	-	-	232	-	168,000	-
1952	1240	19,900	May 22, 1951	2.6	238	172,500	13.4	-	9,690	-
1953	1280	284	May 8, 1952	.2	17.7	12,800	6.90	-	4,990	-
1954	1340	903	July 12, 1953	.1	7.28	5,270	11.5	-	8,300	-
1955	1390	1,710	May 24, 1954	.1	10.3	7,430	13.3	-	9,660	-
1956	1440	964	Sept. 19, 1955	0	14.7	10,620	3.62	-	2,630	-
1957	1510	741	July 6, 1956	.3	3.92	2,840	148	-	107,000	-
1958	1560	22,400	June 17, 1957	0	145	104,900	82.4	-	45,170	-
1959	1630	2,920	July 6, 1958	6.3	62.6	45,330	23.3	-	16,890	-
1960	1710	3,540	May 30, 1959	.6	19.7	14,240	-	-	-	-
		3,170	May 5, 1960	1.4	59.0	42,820	-	-	-	-

## 8640. Smoky Hill River near Russell, Kans.

Location.--Lat 38°47', long 98°51', in NW $\frac{1}{4}$  sec.2, T.15 S., R.14 W., on downstream side of right pier of bridge on U. S. Highway 281, a quarter of a mile upstream from Landon Creek, 7.7 miles south of Russell, and at mile 287.0.

Drainage area.--6,965 sq mi.

Records available.--October 1939 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 1,689.05 ft above mean sea level, datum of 1929. Prior to Sept. 11, 1940, wire-weight gage at same site and datum.

Average discharge.--21 years (1939-60), 240 cfs (173,800 acre-ft per year).

Extremes.--1939-60: Maximum discharge, 39,500 cfs May 23, 1951 (gage height, 23.86 ft); no flow at times in 1940, 1943, 1955-57.

Flood of May 30, 1938, reached a stage of about 29.0 ft, from floodmarks (discharge, about 70,000 cfs, from rating curve extended above 37,500 cfs by logarithmic plotting).

Remarks.--Flow regulated by Cedar Bluff Reservoir (see p. 378). Records of chemical analyses for the period October 1950 to September 1951 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	496	76.9	40.5	28.6	35.2	44.2	170	1,624	4,415	2,215	1,363	1,519	1,004
1952	168	85.6	54.0	77.5	301	459	290	248	117	43.0	26.8	32.7	158
1953	19.8	13.8	27.9	40.3	19.5	22.3	15.1	17.0	18.1	104	107	2.60	34.3
1954	4.23	28.5	15.5	8.20	22.4	15.5	22.2	317	84.8	4.89	6.60	16.1	45.8
1955	46.0	8.09	10.5	11.0	13.9	10.6	124	21.2	83.2	44.0	4.57	466	69.6
1956	56.9	12.6	11.2	9.07	16.3	13.9	13.1	53.3	19.4	150	3.09	.59	30.2
1957	9.27	6.47	2.85	3.24	6.75	13.9	81.9	580	1,882	2,245	567	994	543
1958	350	113	75.7	49.1	43.1	454	489	878	362	1,388	785	225	458
1959	146	46.2	40.0	40.8	52.2	35.1	31.1	451	125	111	22.0	390	125
1960	383	41.4	36.3	31.4	68.7	882	673	693	364	50.0	316	224	315

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	30,510	4,580	2,490	1,760	1,960	2,720	10,110	99,870	262,700	136,200	83,790	90,370	727,100
1952	10,360	5,090	3,320	4,760	17,330	28,210	17,270	15,240	6,990	2,640	1,650	1,950	114,800
1953	1,220	821	1,710	2,480	1,080	1,370	898	1,040	1,080	6,400	6,590	155	24,840
1954	260	1,700	950	504	1,240	956	1,320	19,510	5,050	301	406	956	33,150
1955	2,850	481	644	678	772	651	7,360	1,310	4,950	2,700	281	27,730	50,390
1956	3,500	751	689	558	936	854	778	3,270	1,150	9,220	190	35	21,930
1957	570	385	175	199	375	855	4,880	35,690	117,900	138,000	34,880	59,140	393,000
1958	20,310	7,080	4,660	3,020	2,390	27,930	29,070	53,980	21,530	85,350	48,290	13,410	317,000
1959	8,970	2,750	2,460	2,510	2,900	2,160	1,850	27,760	7,430	6,830	1,350	23,200	90,170
1960	23,530	2,460	2,230	1,930	3,950	54,240	40,050	42,640	21,630	3,070	19,400	13,330	228,500

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	449	325,200
1951	1210	39,500	May 23, 1951	15	1,004	727,100	978	708,200
1952	1240	885	Apr. 9, 1952	14	158	114,800	137	99,790
1953	1280	2,870	Aug. 3, 1953	.6	34.3	24,840	33.1	24,000
1954	1340	4,640	May 24, 1954	.3	45.8	33,150	47.2	34,200
1955	1390	8,030	Sept. 19, 1955	0	69.6	50,390	71.0	51,370
1956	1440	2,340	May 30, 1956	.2	30.2	21,930	25.0	18,120
1957	1510	113,900	July 2, 1957†	0	543	393,000	586	424,000
1958	1560	8,970	Mar. 29, 1958	24	438	317,000	413	299,200
1959	1630	8,650	May 30, 1959	12	125	90,170	144	104,200
1960	1710	10,300	Aug. 29, 1960	12	315	228,500	-	-

† Corrected.

## 8645. Smoky Hill River at Ellsworth, Kans.

Location.--Lat 38°44', long 98°14', in SE $\frac{1}{4}$  sec.20, T.15 S., R.8 W., on downstream side of right pier of bridge on State Highway 14 in Ellsworth, 2 miles downstream from Turkey Creek and at mile 238.0.

Drainage area.--7,580 sq mi, approximately.

Records available.--April 1895 to October 1905, July 1918 to July 1925, August 1928 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 1,509.02 ft above mean sea level, datum of 1929. Prior to Oct. 31, 1905, staff gage at present site at datum 1.61 ft higher. July 23, 1918, to July 4, 1925, and Aug. 1, 1928, to Nov. 29, 1939, chain or wire-weight gages at present site and datum.

Average discharge.--48 years (1895-1905, 1918-24, 1928-60), 254 cfs (183,900 acre-ft per year).

Extremes.--1895-1905, 1918-25, 1928-60: Maximum discharge, 61,000 cfs June 1, 1938 (gage height, 27.2 ft, from floodmarks); no flow for part of day Sept. 28, 1956.

Flood in August 1927 reached a stage of 25.7 ft, from floodmarks (discharge, 44,800 cfs).

Remarks.--Flow regulated by Cedar Bluff Reservoir (see p. 378) since November 1950. Records of chemical analyses for the period September 1957 to September 1959 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	692	121	74.5	50.6	58.6	66.9	202	2,100	6,270	3,213	1,510	2,144	1,377
1952	279	155	103	120	299	474	449	554	163	67.4	63.0	37.5	230
1953	27.0	25.6	40.0	58.2	34.3	44.1	34.0	33.0	79.4	172	241	14.0	67.5
1954	8.14	44.3	44.5	20.0	35.5	26.5	26.4	340	239	17.0	7.22	14.9	68.8
1955	57.4	20.1	15.7	20.9	24.5	22.5	329	33.7	143	254	9.13	48.1	117
1956	106	27.5	23.5	17.8	26.1	28.6	33.4	127	50.3	164	33.5	1.68	53.7
1957	9.55	17.0	9.99	8.06	22.0	28.2	238	1,195	1,899	2,886	622	1,046	669
1958	529	161	101	78.1	66.6	909	770	936	397	1,651	830	273	564
1959	403	85.6	67.9	61.7	99.7	86.4	58.2	570	288	132	37.6	565	205
1960	674	83.0	62.9	118	224	1,609	786	794	471	97.5	833	533	526

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	42,540	7,210	4,580	3,110	3,280	4,110	12,050	29,100	87,100	17,600	92,840	127,600	997,100
1952	17,150	9,200	6,350	7,360	17,200	29,130	26,700	34,050	9,690	4,150	5,870	2,230	167,100
1953	1,660	1,530	2,460	3,580	1,900	2,710	2,020	2,030	4,730	10,580	14,830	830	48,860
1954	500	2,640	2,730	1,230	1,970	1,630	1,570	20,900	14,250	1,040	444	887	49,790
1955	3,530	1,190	966	1,290	1,360	1,380	19,580	2,070	8,500	15,600	561	28,640	84,670
1956	6,500	1,630	1,440	1,100	1,500	1,760	1,990	7,830	3,000	10,080	2,060	100	38,990
1957	587	1,010	614	496	1,220	1,740	14,150	73,450	113,000	77,500	38,230	62,230	484,200
1958	32,500	9,570	6,200	4,800	3,700	55,870	45,800	57,570	23,600	101,500	51,060	16,230	408,400
1959	24,750	5,090	4,170	3,790	5,540	5,310	3,460	35,080	17,140	8,090	2,310	33,650	148,400
1960	41,430	4,940	3,870	7,280	12,910	98,920	46,790	48,810	28,030	6,000	51,210	31,700	381,900

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	589	426,600
1951	1240	30,000	May 23, 1951	20	1,377	997,100	1,347	975,500
1952	1240	11,100	May 24, 1952	23	230	167,100	193	140,000
1953	1280	3,190	Aug. 4, 1953	6.5	67.5	48,860	67.8	49,080
1954	1340	3,510	June 15, 1954	1.0	68.8	49,790	68.5	49,610
1955	1390	10,800	July 1, 1955	2.0	117	84,670	122	88,550
1956	1440	4,060	May 30, 1956	.6	53.7	38,990	43.6	31,630
1957	1510	13,900	July 2, 1957	1.1	669	484,200	732	530,300
1958	1560	10,200	Mar. 30, 1958	35	564	408,400	544	394,100
1959	1630	9,720	Oct. 7, 1958	20	205	148,400	227	164,600
1960	1710	18,000	Aug. 29, 1960	28	526	381,900	-	-

## 8650. Kanopolis Reservoir near Kanopolis, Kans.

Location.--Lat 38°37', long 97°58', in NE $\frac{1}{4}$  sec.3, T.17 S., R.6 W., in shaft of control tower at dam on Smoky Hill River, 12 miles southeast of Kanopolis, 25 miles southwest of Salina, and 207.8 miles upstream from mouth of Smoky Hill River.

Drainage area.--7,857 sq mi.

Records available.--February 1948 to September 1960. Prior to October 1956, monthly records only.

Gage.--Water-stage recorder. Datum of gage is at mean sea level, datum of 1929 (levels by Corps of Engineers).

Extremes.--1948-60: Maximum elevation, 1,506.98 ft July 14, 1951 (contents, 435,100 acre-ft); minimum since conservation pool was first filled, 1,454.44 ft Feb. 5, 1950 (contents, 38,330 acre-ft).

Remarks.--Reservoir is formed by earthfill dam; storage began Feb. 17, 1948, and dam was completed in same year. Capacity, 444,000 acre-ft between elevations 1,415 (sill of outlet gate) and 1,508 ft. Crest of uncontrolled spillway is at elevation 1,507 ft. Storage capacity of 396,000 acre-ft above elevation 1,459 ft is provided for flood control. Storage capacity of 48,700 acre-ft below elevation 1,459 ft is provided for conservation and recreation. Inflow partly regulated by Cedar Bluff Reservoir. Figures given herein represent total contents. Records of chemical analyses for the period October 1958 to September 1959 are published in reports of Geological Survey.

Cooperation.--Records furnished by Corps of Engineers.

Contents, in acre-feet, on last day of month

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951	107,300	58,150	55,820	55,630	57,140	55,110	53,380	125,950	378,400	388,480	265,860	214,330
1952	54,880	52,480	51,640	47,980	50,270	48,890	67,200	59,110	51,780	50,550	50,380	48,210
1953	45,780	44,550	44,260	44,640	44,300	44,300	43,130	42,480	43,850	50,200	60,810	53,900
1954	50,130	50,550	51,640	50,480	50,510	49,710	48,880	66,390	62,820	57,890	54,280	50,480
1955	50,730	48,790	47,190	46,380	46,000	45,460	63,050	60,650	64,680	65,630	58,920	77,120
1956	a57,830	55,330	54,220	53,620	53,720	53,080	54,630	58,300	56,660	59,610	54,700	47,130
1957	43,220	41,490	40,140	36,680	38,530	41,800	57,340	99,710	144,300	170,600	67,360	60,860
1958	70,310	61,230	59,500	58,910	59,270	111,200	56,940	64,960	60,750	84,630	57,690	59,820
1959	59,540	59,270	58,910	58,050	59,270	61,870	52,500	84,250	64,730	60,110	55,720	83,160
1960	58,910	47,880	51,400	57,020	59,420	136,500	57,120	59,760	58,690	57,900	93,610	86,670

a New capacity table put in use Oct. 1, 1955; contents on Sept. 30, 1955, from new capacity table, 71,820 acre-ft.

8655. Smoky Hill River near Langley, Kans.

Location.--Lat 38°37', long 97°57', in SE $\frac{1}{4}$  sec.35, T.16 S., R.6 W., on downstream side of pier of county highway bridge, half a mile downstream from Kanopolis Dam, 5 miles north of Langley, and at mile 207.2.

Drainage area.--7,857 sq mi.

Records available.--October 1940 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 1,400.66 ft above mean sea level (Corps of Engineers bench mark). Prior to Apr. 1, 1952, at datum 2.00 ft higher.

Average discharge.--20 years (1940-60), 365 cfs (264,200 acre-ft per year).

Extremes.--1940-60: Maximum discharge observed, 21,800 cfs Oct. 20, 1941 (gage height, 27.2 ft, present datum); minimum daily, 0.4 cfs Jan. 23, 1948.

Flood in June 1938 reached a stage of 28.9 ft (present datum), from information by Corps of Engineers (discharge, about 45,000 cfs by extension of subsequent rating curve above 16,000 cfs and correlation of peak flow at nearby stations).

Remarks.--Flow regulated by Cedar Bluff and Kanopolis Reservoirs (see elsewhere in this report).

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1,785	968	122	66.6	65.8	94.7	237	850	1,930	3,660	3,454	3,376	1,392
1952	3,004	235	135	192	272	532	374	839	305	74.8	71.9	52.8	511
1953	50.5	52.0	54.5	48.4	49.3	50.6	44.7	42.9	43.9	49.2	103	95.0	57.0
1954	49.4	39.3	39.5	37.6	33.4	32.0	34.5	41.7	44.2	53.4	42.1	42.7	73.6
1955	42.0	40.1	40.5	39.5	36.9	31.5	59.7	61.2	81.8	262	73.7	173	78.7
1956	383	59.2	43.1	31.1	28.4	28.8	44.6	34.1	85.3	91.8	103	80.3	84.9
1957	79.4	43.3	28.6	28.1	20.9	8.12	39.9	810	1,281	2,467	2,411	1,093	699
1958	424	320	143	102	79.7	180	1,783	920	499	1,362	1,247	245	612
1959	373	87.4	83.1	75.4	75.9	90.9	207	188	663	233	100	185	197
1960	1,168	276	24.5	38.2	258	442	2,310	641	565	105	173	752	577

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	109,800	57,590	7,470	4,100	3,680	5,820	14,090	52,270	114,900	225,000	212,400	200,900	1,008,000
1952	184,700	13,970	8,320	11,780	15,640	32,680	22,270	51,570	18,150	4,600	4,420	3,140	371,200
1953	3,100	3,090	3,350	2,980	2,740	3,110	2,680	2,640	2,610	3,020	6,320	5,650	41,270
1954	3,040	2,340	2,430	2,310	1,880	1,970	2,050	2,570	26,280	3,280	2,590	2,540	53,280
1955	2,580	2,380	2,490	2,430	2,050	1,940	3,550	3,760	4,870	16,130	4,530	10,300	57,010
1956	23,560	3,520	2,650	1,910	1,630	1,770	2,650	2,090	5,080	5,640	6,320	4,780	61,600
1957	4,880	2,570	1,760	1,730	1,160	499	2,380	49,810	76,240	151,700	148,300	64,960	508,000
1958	26,100	19,040	8,610	6,260	4,430	11,080	106,100	56,550	29,700	83,750	76,660	14,560	443,000
1959	22,910	5,200	5,110	4,630	4,210	5,590	12,330	11,550	39,430	14,300	6,180	10,980	142,400
1960	71,840	16,430	1,510	2,350	14,860	27,160	137,400	51,730	33,610	6,470	10,650	44,760	418,800

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	592	428,800
1951	1210	5,570	July 15, 1951	51	1,392	1,008,000	1,437	1,040,000
1952	1240	3,300	Oct. 20, 1951	49	511	371,200	239	173,800
1953	1260	837	July 7, 1953	40	57.0	41,270	54.6	39,540
1954	1340	874	June 16-17, 1954	20	73.6	53,280	73.1	52,900
1955	1390	750	Sept. 29, 1955	21	78.7	57,010	110	79,290
1956	1440	742	Oct. 4, 1955	23	84.9	61,600	56.6	41,080
1957	1510	2,810	July 6, 1957	4.2	699	508,000	761	550,700
1958	1560	2,280	July 27, 1958	71	612	443,000	583	422,300
1959	1630	2,310	June 9, 1959	44	197	142,400	275	199,000
1960	1710	3,420	Apr. 13, 1960	15	577	418,800	-	-

## 8660. Smoky Hill River at Lindsborg, Kans.

Location.--Lat 38°34', long 97°40', in SE $\frac{1}{4}$  sec.17, T.17 S., R.3 W., on downstream side of left pier of First Street Bridge in Lindsborg, 300 ft downstream from milldam and at mile 170.9.

Drainage area.--8,110 sq mi.

Records available.--February 1930 to September 1960 in reports of Geological Survey. January 1905 to September 1923 (fragmentary) in report of Kansas State Board of Agriculture, Division of Water Resources, entitled "Stream-Flow Data 1928 to 1935."

Gage.--Water-stage recorder. Datum of gage is 1,297.09 ft above mean sea level, datum of 1929. Prior to Dec. 25, 1917, chain gage at railroad bridge 450 ft downstream at datum 0.22 ft lower. Dec. 25, 1917, to Feb. 23, 1934, wire-weight or chain gages at present site and datum.

Average discharge.--30 years (1930-60), 358 cfs (259,200 acre-ft per year).

Extremes.--1930-60: Maximum discharge, 26,000 cfs June 3, 1938 (gage height, 32.55 ft); minimum daily, 2 cfs Apr. 13, 25, 1935.  
Flood in May 1903 reached a stage of 33.9 ft, from floodmarks (discharge, 32,000 cfs, from rating curve extended above 26,000 cfs).

Remarks.--Flow regulated by Cedar Bluff and Kanopolis Reservoirs (see elsewhere in this report).

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1,706	1,065	173	103	91.5	108	358	1,124	2,238	4,538	5,667	3,349	1,553
1952	5,079	453	211	230	315	614	473	836	386	99.8	92.7	71.7	576
1953	65.8	65.9	69.9	68.1	64.3	64.9	58.8	144	68.0	90.1	104	96.5	80.3
1954	55.4	50.0	49.9	50.5	49.4	45.3	45.7	46.2	408	77.4	42.0	41.4	79.4
1955	40.8	42.3	40.7	44.4	43.0	35.1	99.2	63.7	76.2	221	62.0	126	74.6
1956	364	69.5	53.2	38.4	38.1	35.4	42.6	35.9	105	68.9	76.6	62.3	82.9
1957	85.0	49.8	35.1	28.7	38.0	34.3	80.7	991	1,530	2,250	2,287	1,127	717
1958	568	359	178	122	100	323	1,754	1,008	570	1,392	1,306	304	669
1959	409	115	104	91.4	107	129	241	326	766	516	114	213	244
1960	1,219	322	62.2	71.2	303	690	2,261	1,063	687	153	239	651	658

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	104,900	63,390	10,640	6,320	5,080	6,640	21,300	69,140	133,200	279,000	225,500	199,300	1,124,000
1952	189,300	26,330	12,960	14,170	18,090	37,760	28,140	51,400	22,940	6,140	5,700	4,270	417,800
1953	4,040	3,920	4,300	4,190	3,570	3,990	3,500	8,870	4,050	5,640	6,390	5,740	58,100
1954	3,410	2,970	3,070	3,100	2,750	2,660	2,600	2,840	24,270	4,760	2,580	2,470	57,480
1955	2,510	2,520	2,510	2,730	2,390	2,160	5,900	3,920	4,530	13,570	3,810	7,480	54,030
1956	22,410	4,140	3,270	2,360	2,190	2,180	2,530	2,210	6,230	4,240	4,710	3,710	60,180
1957	5,230	2,980	2,160	1,770	2,110	2,110	4,800	60,920	91,070	138,300	140,600	67,080	519,100
1958	34,910	21,360	10,960	7,470	5,560	19,890	104,400	61,980	35,890	85,620	80,280	18,080	484,400
1959	25,140	6,840	6,420	5,620	5,940	7,960	14,330	20,040	45,560	19,450	7,010	12,660	177,000
1960	74,950	19,170	3,820	4,360	17,400	42,400	134,500	65,370	40,890	9,430	14,720	50,630	477,700

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	658	476,600
1951	1210	14,200	July 12, 1951	50	1,553	1,124,000	1,623.	1,175,000
1952	1240	3,300	Oct. 21, 30, 1951	67	576	417,800	277	200,900
1953	1280	3,080	May 27, 1953	43	80.3	58,100	76.4	55,290
1954	1340	742	June 18, 1954	32	79.4	57,480	76.7	55,570
1955	1390	932	Apr. 13, 1955	20	74.6	54,030	105	76,310
1956	1440	1,060	June 3, 1956	21	82.9	60,180	56.1	40,710
1957	1510	5,300	May 17, 1957	11	717	519,100	796	576,000
1958	1560	4,680	July 27, 1958	80	669	484,400	629	455,600
1959	1630	2,500	June 30, 1959	50	244	177,000	327	236,500
1960	1710	3,140	Apr. 14, 1960	32	658	477,700	-	-

8665. Smoky Hill River near Mentor, Kans.

Location.--Lat 38°47'54", long 97°34'28", on south line of sec.29, T.14 S., R.2 W., at downstream side of highway bridge, 3.6 miles southeast of Salina City Hall, 4 miles north of Mentor, and at mile 131.5.

Drainage area.--8,230 sq mi.

Records available.--December 1923 to October 1930, May 1931 to June 1932, October 1947 to September 1950. Published as "near Salina" 1948-49.

Gage.--Water-stage recorder. Datum of gage is 1,211.40 ft above mean sea level (levels by Corps of Engineers). Prior to June 30, 1932, chain gage at site 10 miles upstream at datum 20.9 ft higher. Oct. 1, 1947, to Sept. 18, 1948, wire-weight gage and Sept. 19, 1948, to June 26, 1959, water-stage recorder, at site 0.3 mile west on former channel at present datum. June 27 to Sept. 8, 1959, wire-weight gage at present site and datum.

Average discharge.--19 years (1924-30, 1947-60), 435 cfs (314,900 acre-ft per year).

Extremes.--1923-32, 1947-60: Maximum discharge, 25,500 cfs Aug. 17, 1927 (gage height, 26.2 ft, from floodmark, site and datum then in use), from rating curve extended above 5,700 cfs on basis of flood-routing study and slope-area measurement at gage height 25.8 ft; minimum observed, 7 cfs Nov. 13, 1947.

Greatest flood known at Salina,  $7\frac{1}{2}$  miles downstream, occurred in 1844; second greatest flood known, May 29, 1903, reached a stage of 26.5 ft near Mentor, from floodmarks, site and datum of 1923-32.

Remarks.--Flow regulated by Cedar Bluff and Kanopolis Reservoirs (see elsewhere in this report). Diversions above station for irrigation.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1,766	1,139	206	131	116	119	373	1,182	2,169	5,417	3,471	3,414	1,656
1952	3,093	643	274	274	334	636	571	824	462	136	123	89.3	625
1953	83.0	85.8	90.0	85.7	78.0	80.9	70.4	169	78.4	94.8	99.8	98.0	93.1
1954	54.4	54.3	55.5	51.4	53.3	45.0	45.4	55.1	369	87.9	41.7	38.2	78.9
1955	40.5	45.7	47.8	48.8	49.4	43.9	150	64.6	76.4	181	54.4	88.4	74.3
1956	351	68.1	54.3	38.0	44.3	36.9	37.8	32.9	76.9	38.5	47.6	38.6	72.4
1957	67.9	48.1	50.1	20.7	35.0	56.0	83.0	837	1,561	2,177	2,261	1,042	698
1958	609	392	221	157	132	366	1,835	1,026	837	1,843	1,374	369	692
1959	461	156	125	100	127	146	279	362	806	390	118	219	274
1960	1,324	350	101	131	338	760	2,161	1,133	728	183	227	816	688

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	108,600	67,760	12,680	8,040	6,420	7,310	22,200	72,700	129,100	333,100	213,400	203,100	1,184,000
1952	190,200	38,240	16,870	16,830	19,220	39,120	33,960	50,640	27,460	8,390	7,850	5,320	453,800
1953	5,110	5,100	5,530	5,270	4,330	4,970	4,190	10,420	4,670	5,830	6,140	5,830	87,390
1954	3,340	3,230	3,410	3,160	2,960	2,770	2,700	3,390	21,940	5,400	2,570	2,280	57,150
1955	2,490	2,720	2,940	3,000	2,740	2,700	8,910	3,970	4,540	11,140	3,350	5,260	53,760
1956	21,600	4,050	3,340	2,340	2,550	2,270	2,250	2,030	4,580	2,360	2,930	2,300	52,600
1957	4,470	2,860	1,850	1,270	1,830	2,210	4,940	57,630	94,060	33,900	39,000	81,970	506,700
1958	37,440	23,340	13,590	9,660	7,350	22,520	97,310	63,080	37,880	82,570	84,500	21,930	501,200
1959	26,340	9,310	7,700	6,170	7,070	8,990	16,600	22,230	47,980	23,960	7,270	13,030	198,600
1960	81,400	20,820	6,210	8,040	19,440	46,730	129,800	69,680	43,290	11,250	13,930	48,570	499,200

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	715	517,500	
1951	1210	20,000	July 13, 1951	80	1,656	1,184,000	1,714	1,241,000	
1952	1240	3,190	Oct. 31, 1951	81	625	453,800	309	224,200	
1953	1280	2,250	May 28, 1953	53	93.1	67,390	85.1	61,630	
1954	1340	735	June 13, 1954	35	78.9	57,150	76.4	55,320	
1955	1390	1,800	Apr. 13, 1955	30	74.3	53,760	103	74,600	
1956	1440	641	June 4, 1956	20	72.4	52,600	44.7	32,490	
1957	1510	3,820	June 28, 1957	13	698	505,700	789	571,200	
1958	1560	4,000	May 4, 1958	110	692	501,200	652	472,200	
1959	1630	2,300	June 11, 1959	45	274	198,600	362	261,700	
1960	1710	3,080	Apr. 14, 1960	60	688	499,200	-	-	

## 8669. Saline River near Wakeeney, Kans.

Location.--Lat 39°06'15", long 99°52'20", on west line sec.10, T.11 S., R.23 W., on downstream side of bridge on U. S. Highway 283, 1 mile upstream from Trego Creek and 5 miles north of Wakeeney.

Drainage area.--696 sq mi.

Records available.--October 1955 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 2,217.28 ft above mean sea level, datum of 1929. Prior to May 23, 1958, wire-weight gage and crest-stage gages at same site and datum.

Average discharge.--5 years (1955-60), 45.5 cfs (32,940 acre-ft per year).

Extremes.--1955-60: Maximum discharge, 13,000 cfs June 17, 1957 (gage height, 19.40 ft); no flow at times in 1955-57, 1959.

Maximum stage known since at least 1879, about 27 ft in July 1950.

Remarks.--Records of chemical analyses for the period October 1955 to September 1958 and suspended sediment loads and water temperatures for the period October 1955 to September 1959 are published in reports of Geological Survey.

## Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1956	2.38	2.57	0.40	0.67	1.42	2.41	2.08	78.6	5.62	60.4	0.55	0	13.5
1957	0	0	0	0	0	12.3	259	680	121	21.2	95.4	98.7	98.7
1958	10.2	7.19	9.10	9.61	8.98	15.8	37.0	133	29.8	110	46.2	3.52	35.5
1959	2.69	5.55	8.01	8.56	13.3	13.1	11.7	10.6	6.19	7.16	27.1	8.28	10.2
1960	55.3	10.5	8.56	7.12	32.2	335	41.2	207	43.7	8.24	74.0	4.09	69.6

## Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1956	147	153	25	41	82	148	124	4,840	334	3,710	34	0	9,640
1957	0	0	0	0	0	14	734	15,950	40,450	7,410	1,310	5,670	71,540
1958	628	428	560	591	499	969	2,200	8,210	1,770	6,780	2,840	209	25,680
1959	185	350	493	527	740	807	896	652	368	440	1,870	495	7,380
1960	3,400	622	526	438	1,850	20,620	2,450	12,730	2,600	507	4,550	243	50,540

## Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet		
		Discharge	Date							
1956	1440	7,480	May 30, 1956	0	13.3	9,640	12.8	9,310		
1957	1510	13,000	June 17, 1957	0	98.8	71,540	101	73,150		
1958	1560	2,360	May 17, 1958	1.7	35.5	25,680	34.6	25,060		
1959	1630	905	Aug. 15, 1959	0	10.2	7,380	15.1	10,940		
1960	1710	7,580	May 16, 1960	.6	69.6	50,540	-	-		

## 8670. Saline River near Russell, Kans.

Location.--Lat 38°58', long 98°51', on east line of sec.34, T.12 S., R.14 W., at downstream side of bridge on U. S. Highway 281, 2 miles downstream from Salt Creek and 5 miles north of Russell.

Drainage area.--1,502 sq mi.

Records available.--October 1945 to September 1953, June 1959 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 1,551.59 ft above mean sea level, datum of 1929. Prior to Jan. 22, 1946, wire-weight gage at same site and datum.

Average discharge.--9 years (1945-53, 1959-60), 172 cfs (124,500 acre-ft per year).

Extremes.--1945-53, 1959-60: Maximum discharge, 17,000 cfs June 28, 1951 (gage height, 19.12 ft, corrected); minimum, 3.2 cfs June 24, 25, 27, 1953.

Remarks.--Records of suspended sediment loads for the period May 1946 to September 1951 and water temperatures for the period October 1947 to September 1951 are published in reports of Geological Survey.

## Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	180	60.7	52.5	43.5	52.3	55.6	78.4	692	3,011	1,408	328	778	561
1952	136	109	65.5	71.8	73.6	88.2	161	178	69.0	44.8	24.2	14.0	86.2
1953	13.4	22.6	20.6	31.6	29.3	32.8	26.7	26.3	11.8	110	57.6	6.81	32.8
1959	-	-	-	-	-	-	-	-	111	34.6	33.4	34.9	-
1960	144	46.5	41.0	32.6	87.0	561	250	372	263	69.3	346	91.7	193

## Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	11,050	3,610	3,230	2,680	2,900	3,420	4,670	42,530	179,100	86,540	20,150	46,310	406,200
1952	8,330	6,460	4,030	4,410	4,230	5,420	9,560	10,950	4,110	2,750	1,490	830	62,670
1953	822	1,360	1,270	1,940	1,630	2,020	1,710	1,620	702	6,750	3,540	405	23,770
1959	-	-	-	-	-	-	-	-	6,600	2,130	2,060	2,060	-
1960	8,680	2,770	2,520	2,010	5,000	34,490	14,860	22,890	15,640	4,260	21,300	5,480	140,100

## Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet		
		Discharge	Date							
1950	-	-	-	-	-	-	-	-	-	-
1951	1210	17,000	June 28, 1951	30	561	406,200	238	172,400		
1952	1240	560	Apr. 30, 1952	9.5	86.2	62,570	562	407,100		
1953	1280	1,130	July 12, 1953	3.6	32.8	23,770	65.0	47,200		
1959	1630	-	-	-	-	-	-	-		
1960	1710	6,000	Aug. 26, 1960	13	193	140,100	-	-		



8675. Paradise Creek near Paradise, Kans.

Location.--Lat 39°04', long 98°51', on west line of sec.26, T.11 S., R.14 W., on downstream side of center pier of bridge on U. S. Highway 281, 4½ miles southeast of Paradise.

Drainage area.--212 sq mi.

Records available.--April 1946 to September 1953.

Gage.--Water-stage recorder. Datum of gage is 1,601.66 ft above mean sea level, datum of 1929. Prior to June 25, 1947, wire-weight gage at same site and datum.

Average discharge.--7 years (1946-53), 32.3 cfs (23,380 acre-ft per year).

Extremes.--1946-53: Maximum discharge, 14,800 cfs July 11, 1951 (gage height, 23.10 ft), from rating curve extended above 9,300 cfs on basis of slope-area measurement of peak flow; no flow at times.

Remarks.--Records of suspended sediment loads for the period March 1947 to September 1951, and water temperatures for the period June 1949 to September 1951 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	65.1	3.71	4.54	3.97	5.53	8.85	20.9	138	468	665	45.0	108	129
1952	16.9	16.6	11.8	11.8	11.8	16.7	39.5	26.5	8.50	5.92	1.13	.31	14.1
1953	.17	.68	1.15	1.64	1.61	3.96	1.72	1.04	2.19	23.5	14.6	0	4.40

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	4,000	221	279	244	307	544	1,240	8,500	27,850	40,910	2,770	6,410	93,280
1952	1,040	986	728	728	676	1,150	2,350	1,630	506	364	69	18	10,240
1953	11	40	71	101	89	243	102	64	150	1,440	896	0	3,190

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	37.9	27,410
1951	1210	14,800	July 11, 1951	1.0	129	93,280	126	91,530
1952	1240	254	Apr. 21, 1952	0	14.1	10,240	10.5	7,610
1953	1280	474	Aug. 6, 1953	0	4.40	3,190	-	-

8680. Saline River near Wilson, Kans.

Location.--Lat 38°56', long. 98°32', in SE $\frac{1}{4}$  sec. 10, T. 13 S., R. 11 W., on left bank 100 ft upstream from highway bridge, three-quarters of a mile upstream from Hell Creek, 8 miles northwest of Wilson, and at mile 135.0.

Drainage area.--1,900 sq mi, approximately.

Records available.--May 1929 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 1,442.72 ft above mean sea level, datum of 1929. Prior to Apr. 8, 1931, chain or wire-weight gage and Apr. 8, 1931, to Nov. 25, 1938, water-stage recorder, at highway bridge at same datum.

Average discharge.--31 years (1929-60), 161 cfs (116,600 acre-ft per year).

Extremes.--1929-60: Maximum discharge, 24,300 cfs June 18, 1957 (gage height, 25.83 ft); no flow for part of Nov. 9, 1956, Jan. 3, 4, 1957.

Flood in July-August 1928 reached a stage of about 26.8 ft, from floodmarks (discharge, 25,700 cfs, from rating curve extended above 10,000 cfs).

Remarks.--Records of chemical analyses for the period February 1948 to September 1951 and water temperatures for the period March 1948 to April 1951 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	264	83.2	71.0	63.7	82.4	77.6	127	909	3,992	2,357	478	1,095	800
1952	202	162	97.5	102	110	129	255	259	99.3	75.0	49.3	29.1	131
1953	25.8	33.9	30.9	49.8	44.1	54.2	41.2	39.2	30.9	145	89.6	13.6	50.1
1954	11.8	29.5	31.0	20.2	37.4	34.7	22.8	112	320	22.7	38.9	18.7	58.0
1955	52.5	19.4	20.2	20.4	20.1	25.1	30.0	22.8	109	22.2	5.11	87.3	36.1
1956	42.1	15.1	14.3	12.2	18.0	21.0	15.6	39.7	283	280	102	7.14	71.0
1957	7.86	6.46	6.85	6.57	12.6	18.8	66.8	672	2,812	859	192	236	407
1958	89.5	61.1	54.0	47.3	45.2	390	615	1,141	234	328	294	257	298
1959	89.4	71.4	74.7	63.9	96.6	81.5	66.0	343	199	55.8	39.8	62.6	104
1960	201	59.2	53.5	42.5	123	770	345	420	334	105	320	145	244

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	16,210	4,950	4,370	3,920	4,570	4,770	7,580	55,880	237,600	145,000	29,410	65,170	579,400
1952	12,410	9,650	5,990	6,280	6,500	7,940	15,200	15,930	5,910	4,610	3,030	1,730	94,980
1953	1,590	2,020	1,900	3,060	2,450	3,330	2,450	2,410	1,840	8,890	5,510	821	36,270
1954	728	1,760	1,910	1,240	2,060	2,130	1,360	6,910	19,010	1,400	2,390	1,110	42,030
1955	3,230	1,160	1,240	1,260	1,110	1,540	1,790	1,400	6,500	1,560	314	5,190	26,090
1956	2,590	897	879	752	1,030	1,290	930	2,440	16,870	17,220	6,840	425	51,560
1957	483	384	421	404	702	1,150	3,980	41,290	167,300	52,790	11,830	14,020	294,800
1958	5,510	3,640	3,320	2,910	2,510	23,950	36,820	70,130	13,930	20,160	18,090	15,320	216,100
1959	5,500	4,250	4,590	3,930	5,370	5,010	3,930	21,090	11,850	3,410	2,450	3,720	75,100
1960	12,360	3,520	3,290	2,620	7,060	47,340	20,520	25,810	19,860	6,490	19,700	8,630	177,200

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	318	230,300	
1951	1210	19,300	June 23, 1951	35	800	579,400	604	582,000	
1952	1240	584	May 1, 1952	22	131	94,980	99.8	72,440	
1953	1280	752	July 14, 1953	9.0	50.1	36,270	48.6	35,160	
1954	1340	4,990	June 16, 1954	7.5	58.0	42,030	59.8	43,260	
1955	1390	1,960	Sept. 19, 1955	2.0	36.1	26,090	34.3	24,830	
1956	1440	2,830	June 6, 1956	3.5	71.0	51,560	66.8	48,480	
1957	1510	24,300	June 18, 1957	2.0	407	294,800	425	305,900	
1958	1560	10,900	May 17, 1958	25	298	216,100	301	218,000	
1959	1630	5,580	May 30, 1959	22	104	75,100	110	79,950	
1960	1710	4,380	Mar. 24, 1960	20	244	177,200	-	-	

## 8684. Wolf Creek near Lucas, Kans.

Location--Lat 39°03'30", long 98°33'10", in NW¼ sec.33, T.11 S., R.11 W., at downstream side of highway bridge, 1.2 miles west of Lucas, 4 miles upstream from East Fork, and 15 miles upstream from mouth.

Drainage area--163 sq mi.

Records available--June 1959 to September 1960.

Gage--Water-stage recorder. Datum of gage is 1,456.21 ft above mean sea level, datum of 1929.

Extremes--1959-60: Maximum discharge, 4,090 cfs June 28, 1959; maximum gage height, 25.40 ft June 28, 1959; minimum daily discharge, 0.7 cfs Sept. 17, 1959.

Maximum stage known since at least 1895, about 32 ft July 11, 1951, from floodmarks, information by local residents, and Corps of Engineers. Flood of June 17, 1957, reached a stage of about 30 ft. Flood in 1935 was highest known prior to 1951.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1959	-	-	-	-	-	-	-	-	-	3.72	1.46	43.5	-
1960	53.3	4.05	4.80	6.56	43.5	201	47.3	29.9	19.6	7.26	6.14	5.02	35.9

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1959	-	-	-	-	-	-	-	-	-	229	90	2,590	-
1960	3,280	241	295	422	2,500	12,360	2,810	1,840	1,160	446	378	299	26,030

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1959	1710	44,090	June 28, 1959	-	-	-	-	-
1960	1710	3,220	Mar. 27, 1960	2.3	35.9	26,030	-	-

a Maximum during period June to September.

## 8685. Wolf Creek near Sylvan Grove, Kans.

Location--Lat 39°01', long 98°28', on line between secs.7 and 18, T.12 S., R.10 W., on left bank at downstream side of county highway bridge, 3 miles upstream from mouth and 4½ miles west of Sylvan Grove.

Drainage area--261 sq mi.

Records available--October 1945 to September 1953.

Gage--Water-stage recorder. Datum of gage is 1,419.60 ft above mean sea level (levels by U. S. Bureau of Reclamation). Prior to Sept. 20, 1946, wire-weight gage at same site and datum.

Average discharge--8 years (1945-53), 50.4 cfs (36,490 acre-ft per year).

Extremes--1945-53: Maximum discharge, 29,300 cfs July 11, 1951 (gage height, 30.96 ft), from rating curve extended above 3,700 cfs on basis of contracted-opening and slope-area measurements of peak flow; no flow at times in July and August 1946.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	20.5	3.49	3.96	3.68	5.62	5.64	28.3	128	1,285	934	54.9	430	242
1952	35.5	28.1	18.2	17.4	16.0	18.7	81.1	35.5	14.2	11.2	16.1	3.85	24.6
1953	4.55	7.94	7.49	7.82	6.71	7.27	7.47	6.58	5.59	5.07	2.55	.78	5.80

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1,260	206	244	239	312	347	1,680	7,890	76,490	57,440	3,380	25,610	175,100
1952	2,190	1,670	1,220	1,070	918	1,150	4,830	2,190	848	688	959	229	17,890
1953	280	473	461	461	373	447	445	404	321	312	157	46	4,200

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	38.2	27,640
1951	1210	29,300	July 11, 1951	2.0	242	175,100	246	178,400
1952	1240	690	Apr. 9, 1952	3.2	24.6	17,890	19.5	14,120
1953	1280	79	June 28, 1953	.4	5.80	4,200	-	-

## 8695. Saline River at Tescott, Kans.

Location.--Lat 39°00', long 97°53', in SE $\frac{1}{4}$  sec.16, T.12 S., R.5 W., on downstream side of left pier of highway bridge, half a mile south of Tescott, half a mile upstream from Dry Creek, and at mile 54.5.

Drainage area.--2,820 sq mi.

Records available.--September 1919 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 1,265.34 ft above mean sea level, datum of 1929. Prior to Nov. 23, 1934, chain gage at same site and datum.

Average discharge.--41 years (1919-60), 238 cfs (172,300 acre-ft per year).

Extremes.--1919-60: Maximum discharge, 61,400 cfs July 13, 1951 (gage height, 30.06 ft), from rating curve extended above 7,000 cfs on basis of slope-area measurement of peak flow; no flow at times in 1935-36.

Remarks.--Some diurnal fluctuation caused by powerplants above station. Diversions above station for irrigation. Records of chemical analyses for the period December 1949 to September 1953, suspended sediment loads for the period July 1959 to September 1960, and water temperatures for the periods April 1950 to September 1953 and July 1959 to September 1960 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	555	136	118	108	104	106	319	1,344	5,756	5,589	769	2,131	1,590
1952	404	313	204	190	187	233	606	410	231	121	328	68.9	275
1953	54.9	70.0	60.9	81.3	77.0	89.7	74.2	80.3	47.3	179	118	31.9	80.6
1954	22.4	48.6	56.8	34.3	52.9	49.8	40.9	200	491	44.7	42.3	21.7	91.8
1955	92.6	27.8	29.9	29.3	29.2	36.0	45.9	23.5	137	46.0	8.88	176	56.6
1956	72.3	21.1	20.0	20.6	28.5	33.8	33.7	19.3	352	286	187	11.1	90.6
1957	11.2	29.4	12.5	10.6	19.6	26.8	191	1,371	2,445	2,073	284	559	588
1958	240	117	101	92.5	81.1	553	1,242	1,495	380	556	384	339	468
1959	174	117	112	96.4	159	172	119	438	649	185	63.7	195	206
1960	385	100	78.9	108	333	1,698	666	596	437	161	379	360	443

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	54,130	8,110	7,230	6,820	5,780	6,500	18,970	82,630	402,000	405,200	47,280	126,800	1,151,000
1952	24,850	18,610	12,530	11,700	10,730	14,350	36,040	25,220	13,760	7,420	20,150	4,100	199,500
1953	3,380	4,160	3,750	5,000	4,280	5,510	4,410	4,940	2,810	11,010	7,240	1,900	58,390
1954	1,380	2,890	3,490	2,110	2,940	3,060	2,430	12,320	29,230	2,750	2,600	1,290	66,490
1955	5,690	1,660	1,840	1,800	1,620	2,210	2,730	1,450	8,140	2,830	546	10,470	40,990
1956	4,440	1,250	1,230	1,270	1,640	2,080	2,010	1,180	20,960	17,560	11,520	662	65,800
1957	690	1,750	770	654	1,090	1,650	11,340	84,290	45,500	27,500	17,470	33,270	426,000
1958	14,790	6,950	6,190	5,680	4,510	33,990	73,930	91,910	22,630	34,190	23,640	20,160	338,600
1959	10,700	6,960	6,880	5,930	8,840	10,600	7,100	26,780	38,620	11,590	3,920	11,580	149,500
1960	23,660	5,960	4,850	6,650	19,130	104,400	39,620	36,660	26,000	9,900	23,320	21,400	321,600

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	410	297,200
1951	1210	61,400	July 13, 1951	66	1,590	1,151,000	1,599	1,158,000
1952	1240	2,720	Aug. 12, 1952	54	275	199,500	213	154,800
1953	1280	687	July 16, 1953	22	80.6	58,390	75.8	54,860
1954	1340	2,580	June 19, 1954	12	91.8	66,490	93.8	67,920
1955	1390	1,230	Sept. 22, 1955	3.0	56.6	40,990	53.5	38,720
1956	1440	2,090	June 9, 1956	5.8	90.6	65,800	85.5	62,090
1957	1510	13,600	July 1, 1957	4.9	588	426,000	622	450,700
1958	1560	8,490	May 21, 1958	55	468	338,600	463	335,200
1959	1630	4,170	June 30, 1959	42	206	149,500	220	159,400
1960	1710	11,900	Mar. 29, 1960	55	443	321,600	-	-

## 8703. Gypsum Creek near Gypsum, Kans.

Location.--Lat 38°39'11", long 97°25'10", on south line of sec.15, T.16 S., R.1 W., on left bank at downstream side of highway bridge, 2.6 miles upstream from Stag Creek, 3.5 miles south of Gypsum, and 22.7 miles upstream from mouth.

Drainage area.--120 sq mi, approximately.

Records available.--October 1954 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 1,232.16 ft above mean sea level, datum of 1929. Prior to July 21, 1959, wire-weight and crest-stage gages at same site and datum.

Average discharge.--6 years (1954-60), 20.6 cfs (14,910 acre-ft per year).

Extremes.--1954-60: Maximum discharge, 6,900 cfs Apr. 13, 1955 (gage height, 19.00 ft); no flow at times in 1955-57, 1959-60.

Maximum stage known since at least 1869, 22.2 ft May 29, 1903; flood in April 1929 reached a stage of 21.9 ft, and that of July 11, 1951, a stage of 21.7 ft, from flood-mark, information from newspapers and local residents.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1955	0	0	0.05	0.15	1.09	1.13	114	1.42	1.48	2.73	0	2.56	10.2
1956	.25	0	0	.05	.02	.133	.12	2.62	.05	0	0	0	.26
1957	0	0	0	0	0	1.33	10.3	149	112	9.23	.25	1.51	23.7
1958	23.1	6.06	4.34	6.25	11.8	95.5	21.9	76.0	19.0	49.1	6.28	69.8	32.6
1959	13.2	11.0	8.84	10.3	17.3	17.3	17.6	152	8.38	7.59	.50	18.6	23.7
1960	27.1	5.92	8.39	34.6	46.8	123	38.1	32.0	47.8	10.3	18.1	9.46	33.4

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1955	0	0	3.4	9.1	60	70	6,770	87	88	168	0	152	7,410
1956	15	0	0	3.4	1.0	1.0	7.3	161	3.0	0	0	0	192
1957	0	0	0	0	0	82	611	9,140	640	567	15	90	17,140
1958	1,420	361	267	364	658	5,870	1,300	4,670	1,130	3,020	366	4,150	23,620
1959	813	652	544	634	960	1,070	1,050	9,340	499	467	31	1,100	17,160
1960	1,660	352	516	2,130	2,690	7,550	2,270	1,970	2,840	632	1,110	563	24,280

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1955	1560	6,900	Apr. 13, 1955	0	10.2	7,410	10.2	7,420	
1956	1560	62	May 30, 1956	0	.26	192	.24	177	
1957	1560	2,660	June 27, 1957	0	23.7	17,140	26.5	19,190	
1958	1560	1,450	May 4, 1958	.1	32.6	23,620	32.6	23,580	
1959	1630	3,550	May 5, 1959	0	23.7	17,160	24.4	17,680	
1960	1710	905	Mar. 24, 1960	0	33.4	24,280	-	-	

## 8705. Smoky Hill River near New Cambria, Kans.

Location.--Lat 38°52'30", long 97°24'35", on east line of sec.34, T.13 S., R.1 W., on downstream side of county highway bridge, 1 mile downstream from Gypsum Creek, 5 miles east of New Cambria, and 7 miles upstream from Solomon River.

Drainage area.--11,980 sq mi, approximately.

Records available.--December 1948 to September 1953 (for stages below 25 ft only).

Gage.--Wire-weight gage. Datum of gage is 1,147.6 ft above mean sea level, datum of 1929.

Extremes.--1948-53: Maximum gage height, 30.8 ft July 12, 1951 (discharge not determined); minimum discharge observed, 112 cfs Sept. 30, 1953.

Remarks.--Natural flow of stream affected by Cedar Bluff Reservoir beginning Nov. 13, 1950 (see p. 378), Kanopolis Reservoir (see p. 384) and by numerous small diversions for irrigation above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	2,301	1,342	420	285	276	275	714	2,992	-	4,850	-	-	-
1952	3,714	1,302	770	648	642	1,142	2,423	1,782	1,035	351	558	230	1,219
1953	181	194	187	214	210	246	210	851	247	274	220	139	266

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	141,500	79,820	25,800	17,510	15,320	16,890	42,480	184,000	-	298,200	-	-	-
1952	228,400	77,500	47,330	39,860	36,940	70,240	144,200	109,600	61,610	21,560	34,300	13,660	885,200
1953	11,110	11,520	11,510	13,160	11,690	15,230	12,490	52,330	14,700	16,850	13,540	8,290	192,400

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	-	-	-
1951	1210	(a)	July 12, 1951	220	-	-	1,239	897,400	
1952	1240	8,700	Apr. 21, 1952	190	1,219	885,200	780	566,100	
1953	1280	10,100	May 28, 1953	112	266	192,400	-	-	

a Discharge not computed for stages above 25 ft; maximum gage height, 30.8 ft.

## 8710. North Fork Solomon River at Glade, Kans.

Location.--Lat 39°40'40", long 99°18'30", on west line of sec.25, T.4 S., R.18 W., at downstream side of bridge on U. S. Highway 183, half a mile south of Glade.

Drainage area.--849 sq. mi.

Records available.--October 1952 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 1,756.04 ft above mean sea level, datum of 1929.

Average discharge.--8 years (1952-60), 41.8 cfs (30,260 acre-ft per year).

Extremes.--1952-60: Maximum discharge, 23,300 cfs June 16, 1957 (gage height, 16.55 ft); no flow at times in each year.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952													
1953	6.73	10.3	5.68	19.8	19.2	18.9	17.6	59.1	24.7	167	31.2	2.65	32.2
1954	.97	9.31	8.65	7.48	26.5	14.4	43.2	265	78.7	2.49	2.56	24.3	40.3
1955	.04	1.05	4.78	7.78	10.9	5.94	1.72	120	16.0	16.9	102		24.6
1956	3.71	.23	0	3.62	9.35	11.9	5.60	3.64	14.9	29.8	0	0	6.91
1957	.02	.85	0	0	0	.05	29.4	228	1,011	182	27.1	15.2	124
1958	4.30	9.04	9.80	7.19	16.5	26.0	32.7	51.4	25.0	88.8	41.6	12.7	27.2
1959	0	2.42	2.69	2.02	20.6	22.9	16.8	21.7	55.9	105	2.76	0	21.0
1960	13.0	4.71	7.55	4.75	26.6	250	62.6	177	120	30.6	1.98	0	58.5

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952													
1953	414	610	349	1,220	1,070	1,160	1,050	3,630	1,470	10,250	1,920	157	23,300
1954	60	590	532	460	1,470	887	2,570	16,290	4,560	153	158	1,450	29,180
1955	2.6	82	293	479	542	670	354	106	7,170	985	1,040	6,070	17,770
1956	228	14	0	223	538	731	333	224	889	1,630	0	0	5,010
1957	1.2	51	0	0	0	3.0	1,750	14,000	60,160	11,190	1,670	906	89,730
1958	264	538	603	442	918	600	1,940	3,160	1,490	5,480	2,560	756	19,730
1959	0	144	165	124	1,140	410	998	1,340	3,210	6,480	170	0	15,180
1960	797	280	464	295	1,530	15,350	3,730	10,890	7,130	1,880	122	0	42,470

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950								
1951								
1952								
1953	1280	11,600	July 20, 1953	0	32.2	23,300	31.9	23,110
1954	1340	4,240	May 28, 1954	0	40.3	29,180	39.2	28,360
1955	1390	4,100	Sept. 26, 1955	0	24.6	17,770	24.4	17,660
1956	1440	780	July 7, 1956	0	6.91	5,010	6.64	4,820
1957	1510	23,300	June 16, 1957	0	124	89,730	126	91,080
1958	1560	992	July 4, 1958	0	27.2	19,730	25.7	18,630
1959	1630	3,330	July 14, 1959	0	21.0	15,180	22.7	16,410
1960	1710	4,530	Mar. 23, 1960	0	58.5	42,470	-	-

## 8715. Bow Creek near Stockton, Kans.

Location.--Lat 39°34', long 99°17', on west line of sec.1, T.6 S., R.18 W., near center of stream at downstream side of bridge on U. S. Highway 183, 8.5 miles north of Stockton.

Drainage area.--837 sq. mi.

Records available.--November 1950 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 1,801.80 ft above mean sea level, datum of 1929. Prior to June 28, 1951, wire-weight gage at same site and datum.

Average discharge.--9 years (1951-60), 16.2 cfs (11,730 acre-ft per year).

Extremes.--1950-60: Maximum discharge, 12,900 cfs July 12, 1951 (gage height, 13.6 ft); from rating curve extended above 2,400 cfs on basis of contracted-opening measurement of peak flow; no flow at times.

Monthly and yearly mean discharge, in cubic feet per second, of Bow Creek near Stockton, Kans.

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	8.89	7.98	5.45	6.95	8.09	38.3	468	539	49.0	102	-
1952	22.2	14.3	11.2	12.1	11.3	11.3	20.4	38.0	15.4	5.57	9.93	2.39	14.5
1953	3.72	5.15	4.63	6.58	8.74	9.36	7.44	6.59	5.06	33.5	4.86	.40	8.04
1954	.67	3.78	2.25	2.06	7.55	6.80	6.95	84.4	94.0	5.07	4.33	10.5	19.0
1955	2.95	3.15	4.25	3.55	4.79	6.56	5.15	2.41	17.0	.32	.27	40.3	7.47
1956	2.65	1.25	1.19	2.33	4.07	5.17	4.26	2.45	3.43	18.8	.91	0	3.89
1957	0	0	0	0	.22	1.68	13.0	87.3	321	75.5	15.4	6.16	43.3
1958	2.78	4.24	4.75	6.47	5.09	9.06	15.9	17.5	6.13	29.3	37.7	17.7	13.1
1959	3.34	4.27	4.75	4.09	11.2	8.65	7.47	7.10	6.01	15.5	2.06	10.9	7.08
1960	30.6	5.92	4.65	3.64	18.4	91.2	29.8	120	29.1	10.1	3.49	1.60	29.2

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	547	491	302	427	482	2,360	27,850	33,150	3,010	6,080	-
1952	1,360	849	685	742	649	695	1,220	2,340	916	343	611	142	10,550
1953	228	306	285	404	485	576	443	405	300	2,060	299	24	5,820
1954	41	225	138	127	420	418	414	5,190	5,600	312	266	611	13,760
1955	181	187	262	218	266	391	307	148	1,010	20	16	2,400	5,410
1956	163	74	73	143	234	318	254	150	204	1,150	56	0	2,820
1957	0	0	0	0	12	103	777	5,370	19,110	4,640	946	367	31,320
1958	171	252	292	398	283	556	946	1,080	365	1,800	2,320	1,050	9,510
1959	205	254	292	252	624	532	444	437	357	953	127	646	5,120
1960	1,880	352	286	224	1,060	5,610	1,770	7,370	1,730	620	215	95	21,210

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950								
1951	1210	12,900	July 12, 1951	-	-	-	106	77,050
1952	1240	1,210	May 30, 1952	2.0	14.5	10,550	11.7	8,480
1953	1280	470	July 21, 1953	0	8.04	5,820	7.46	5,400
1954	1340	3,360	June 15, 1954	0	19.0	13,760	19.3	13,990
1955	1390	572	Sept. 26, 1955	0	7.47	5,410	7.03	5,090
1956	1440	486	July 7, 1956	0	3.89	2,820	3.46	2,510
1957	1510	4,300	June 17, 1957	0	43.3	31,320	44.3	32,040
1958	1560	1,220	Sept. 5, 1958	1.4	13.1	9,510	13.2	9,550
1959	1630	1,120	July 14, 1959	0	7.08	5,120	9.52	6,890
1960	1710	2,040	May 18, 1960	.7	29.2	21,210	-	-

## 8717. Kirwin Reservoir at Kirwin, Kans.

Location.--Lat 39°40', long 99°07', in SE $\frac{1}{4}$  sec.33, T.4 S., R.16 W., in control house structure at outlet works of Kirwin dam on North Fork Solomon River, half a mile south of Kirwin, 1.6 miles upstream from Deer Creek, and at mile 66.6.

Drainage area.--1,360 sq mi, approximately.

Records available.--September 1955 to September 1960. Monthly records only prior to October 1956.

Gage.--Water-stage recorder and servo-manometer follower. Datum of gage is at mean sea level (levels by Bureau of Reclamation). Prior to Aug. 7, 1957, mercury-column or staff gages at same site and datum.

Extremes.--1955-60: Maximum elevation, 1,731.65 ft May 20, 1960 (contents, 112,100 acre-ft); minimum elevation since first filling of irrigation pool, 1,728.92 ft Sept. 17, 1959 (contents, 74,640 acre-ft).

Remarks.--Reservoir is formed by compacted earthfill dam. Storage began Sept. 19, 1955. Total capacity, 513,000 acre-ft, consisting of the following: dead storage, 6,400 acre-ft below elevation 1,693.00 ft (sill of trashrack structure); irrigation pool, 88,800 acre-ft between elevations 1,693.0 and 1,728.4 ft; flood control pool, 219,400 acre-ft between elevations 1,728.4 and 1,757.3 ft (crest of uncontrolled spillway); and uncontrolled storage, 198,400 acre-ft between elevations 1,757.3 and 1,773.0 ft. Reservoir is used to store water for flood control and irrigation in Kirwin Unit, Missouri River Basin project. Figures given herein represent total contents.

Corrections.--In WSP 1440, the contents for Sept. 18, 1955, is listed in error; it should be 280 acre-ft.

Contents, in acre-feet, on last day of month

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955	-	-	-	-	-	-	-	-	-	-	-	6,315
1956	6,175	6,035	6,035	6,175	6,865	7,650	7,895	7,690	8,280	10,410	9,585	8,545
1957	8,152	7,940	7,855	7,775	7,775	7,982	10,300	29,370	91,040	89,350	86,600	85,020
1958	83,880	83,880	83,480	83,740	84,930	87,860	90,560	93,460	88,900	91,470	90,420	88,330
1959	86,550	85,680	85,910	86,410	88,900	90,800	91,520	92,150	88,330	86,460	77,780	75,970
1960	79,890	79,280	79,630	80,510	83,200	102,200	97,170	105,800	100,600	91,670	85,490	82,890

## 8718. North Fork Solomon River at Kirwin, Kans.

Location.--Lat 39°40', long 99°07', in two channels in SE $\frac{1}{4}$  sec.33 (river outlet gage) and SW $\frac{1}{4}$  sec.34 (spillway gage), T.4 S., R.16 W., 200 and 600 ft, respectively, downstream from toe of Kirwin Dam, half a mile and three-quarters of a mile, respectively, south of Kirwin, 1.3 miles upstream from Deer Creek, and at mile 66.5.

Drainage area.--1,360 sq mi, approximately.

Records available.--August 1919 to June 1925, August 1928 to June 1932, December 1941 to September 1960.

Gage.--Water-stage recorder and concrete control on river outlet channel. Datum of gage is 1,659.50 ft above mean sea level (Bureau of Reclamation bench mark). Water-stage recorder on spillway channel. Datum of spillway channel gage is 1,650.81 ft above mean sea level (Bureau of Reclamation bench mark). Prior to June 25, 1942, wire-weight or chain gages and June 25, 1942, to July 31, 1955, water-stage recorder, at site of former highway bridge 300 ft downstream from present river outlet gage at datum 1,656.95 ft above mean sea level (levels by Bureau of Reclamation). Aug. 1, 1955, to Jan. 29, 1957, staff gage on headwall of river outlet structure 200 ft upstream from present site at previously used datum.

Average discharge.--26 years (1919-24, 1928-31, 1942-60), 71.3 cfs (51,620 acre-ft per year).

Extremes.--1919-25, 1928-32, 1941-60: Maximum discharge, 24,000 cfs Sept. 18, 1919 (gage height, 22.5 ft, site and datum then in use), from rating curve extended above 10,000 cfs on basis of slope-area and contracted-opening measurements at gage height 22.3 ft; no flow at times in 1943, 1948, 1955-60.  
Flood in June 1915 reached a stage of about 27 ft, site and datum in use prior to July 1955, from information by local residents.

Remarks.--Flow regulated by Kirwin Reservoir (see p. 395) beginning Mar. 7, 1955. Figures of flow do not include diversion immediately above station into Kirwin Main Canal. Records of suspended sediment loads and water temperatures for the period February 1950 to June 1952 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	50.3	39.2	38.6	37.8	42.6	28.5	36.0	250	1,395	1,809	357	525	386
1952	130	84.7	61.9	57.4	65.0	66.1	89.1	173	69.7	77.1	76.4	14.0	80.6
1953	13.8	18.6	16.7	28.4	32.0	33.8	31.3	64.7	30.0	222	80.7	3.67	48.4
1954	2.43	14.8	16.4	12.4	37.9	24.4	59.3	378	240	15.5	10.2	36.7	70.7
1955	8.26	7.78	13.5	14.7	23.8	18.5	11.7	6.10	104	44.2	12.9	4.13	22.3
1956	.04	0	0	0	0	0	.33	1.63	2.81	.42	2.89	2.64	.90
1957	.42	0	0	0	0	0	.02	0	.003	163	.02	1.63	14.0
1958	.17	.04	1.78	.07	.09	.05	.21	.10	.04	.23	.07	.08	.25
1959	.003	0	0	0	0	0	.003	0	.09	.10	.10	.10	.03
1960	.08	0	0	0	0	0	161	175	202	6.83	.10	.08	45.2

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	5,090	2,330	2,370	2,320	2,360	1,750	2,140	15,350	82,980	111,200	21,970	51,230	279,100
1952	7,970	5,040	3,810	5,530	5,740	4,060	5,300	10,650	4,150	4,740	4,700	831	58,520
1953	849	1,110	1,030	1,750	1,780	2,080	1,860	3,980	1,790	13,860	4,960	218	35,070
1954	150	882	1,010	761	2,100	1,500	5,530	23,220	14,290	954	627	2,180	51,200
1955	508	463	832	906	5,320	1,140	695	375	6,180	2,720	793	246	16,180
1956	2.6	0	0	0	0	0	20	100	167	26	178	157	651
1957	26	0	0	0	0	0	1.4	0	.2	10,030	1.4	97	10,160
1958	10	2.4	110	4.4	5.0	3.0	12	6.3	2.6	14	4.4	5.0	179
1959	.2	0	0	0	0	0	.2	0	5.4	6.1	6.1	6.1	24
1960	5.2	0	0	0	0	0	9,560	10,790	12,010	429	6.1	4.6	32,800

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	150	108,500
1951	1210	15,600	July 11, 1951	10	386	279,100	398	288,100
1952	1240	2,020	May 31, 1952	10	80.6	58,520	61.6	44,690
1953	1280	7,080	July 21, 1953	1.2	48.4	35,070	47.1	34,120
1954	1340	5,850	June 15, 1954	.7	70.7	51,200	70.4	50,960
1955	1390	201	June 18, 1955	0	22.3	16,180	19.9	14,380
1956	1440	14	June 8, 1956	0	.90	651	.93	674
1957	1510	429	July 6, 1957	0	14.0	10,160	14.2	10,250
1958	1560	90	Dec. 12, 1957	0	.25	179	.08	57
1959	1630	5.3	Apr. 16, 1959	0	.03	24	.04	29
1960	1710	545	Apr. 7, 1960	0	45.2	32,800	-	-



8725. North Fork Solomon River near Downs, Kans.

Location.--Lat 39°31', long 98°36', on south line of sec.19, T.6 S., R.11 W., on downstream side of left pier of bridge on U. S. Highway 24, 3 miles west of Downs, 4½ miles upstream from Oak Creek, and at mile 16.4.

Drainage area.--2,390 sq mi, approximately.

Records available.--September 1945 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 1,460.32 ft above mean sea level, datum of 1929. Prior to Dec. 5, 1946, wire-weight gage at same site and datum.

Average discharge.--15 years (1945-60), 194 cfs (140,500 acre-ft per year).

Extremes.--1945-60: Maximum discharge, 35,700 cfs July 12, 1951 (gage height, 30.41 ft), from rating curve extended above 21,000 cfs by logarithmic plotting; no flow at times in 1955-56.

Remarks.--Flow regulated by Kirwin Reservoir (see p. 395) beginning Mar. 7, 1955.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	201	70.0	58.5	51.1	76.5	86.9	83.8	659	5,516	4,031	625	758	855
1952	249	156	116	108	125	137	184	218	163	237	161	37.8	158
1953	29.5	40.3	40.0	57.3	67.0	62.3	48.7	73.6	106	161	47.2	11.3	62.1
1954	15.1	27.2	38.1	24.0	47.6	33.1	63.3	508	346	18.2	22.8	57.1	100
1955	16.1	13.8	18.8	15.9	35.8	30.8	15.8	17.4	608	51.7	8.30	145	80.5
1956	10.5	6.54	6.21	6.55	34.6	9.53	6.81	2.25	142	81.3	1.39	.29	25.5
1957	1.85	1.44	2.08	2.19	6.29	9.95	24.1	421	1,721	472	101	24.8	232
1958	61.4	16.1	15.3	12.1	12.6	34.1	90.1	69.2	36.2	190	140	52.5	60.5
1959	16.9	17.0	16.5	12.0	38.6	25.1	18.5	132	39.5	36.7	24.9	60.5	36.5
1960	251	20.1	18.0	15.6	35.6	359	275	333	553	64.0	47.4	24.3	167

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	12,390	4,170	3,590	3,140	4,250	5,350	4,990	40,530	209,200	247,900	38,420	45,090	619,000
1952	15,290	9,310	7,140	6,610	7,190	8,430	10,920	13,390	9,720	14,540	9,900	2,250	114,700
1953	1,810	2,400	2,460	3,520	3,720	3,830	2,900	4,520	6,330	9,900	2,900	674	44,960
1954	929	1,620	2,340	1,480	2,650	2,030	3,770	51,240	20,560	1,120	1,400	3,400	72,540
1955	989	819	1,160	980	1,990	1,900	938	1,070	36,150	3,180	511	8,620	58,310
1956	648	389	382	402	1,990	586	405	138	8,460	5,000	86	17	18,500
1957	40	86	128	135	349	612	1,440	25,910	102,400	29,030	6,200	1,480	167,800
1958	3,770	958	958	742	699	2,100	5,360	4,250	2,150	11,080	8,590	3,120	43,760
1959	1,040	1,010	1,010	735	2,140	1,540	1,100	8,120	2,350	2,250	1,530	3,600	26,420
1960	15,430	1,190	1,110	962	2,040	22,100	16,350	20,470	32,930	3,930	2,910	1,450	120,900

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	319	231,100
1951	1210	35,700	July 12, 1951	30	855	619,000	871	630,600
1952	1240	4,940	July 15, 1952	26	158	114,700	123	89,620
1953	1280	3,720	July 21, 1953	7.0	62.1	44,960	59.6	43,180
1954	1340	5,560	June 16, 1954	2.8	100	72,540	97.5	70,620
1955	1390	14,000	June 18, 1955	1.1	80.5	58,310	78.4	56,760
1956	1440	4,620	June 22, 1956	0	25.5	18,500	23.9	17,340
1957	1510	26,500	June 17, 1957	.1	232	167,800	239	173,200
1958	1560	2,200	Oct. 23, 1957	9.0	60.5	43,760	56.9	41,150
1959	1630	1,280	May 5, 1959	7.4	36.5	26,420	56.8	41,100
1960	1710	5,300	Oct. 6, 1959	9.0	167	120,900	-	-

8730. South Fork Solomon River above Webster Reservoir, Kans.

Location.--Lat 39°22', long 99°35', on west line of sec.8, T.8 S., R.20 W., on downstream side of highway bridge, 4 miles north of Damar, 7 miles downstream from Wild Horse Creek, and 11 miles upstream from Webster Dam.

Drainage area.--1,040 sq mi, approximately.

Records available.--January 1945 to September 1960. Prior to October 1953, published as "at Webster."

Gage.--Water-stage recorder. Datum of gage is 1,936.51 ft above mean sea level, datum of 1929 (levels by Bureau of Reclamation). Prior to May 17, 1946, wire-weight gage, May 17, 1946, to May 20, 1951, water-stage recorder and wire-weight gage (destroyed by flood), and May 21 to Sept. 30, 1951, staff gage, all at site 8 miles downstream at datum 94.52 ft lower. Oct. 1, 1951, to May 22, 1952, wire-weight gage at bridge near Stockton 23 miles downstream at different datum. May 23, 1952, to May 23, 1954, water-stage recorder and staff gage at site 8 miles downstream at datum 94.52 ft lower.

Average discharge.--15 years (1945-60), 102 cfs (73,840 acre-ft per year).

Extremes.--1945-60: Maximum discharge, 55,200 cfs July 12, 1951 (gage height, 14.9 ft, from floodmarks, site and datum then in use), from rating curve extended above 11,000 cfs on basis of slope-area measurement of peak flow; no flow at times in most years. Maximum flood known, that of July 12, 1951; second highest known, that in June 1908 (13.4 ft, present site and datum), from information obtained from Kansas State Highway Commission.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	30.7	23.7	23.4	28.8	34.9	40.3	50.1	561	1,767	2,561	304	385	487
1952	80.5	79.5	46.8	60.0	65.0	100	140	150	16.3	3.55	3.77	.95	62.2
1953	.07	1.68	8.22	24.9	24.0	36.3	33.3	20.5	10.6	73.1	42.4	.24	23.1
1954	.15	5.41	11.3	12.3	36.5	25.5	24.8	165	184	1.55	4.34	.02	39.1
1955	.20	.59	.73	1.03	11.6	16.5	14.2	2.39	22.9	.02	.20	72.5	11.7
1956	4.73	0	2.73	7.30	12.7	20.2	15.0	12.0	12.1	74.4	5.02	0	14.0
1957	0	.34	.01	.07	.47	3.37	75.1	434	1,058	213	116	162	172
1958	21.2	27.8	21.5	26.6	23.0	60.0	116	135	80.3	271	233	79.0	91.9
1959	19.6	27.5	29.7	18.3	48.4	48.7	46.2	38.2	54.0	8.47	10.5	6.73	29.5
1960	70.2	25.7	28.3	19.8	63.6	314	124	323	165	20.1	56.1	9.79	102

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1,890	1,410	1,440	1,770	1,940	2,480	2,980	34,510	105,100	157,500	18,700	22,880	352,600
1952	4,950	4,730	2,880	3,690	3,740	6,150	8,330	9,240	968	218	232	56	45,180
1953	4.2	100	505	1,530	1,330	2,230	1,980	1,260	628	4,500	2,610	14	16,690
1954	9.5	322	698	755	2,030	1,560	1,480	10,140	10,940	96	267	10	28,300
1955	12	35	45	63	644	1,020	847	147	1,360	12	12	4,320	8,510
1956	291	20	168	449	730	1,240	893	736	720	4,570	308	0	10,120
1957	0	0	.6	4.6	26	207	4,470	26,720	62,960	13,090	7,120	9,670	124,300
1958	1,300	1,650	1,320	1,640	1,280	3,690	6,890	8,300	4,780	6,650	14,350	4,700	66,550
1959	1,210	1,640	1,820	1,130	2,690	2,990	2,750	2,350	3,210	521	645	400	21,360
1960	4,310	1,530	1,740	1,220	3,660	19,310	7,390	19,850	9,800	1,230	3,450	583	74,070

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean
		Discharge	Date				
1950	-	-	-	-	-	-	171
1951	1210	55,200	July 12, 1951	4	487	352,600	498
1952	1240	1,500	Apr. 21, 1952	0	62.2	45,180	45.8
1953	1280	1,600	July 20, 1953	0	23.1	16,690	23.6
1954	1340	9,640	June 15, 1954	0	39.1	28,300	37.8
1955	1390	4,000	Sept. 26, 1955	0	11.7	8,510	12.3
1956	1440	3,940	July 6, 1956	0	14.0	10,120	13.3
1957	1510	25,100	June 17, 1957	0	172	124,300	178
1958	1560	10,400	Aug. 16, 1958	10	91.9	66,550	92.5
1959	1630	683	June 11, 1959	0	29.5	21,360	33.5
1960	1710	14,400	May 16, 1960	1.3	102	74,070	-

## 8731. Webster Reservoir near Stockton, Kans.

Location.--Lat 39°24'58", long 99°25'28", in sec.27, T.7 S., R.19 W., in spillway gate control area near north end of Webster Dam on South Fork Solomon River, 8 miles west of Stockton and at mile 90.3.

Drainage area.--1,200 sq mi, approximately.

Records available.--June 1956 to September 1960. Prior to October 1956, monthly contents only.

Gage.--Water-stage recorder (elevations above 1,873 ft) and mercury-column gage near south end of dam. Datum of gages is at mean sea level (levels by Bureau of Reclamation).

Extremes.--1956-60: Maximum elevation, 1,899.55 ft July 2-5, 1957 (contents, 107,000 acre-ft); minimum since first filling of irrigation pool, 1,886.10 ft Mar. 28, 1958 (contents, 55,700 acre-ft).

Remarks.--Reservoir is formed by compacted earthfill dam. Storage began May 3, 1956.

Total capacity, 401,600 acre-ft, consisting of the following: dead storage, 2,184 acre-ft below elevation 1,855.5 ft (sill of trashrack); irrigation pool, 64,920 acre-ft between elevations 1,855.5 and 1,889.6 ft; flood control pool, 193,600 acre-ft between elevations 1,889.6 and 1,923.7 ft; and uncontrolled storage, 140,900 acre-ft between elevations 1,923.7 and 1,938.0 ft. Reservoir is used to store water for flood control and irrigation in Webster Unit, Missouri River Basin project. Figures given herein represent total contents.

Contents, in acre-feet, on last day of month

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956	-	-	-	-	-	-	-	-	1,093	3,114	3,153	2,619
1957	2,380	2,280	2,208	2,160	2,046	2,184	5,718	28,140	95,270	68,240	72,860	69,140
1958	68,550	69,580	70,510	71,530	63,710	57,210	58,690	61,430	62,250	75,500	86,860	87,340
1959	84,020	82,130	81,700	82,360	84,610	71,670	66,750	69,000	65,660	65,320	63,610	62,610
1960	67,440	66,750	66,170	65,800	69,640	89,840	72,140	73,590	69,290	63,040	64,380	62,970

## 8732. South Fork Solomon River below Webster Reservoir, Kans.

Location.--Lat 39°25', long 99°25', in two channels in NE $\frac{1}{4}$  sec.34 (river outlet gage) and SE $\frac{1}{4}$  sec.27 (spillway gage), T.7 S., R.19 W., 0.2 mile downstream from river outlet and spillway, respectively, of Webster Dam and Reservoir, 1.3 miles upstream from Sand Creek, 8 miles west of Stockton, and at mile 90.2.

Drainage area.--1,200 sq mi, approximately.

Records available.--October 1956 to September 1960.

Gage.--Water-stage recorder and concrete Parshall flume on river outlet channel. Datum of gage is 1,835.32 ft above mean sea level (Bureau of Reclamation bench mark). Water-stage recorder on spillway channel. Datum of spillway channel gage is 1,825.18 ft above mean sea level (Bureau of Reclamation bench mark).

Extremes.--1956-60: Maximum discharge, 1,740 cfs Oct. 10, 1958; no flow at times in 1956-58, 1960.

Remarks.--Flow regulated by Webster Reservoir (see preceding station). Separate records are collected and computed for river outlet channel and spillway channel. Figures given herein represent combined discharge.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1957	0	0	0	0	0	0	0.04	0.06	0.28	672	14.2	183	73.4
1958	14.8	4.47	92	95	168	181	92.6	105	47.6	84.2	50.6	46.2	65.4
1959	51.5	45.3	37.3	16.4	19.7	268	125	34	105	48	8.60	5.98	57.1
1960	1.92	22.2	30.1	28.8	17.3	54.7	418	334	282	96.6	39.7	16.1	111

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1957	0	0	0	0	0	0	2.2	2.8	17	41,290	875	10,910	53,100
1958	910	28	57	58	9,310	11,130	5,510	6,460	2,830	5,180	3,110	2,750	47,330
1959	3,170	2,700	2,290	1,010	1,090	16,490	7,410	21	6,250	30	529	358	41,350
1960	118	1,320	1,850	1,770	998	3,330	24,850	20,510	16,800	5,940	2,440	960	80,880

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1957	1510	1,560	July 17, 1957	0	73.4	53,100	74.7	54,090	
1958	1560	457	Apr. 22, 1958	0	65.4	47,330	75.3	54,500	
1959	1630	1,740	Oct. 10, 1958	.2	57.1	41,350	50.4	36,470	
1960	1710	1,100	May 5, 1960	0	111	80,880	-	-	

8735. South Fork Solomon River at Alton, Kans.

Location.--Lat 39°27', long 98°57', in SW $\frac{1}{4}$  sec.12, T.7 S., R.15 W., on left bank 85 ft upstream from county highway bridge, half a mile south of Alton, and at mile 47.6.

Drainage area.--1,720 sq mi, approximately.

Records available.--August 1919 to June 1925, August 1928 to June 1932, June 1942 to September 1957.

Gage.--Water-stage recorder. Datum of gage is 1,598.20 ft above mean sea level, datum of 1929 (levels by Bureau of Reclamation). Aug. 31, 1919, to June 30, 1932, staff or chain gage at a former county highway bridge 175 ft downstream from present site at datum 2 ft higher prior to Sept. 30, 1923, and present datum thereafter. June 23, 1942, to July 11, 1951, water-stage recorder at former county highway bridge (destroyed by flood) at same datum. July 30, 1951, to May 9, 1952, staff gage 75 ft downstream from present site at same datum.

Average discharge.--23 years (1919-24, 1928-31, 1942-57), 108 cfs (78,190 acre-ft per year).

Extremes.--1919-25, 1928-32, 1942-57: Maximum discharge, 91,900 cfs July 12, 1951 (gage height, 27.1 ft, from floodmarks), from rating curve extended above 25,000 cfs on basis of contracted-opening and slope-area measurement of peak flow; no flow at times in 1948, 1955-57.

Remarks.--Flow regulated by Webster Reservoir (see p. 399). Records of suspended sediment loads for the periods June 1946 to July 1951 and April 1952 to September 1952 and water temperatures for the period June 1949 to July 1951 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	64.7	36.5	37.8	39.1	44.8	54.5	71.6	827	2,578	4,035	461	674	748
1952	132	120	82.1	83.7	88.3	133	182	239	91.7	23.0	18.1	9.5	100
1953	9.04	11.2	16.0	41.1	35.7	44.2	37.3	27.1	6.92	91.9	46.8	3.28	31.0
1954	2.89	7.98	18.3	13.5	39.2	30.2	26.3	307	402	21.0	10.3	5.31	73.5
1955	1.62	2.24	2.91	3.71	6.46	16.2	17.7	4.58	16.4	.40	22.7	62.2	13.0
1956	22.8	3.10	2.01	5.72	12.9	26.4	15.1	3.55	25.7	44.8	11.1	0	14.5
1957	0	0	.02	.06	.76	1.32	1.13	68.7	1,057	864	79.3	170	187
1958													
1959													
1960													

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	3,980	2,170	2,320	2,400	2,480	3,350	4,260	50,870	153,400	248,100	28,350	40,090	541,800
1952	8,120	7,170	5,050	5,150	5,080	8,160	10,860	14,670	5,460	1,410	1,110	565	72,800
1953	556	663	986	2,530	1,980	2,720	2,220	1,670	412	5,650	2,880	195	22,460
1954	178	475	1,120	827	2,180	1,860	1,560	18,850	23,940	1,290	630	316	53,230
1955	100	133	179	228	359	996	1,050	281	974	25	1,400	3,700	9,420
1956	1,400	185	124	351	745	1,620	897	219	1,530	2,760	680	0	10,510
1957	0	0	1.4	3.6	42	81	67	4,220	62,880	53,130	4,880	10,130	135,400
1958													
1959													
1960													

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	188	136,400
1951	1210	91,900	July 12, 1951	10	748	541,800	765	553,600
1952	1240	1,240	Apr. 21, 1952	5.7	100	72,800	73.5	54,670
1953	1280	924	July 22, 1953	1.0	31.0	22,460	30.4	22,030
1954	1340	7,520	June 16, 1954	1.2	73.5	53,230	71.6	51,860
1955	1390	1,380	Sept. 27, 1955	0	13.0	9,420	14.8	10,720
1956	1440	848	July 6, 1956	0	14.5	10,510	12.1	8,800
1957	1510	20,400	June 17, 1957	0	187	135,400	-	-
1958								
1959								
1960								

8740. South Fork Solomon River at Osborne, Kans.

Location.--Lat 39°26', long 98°42', on west line of sec.20, T.7 S., R.12 W., on downstream side of right pier of bridge on U. S. Highway 281, half a mile south of Osborne, 0.6 mile downstream from Covert Creek, and at mile 26.1.

Drainage area.--2,024 sq mi.

Records available.--March 1946 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 1,505.09 ft above mean sea level, datum of 1929. Prior to Dec. 12, 1946, wire-weight gage at same site and datum.

Average discharge.--14 years (1946-60), 186 cfs (134,700 acre-ft per year).

Extremes.--1946-60: Maximum discharge, 81,200 cfs July 13, 1951 (gage height, 27.65 ft), from rating curve extended above 16,000 cfs on basis of slope-area and contracted-opening measurement of peak flow; no flow Aug. 21, 1946, Apr. 21, 1948.

Remarks.--Flow regulated by Webster Reservoir (see p. 399) beginning May 3, 1956. Diversions above station for irrigation.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	206	64.3	59.1	52.4	65.4	78.8	115	1,088	3,675	5,193	558	708	994
1952	180	158	114	112	122	141	240	285	123	41.4	35.0	15.3	131
1953	15.5	18.1	23.8	49.3	46.1	58.5	46.7	37.1	13.8	114	61.8	7.04	41.1
1954	6.25	11.2	26.0	20.5	47.1	34.7	29.2	265	402	31.9	13.9	14.3	74.9
1955	7.57	6.35	7.63	5.30	14.0	23.9	20.8	9.49	34.6	1.74	24.0	53.0	17.3
1956	24.4	5.45	4.15	8.21	15.6	25.2	17.3	12.2	34.7	124	22.4	.28	24.6
1957	.21	.36	1.05	1.22	2.70	4.77	11.4	173	1,433	972	131	172	242
1958	88.7	23.1	18.6	16.1	170	262	432	453	133	206	153	91.8	171
1959	58.2	57.6	54.3	29.3	59.9	249	196	80.6	117	18.1	2.55	4.27	77.2
1960	65.7	23.3	37.2	27.6	48.4	291	557	483	507	140	113	35.1	194

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	12,690	3,830	3,630	3,220	3,630	4,840	6,840	66,870	218,700	319,300	34,300	42,110	720,000
1952	11,050	9,400	7,030	6,860	6,990	8,690	14,300	17,540	7,300	2,540	2,150	1,090	94,940
1953	954	1,080	1,460	3,030	2,560	3,600	2,780	2,280	822	7,010	3,800	419	29,800
1954	384	665	1,600	1,260	2,620	2,140	1,740	16,270	23,890	1,960	857	850	54,240
1955	466	378	469	326	779	1,470	1,240	583	2,060	107	1,480	3,160	12,520
1956	1,500	324	255	505	895	1,550	1,030	749	2,070	7,610	1,370	16	17,870
1957	13	21	64	75	150	293	680	10,660	85,240	59,750	8,060	10,240	175,200
1958	5,450	1,390	1,140	988	9,430	16,110	25,720	27,840	7,900	12,670	9,430	5,460	123,500
1959	3,580	3,430	3,340	1,800	3,330	15,290	11,680	4,950	6,990	1,120	157	254	55,920
1960	4,040	1,390	2,290	1,700	2,780	17,880	33,170	29,680	30,160	8,580	6,940	2,090	140,700

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean		Acre-feet
		Discharge	Date						
1950	-	-	-	-	-	-	268	-	193,800
1951	1210	81,200	July 13, 1951	25	994	720,000	1,005	-	720,500
1952	1240	1,180	Apr. 22, 1952	13	131	94,940	97.8	-	70,950
1953	1280	783	July 22, 1953	4.5	41.1	29,800	40.0	-	28,850
1954	1340	5,510	June 17, 1954	4.5	74.9	54,240	73.1	-	52,900
1955	1390	1,160	June 17, 1955	.2	17.3	12,520	18.3	-	13,280
1956	1440	2,100	July 5, 1956	.1	24.6	17,870	21.9	-	15,890
1957	1510	21,200	June 17, 1957	.2	242	175,200	253	-	183,100
1958	1560	5,170	May 17, 1958	9.0	171	123,500	174	-	125,900
1959	1630	933	May 30, 1959	.7	77.2	55,920	73.6	-	53,290
1960	1710	3,780	Mar. 27, 1960	9.6	194	140,700	-	-	-

## KANSAS RIVER BASIN

8760. Solomon River at Beloit, Kans.

Location.--Lat 39°25'09", long 98°03'33", in NW<sup>1</sup> sec.25, T.7 S., R.7 W., on left bank 2.9 miles downstream from Plum Creek, 4 miles southeast of Beloit, and at mile 122.1.

Drainage area.--5,530 sq mi, approximately.

Records available.--April 1929 to September 1960. Records for April 1895 to June 1897, published in 18th and 19th Ann. Repts., Pt. 4, have been found to be unreliable and should not be used. Fragmentary gage-height records collected near this site since Jan. 8, 1905, are contained in reports of U. S. Weather Bureau and Kansas Water Commission.

Gage.--Water-stage recorder. Datum of gage is 1,324.82 ft above mean sea level, datum of 1929 (levels by Corps of Engineers). Prior to June 10, 1958, chain or wire-weight gages and Mar. 19, 1930, to June 9, 1958, supplementary water-stage recorders, all in vicinity of city water plant dam in Beloit 8.5 miles upstream from present site at datum 14.19 ft higher.

Average discharge.--31 years (1929-60), 428 cfs (309,900 acre-ft per year).

Extremes.--1929-60: Maximum discharge, 125,000 cfs July 13, 1951 (gage height, 39.30 ft, site and datum then in use; 39.9 ft, present site and datum, from floodmarks), from rating curve extended above 33,000 cfs on basis of slope-area measurement of peak flow at nearby points on Solomon River; no flow at times in 1939-41, 1946, 1955-57. Maximum stage known since at least 1877, that of July 13, 1951, from U. S. Weather Bureau records and newspaper files.

Remarks.--Flow regulated by Kirwin Reservoir (see p. 395) beginning Mar. 7, 1955, and by Webster Reservoir (see p. 399) beginning May 3, 1956. Large diversions below Kirwin and Webster Dams and many small diversions above station for irrigation. Records of chemical analyses for the periods December 1949 to September 1952, September 1957 to September 1958, and October 1959 to September 1960; suspended sediment loads for the period May 1948 to September 1952; and water temperatures for the periods February 1949 to September 1952 and September 1957 to September 1958, are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	872	230	200	170	192	275	379	2,031	9,612	13,460	2,102	2,297	2,667
1952	638	460	343	342	349	417	771	644	390	305	204	95.1	413
1953	75.2	92.5	94.4	127	150	170	127	122	184	254	110	44.8	128
1954	33.1	64.4	95.0	46.3	95.9	76.2	100	722	954	74.1	51.5	95.9	201
1955	37.5	30.5	41.5	43.1	85.1	70.7	49.8	37.8	711	88.9	27.7	180	116
1956	65.0	22.9	21.2	20.1	47.6	44.6	25.9	7.53	217	433	32.4	.07	78.4
1957	.08	3.16	4.85	5.35	8.56	26.3	91.3	995	3,369	1,868	288	259	577
1958	193	65.5	58.6	47.2	144	551	610	948	279	689	363	301	356
1959	123	98.0	95.7	61.0	164	282	274	530	275	62.2	19.2	88.3	173
1960	479	63.4	76.4	58.1	318	1,561	1,205	969	1,276	294	269	94.7	555

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	53,640	13,660	12,310	10,480	10,640	16,910	22,520	124,900	572,000	827,600	129,300	136,700	1,931,000
1952	39,220	27,360	21,070	21,040	20,070	25,630	45,880	39,630	23,190	18,770	12,570	5,660	300,100
1953	4,630	5,500	5,800	7,810	8,310	10,440	7,580	7,480	9,750	15,650	6,770	2,660	92,380
1954	2,040	3,830	5,840	2,970	5,330	4,680	5,970	44,400	56,780	4,550	3,160	5,710	145,300
1955	2,300	1,810	2,550	2,650	4,730	4,350	2,970	2,320	42,300	5,470	1,700	10,700	83,850
1956	4,000	1,360	1,300	1,240	2,740	2,750	1,540	463	12,920	26,800	1,990	4.0	56,910
1957	5.0	168	298	329	478	1,620	5,430	61,180	200,400	114,900	17,890	15,410	417,900
1958	11,860	3,900	3,600	2,900	7,990	33,900	36,320	58,280	18,590	42,390	22,330	17,900	258,000
1959	7,560	5,830	5,890	3,750	9,130	17,360	16,290	32,560	16,340	3,820	1,180	5,250	125,000
1960	29,440	3,770	4,700	3,570	18,300	95,970	71,710	59,610	75,940	18,070	16,560	5,640	403,300

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet		
		Discharge	Date							
1950	-	-	-	-	-	-	1,056	764,800		
1951	1210	125,000	July 13, 1951	100	2,667	1,931,000	2,678	1,939,000		
1952	1240	3,290	July 18, 1952	75	413	300,100	315	228,400		
1953	1280	2,100	July 23, 1953	24	128	92,380	122	88,160		
1954	1340	4,450	June 17, 1954	19	201	145,300	194	140,200		
1955	1390	6,460	June 20, 1955	0	116	83,850	116	83,850		
1956	1440	4,160	June 24, 1956	0	78.4	56,910	69.9	50,740		
1957	1510	32,800	June 19, 1957	0	577	417,900	605	436,800		
1958	1560	6,550	May 19, 1958	33	356	258,000	356	257,900		
1959	1630	3,930	May 31, 1959	2.2	173	125,000	198	143,600		
1960	1710	14,400	Mar. 28, 1960	34	555	403,300	-	-		

## 8767. Salt Creek near Ada, Kans.

Location.--Lat 39°08'30", long 97°50'10", on west line of sec.36, T.10 S., R.5 W., at downstream side of highway bridge, 3 miles southeast of Ada and 19.4 miles upstream from mouth.

Drainage area.--384 sq mi, approximately.

Records available.--June 1959 to September 1960.

Gage.--Water-stage recorder. Altitude of gage is 1,280 ft (from topographic map).

Extremes.--1959-60: Maximum discharge, 8,400 cfs Mar. 27, 1960 (gage height, 21.08 ft); minimum, 0.4 cfs Sept. 15, 1959.

Maximum stage known since at least 1897, that of Mar. 27, 1960. Flood in 1942 reached a stage of about 21 ft, from information by local residents.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1959	-	-	-	-	-	-	-	-	-	-	-	-	-
1960	52.8	12.2	7.95	43.4	155	571	174	111	38.5	36.6	2.94	15.4	-
										10.8	11.0	26.1	101

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1959	-	-	-	-	-	-	-	-	-	-	-	-	-
1960	3,250	727	489	2,670	8,940	35,120	10,330	6,820	2,290	2,250	181	919	-
										665	673	1,560	73,530

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1959	1710	-	-	-	-	-	-	-
1960	1710	8,400	Mar. 27, 1960	1.0	101	73,530	-	-

## 8769. Solomon River at Niles, Kans.

Location.--Lat 38°58'08", long 97°28'34", in NW $\frac{1}{4}$  sec.31, T.12 S., R.1 W., on downstream side of left pier of county highway bridge, three-quarters of a mile west of Niles and at mile 16.9.

Drainage area.--6,770 sq mi, approximately.

Records available.--May 1897 to November 1903, October 1917 to September 1960. Published as "near Bennington" October 1917 to May 1919. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 1,160.97 ft above mean sea level, datum of 1929. Prior to Nov. 30, 1903, wire-weight gage at present site at different datum. Oct. 1, 1917, to May 31, 1919, staff gage near Bennington 27 miles upstream at different datum. June 1, 1919, to Sept. 30, 1922, chain gage at present site at datum 2 ft higher. Oct. 1, 1922, to Apr. 25, 1934, chain gage at present site and datum.

Average discharge.--49 years (1897-1903, 1917-60), 595 cfs (430,800 acre-ft per year).

Extremes.--1897-1903, 1917-60: Maximum discharge, 178,000 cfs July 14, 1951 (gage height, 31.76 ft); minimum observed, 1 cfs Sept. 4, 1926.

Remarks.--Flow regulated by Kirwin and Webster Reservoirs (see elsewhere in this report). Some diurnal fluctuation caused by powerplants above station. Many small diversions upstream for irrigation. Records of chemical analyses for the period October 1958 to September 1960 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1,575	415	306	269	263	403	1,010	2,620	12,150	23,080	738	4,210	4,113
1952	1,050	784	591	487	529	759	1,864	1,068	655	434	393	200	736
1953	150	177	160	190	237	260	204	420	271	316	170	99.4	222
1954	76.6	113	150	95.7	151	122	114	524	1,368	128	115	111	253
1955	69.6	55.3	60.1	65.5	94.0	111	98.7	51.5	652	146	62.9	426	156
1956	295	48.2	50.0	50.1	75.4	78.2	57.3	32.1	156	399	47.1	5.60	109
1957	31.5	22.5	19.0	19.2	26.3	35.9	250	1,666	3,263	2,232	362	563	711
1958	277	145	121	111	151	746	1,335	1,575	484	1,042	473	498	566
1959	276	158	154	129	299	396	391	972	562	237	48.3	116	313
1960	648	136	122	204	647	1,969	2,504	1,313	1,433	522	348	372	852

Monthly and yearly discharge, in thousands of acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	96.86	24.70	18.83	16.54	14.58	24.77	60.13	161.1	722.7	1,419	168.4	250.5	2,978
1952	64.57	46.66	36.35	29.96	30.44	46.68	110.9	68.89	33.96	26.70	24.15	11.91	534.2
1953	9.23	10.53	9.82	11.68	13.18	16.01	12.16	25.85	16.15	19.43	10.45	5.91	160.4
1954	4.71	6.71	9.24	5.88	7.27	7.53	6.77	32.20	81.43	7.89	7.09	6.58	183.3
1955	4.28	3.29	3.69	4.02	5.22	6.80	5.87	3.17	38.76	8.95	3.67	25.32	113.2
1956	18.22	2.87	3.08	3.08	4.34	4.81	3.41	1.97	9.31	24.54	2.89	0.333	78.85
1957	1.94	1.34	1.17	1.18	1.46	2.21	14.89	102.4	194.1	137.3	22.25	34.71	515.0
1958	17.02	8.62	7.44	6.81	8.41	45.90	67.53	96.82	28.82	64.06	29.06	29.53	410.0
1959	16.99	9.42	9.50	7.94	16.60	24.35	23.27	59.77	54.62	14.56	2.97	6.90	226.9
1960	39.87	8.08	7.47	12.53	37.24	122.3	149.0	80.75	85.28	32.09	21.42	22.16	618.2

## KANSAS RIVER BASIN

Yearly discharge, in cubic feet per second, of Solomon River at Niles, Kans.

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	1,375	995,000
1951	1210	178,000	July 14, 1951	200	4,113	2,978,000	4,123	2,985,000
1952	1240	6,330	Apr. 20, 1952	160	736	534,200	573	416,200
1953	1280	4,240	May 28, 1953	78	222	160,400	209	151,500
1954	1340	8,470	June 2, 1954	54	253	183,300	240	173,900
1955	1390	3,800	June 23, 1955	10	156	113,200	174	126,200
1956	1440	2,750	July 9, 1956	3.6	109	78,850	81.5	59,130
1957	1510	9,940	June 24, 1957	4.6	711	515,000	751	543,800
1958	1560	7,370	May 21, 1958	84	566	410,000	570	412,800
1959	1630	3,620	May 11, 1959	37	313	226,900	340	246,400
1960	1710	11,700	Mar. 31, 1960	90	852	618,200	-	-

8775. Turkey Creek near Abilene, Kans.

Location.--Lat 38°48'20", long 97°10'50", in W $\frac{1}{2}$  sec.26, T.14 S., R.2 E., at downstream side of highway bridge at confluence of East and West Turkey Creeks, 8 miles south of Abilene and 12 miles upstream from mouth.

Drainage area.--143 sq mi.

Records available.--October 1958 to September 1960.

Gage.--Water-stage recorder. Altitude of gage is 1,140 ft (from topographic map). Prior to July 30, 1959, wire-weight gage at same site and datum.

Extremes.--1958-60: Maximum discharge, 8,800 cfs May 17, 1959 (gage height, 26.10 ft, from floodmark); minimum, 8.4 cfs Sept. 16, 17, 1959.

Maximum discharge known since at least 1903, 23,700 cfs July 1951 (gage height, 29.7 ft, from floodmarks and information by local residents), from slope-area measurement of peak flow at site 1.5 miles downstream. Flood in 1903 was about as high as that in July 1951, from information by local resident.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1959	50.5	23.5	18.9	21.1	36.1	23.7	26.7	425	29.3	146	18.4	106	77.7
1960	156	32.6	25.9	64.2	75.5	197	75.1	50.9	78.9	37.9	19.3	18.7	69.5

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1959	3,100	1,400	1,160	1,300	2,000	1,460	1,590	26,150	1,740	8,960	1,130	6,280	56,270
1960	9,590	1,940	1,590	3,950	4,340	12,140	4,470	3,130	4,690	2,330	1,180	1,110	50,460

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1959	1630	8,800	May 17, 1959	8.6	77.7	56,270	88.0	63,730
1960	1710	2,040	Oct. 2, 1959	10	69.5	50,460	-	-



## 8776. Smoky Hill River at Enterprise, Kans.

Location.--Lat 38°54'20", long 97°07'10", in sec.20, T.13 S., R.3 E., at upstream side of bridge on State Highway 43 at Enterprise, 18.6 miles upstream from Chapman Creek and at mile 55.4.

Drainage area.--19,200 sq mi, approximately.

Records available.--November 1934 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 1,103.25 ft above mean sea level, datum of 1929. Nov. 1, 1934, to Jan. 28, 1935, wire-weight gage and Jan. 29, 1935, to May 3, 1959, water-stage recorder, at site 0.2 mile downstream at datum 5.40 ft lower.

Average discharge.--26 years (1934-60), 1,735 cfs (1,256,000 acre-ft per year).

Extremes.--1934-60: Maximum discharge, 233,000 cfs July 14, 1951 (gage height, 33.96 ft, site and datum then in use, or 29.0 ft, present site and datum), from rating curve extended above 55,000 cfs on basis of slope-area measurement of peak flow; minimum, about 10 cfs Apr. 23, 1935 (regulated by powerplant then in operation).

Flood in May 1903 reached a stage of about 27 ft, present site and datum, from information by Corps of Engineers (discharge, 90,000 cfs).

Remarks.--Natural flow of stream affected by Cedar Bluff, Kanopolis, Kirwin, and Webster Reservoirs (see elsewhere in this report), and by numerous diversions for irrigation above station. Records of chemical analyses for the period October 1955 to September 1958, suspended sediment loads for the period October 1957 to September 1960, and water temperatures for the period October 1955 to September 1960 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	4,162	1,973	768	608	579	724	1,799	6,742	22,500	45,080	8,484	12,130	8,855
1952	4,871	2,391	1,544	1,316	1,317	2,111	4,511	2,961	1,860	878	987	1,483	2,105
1953	369	433	445	477	526	564	462	1,362	592	625	458	273	550
1954	169	233	277	203	265	238	235	808	2,861	380	234	195	508
1955	211	155	155	163	201	216	541	174	985	584	173	628	348
1956	942	173	142	128	162	178	180	102	510	664	264	58.6	293
1957	153	109	74.2	60.2	89.0	98.5	614	4,183	8,249	6,996	3,018	2,499	2,188
1958	2,123	791	556	452	516	2,398	4,792	4,681	2,205	3,513	2,574	1,572	2,193
1959	1,195	505	470	383	658	842	935	2,914	2,058	1,321	323	797	1,036
1960	3,047	744	454	807	1,843	4,871	7,787	3,875	3,113	1,252	1,151	2,240	2,593

Monthly and yearly discharge, in thousands of acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	255.9	117.4	47.20	37.35	32.18	44.49	107.1	414.6	1,339	2,772	521.7	721.8	6,411
1952	299.5	142.3	94.93	80.95	75.75	129.8	268.4	182.1	110.7	53.98	60.70	28.74	1,528
1953	22.70	25.79	27.37	29.31	29.22	34.66	27.50	83.67	35.24	38.40	28.18	16.26	398.3
1954	11.64	13.89	17.02	12.47	14.73	14.66	14.01	49.69	170.3	23.37	14.39	11.58	367.8
1955	12.96	9.21	9.51	10.04	11.16	13.40	32.19	10.71	58.85	35.89	10.66	37.36	251.9
1956	57.91	10.30	8.71	7.87	9.33	10.96	10.74	6.24	30.35	40.86	16.26	3.48	213
1957	9.43	6.46	4.56	3.70	4.94	6.06	36.54	257.2	490.8	430.2	185.6	148.7	1,584
1958	130.5	47.07	34.19	27.77	28.68	147.4	285.2	287.8	131.2	216	158.2	33.53	1,598
1959	75.45	30.07	28.88	23.58	36.53	51.76	55.64	179.2	122.5	61.2	19.87	47.45	750.1
1960	187.4	44.25	27.92	49.63	106.0	299.5	463.4	238.3	185.2	76.99	70.78	133.3	1,883

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	2,807	2,032,000	
1951	1210	233,000	July 14, 1951	341	8,855	6,411,000	9,015	6,527,000	
1952	1240	12,200	Apr. 22, 1952	397	2,105	1,528,000	1,470	1,067,000	
1953	1280	12,600	May 29, 1953	205	550	398,300	504	365,000	
1954	1340	9,610	June 2, 1954	134	508	367,800	493	356,900	
1955	1390	4,730	Apr. 15, 1955	73	348	251,900	410	297,200	
1956	1440	3,920	Oct. 5, 1955	38	293	213,000	216	156,500	
1957	1510	15,600	June 28, 1957	45	2,188	1,584,000	2,452	1,776,000	
1958	1560	11,800	May 23, 1958	314	2,193	1,588,000	2,083	1,508,000	
1959	1630	9,750	May 17, 1959	197	1,036	750,100	1,212	877,300	
1960	1710	26,600	Apr. 2, 1960	300	2,593	1,883,000	-	-	

8780. Chapman Creek near Chapman, Kans.

Location.--Lat 39°01'50", long 97°02'30", on south line of sec.1, T.12 S., R.3 E., at downstream side of bridge on State Highway 18, 5 miles northwest of Chapman and 6 miles upstream from mouth.

Drainage area.--300 sq mi.

Records available.--December 1953 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 1,102.41 ft above mean sea level, datum of 1929 (levels by Corps of Engineers). Prior to May 5, 1959, wire-weight gage at same site and datum.

Average discharge.--6 years (1954-60), 53.3 cfs (38,590 acre-ft per year).

Extremes.--1953-60: Maximum discharge, 12,200 cfs July 3, 1958 (gage height, 23.65 ft); minimum observed, 0.1 cfs Oct. 10, 1956.

Flood in July 1951 reached a stage of 25.5 ft, from floodmarks (discharge, 46,700 cfs, from rating curve extended above 12,000 cfs on basis of contracted-opening measurement of peak flow).

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952													
1953													
1954	-	-	10.3	7.48	13.2	10.0	10.3	59.6	165	3.80	27.2	4.90	-
1955	22.2	5.49	5.73	17.1	28.5	8.49	12.2	13.5	62.0	3.61	.86	40.7	18.2
1956	32.8	4.17	5.59	5.76	7.53	6.48	5.60	4.14	7.11	14.9	33.6	8.50	11.4
1957	2.82	1.69	3.23	3.60	5.30	4.53	38.1	114	150	21.2	2.55	3.77	29.2
1958	2.64	5.77	4.71	6.26	20.3	94.0	17.3	176	50.2	486	43.6	41.9	80.1
1959	10.5	12.2	14.1	15.6	79.1	21.9	16.6	227	17.4	22.9	9.49	22.2	39.0
1960	140	33.9	22.1	101	107	569	241	170	118	23.2	49.5	105	142

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952													
1953													
1954	-	-	636	460	734	618	615	3,670	11,040	234	1,670	291	-
1955	1,370	326	352	1,050	1,580	522	725	830	3,690	222	53	2,420	13,140
1956	2,020	248	344	354	433	399	333	254	423	918	2,060	506	8,290
1957	174	101	198	222	294	279	2,270	7,020	8,900	1,300	157	224	21,140
1958	162	344	289	385	1,130	5,780	1,030	10,820	2,990	29,880	2,680	2,490	57,980
1959	648	729	865	962	4,400	1,340	988	13,980	1,030	1,410	564	1,320	28,260
1960	8,600	2,020	1,360	6,180	6,150	36,220	14,360	10,480	7,020	1,430	3,040	6,270	103,100

Yearly discharge, in cubic feet per second

Year	MSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950								
1951								
1952								
1953								
1954	1340	2,780	June 2, 1954	-	-	-	29.5	21,380
1955	1390	1,470	June 5, 1955	0.5	18.2	13,140	18.9	13,700
1956	1440	980	Sept. 5, 1956	.4	11.4	8,290	8.48	6,150
1957	1510	1,850	June 18, 1957	.2	29.2	21,140	29.7	21,460
1958	1560	12,200	July 3, 1958	.2	80.1	57,980	82.1	59,430
1959	1630	1,470	May 10, 1959	3.2	39.0	28,260	52.5	37,990
1960	1710	6,620	Mar. 28, 1960	8.8	142	103,100	-	-

8785. Lyon Creek near Woodbine, Kans.

Location.--Lat 38°53', long 96°55', in NE $\frac{1}{4}$  sec.31, T.13 S., R.5 E., on downstream side of bridge on U. S. Highway 77, 2 miles downstream from Cary Creek, 7 miles north of Woodbine, and 10 miles upstream from mouth.

Drainage area.--230 sq mi.

Records available.--December 1953 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 1,109.79 ft above mean sea level, datum of 1929 (levels by Corps of Engineers). Prior to May 8, 1959, wire-weight gage at same site and datum.

Average discharge.--6 years (1954-60), 80.9 cfs (58,570 acre-ft per year).

Extremes.--1953-60: Maximum discharge, 14,100 cfs May 17, 1959 (gage height, 27.21 ft); no flow at times in 1953-57.

Flood in July 1951 reached a stage of about 30 ft, from information by local resident (discharge, 93,000 cfs, from slope-area measurement).

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952													
1953													
1954	-	-	7.47	6.25	7.75	8.27	11.0	28.3	45.7	0.09	0	0.003	-
1955	0.003	0.18	.87	2.14	10.7	3.76	34.9	13.4	17.9	56.8	2.87	2.62	12.3
1956	1.59	.46	1.73	2.24	4.38	2.82	3.46	11.0	5.77	3.86	8.23	0	3.81
1957	10.2	0	22.19	.51	1.00	3.29	74.4	342	180	29.4	5.89	10.3	55.1
1958	115	37.4	22.1	23.1	72.6	228	73.8	221	113	149	41.8	107	101
1959	107	39.4	34.2	37.7	50.8	44.3	51.3	635	312	432	48.8	126	161
1960	372	60.1	55.3	111	155	378	178	117	147	46.9	35.0	71.1	146

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952													
1953													
1954	-	-	460	394	430	509	655	1,740	2,720	5.8	0	0.2	-
1955	0.2	11	54	131	593	231	2,080	824	1,070	3,560	177	156	8,890
1956	98	27	106	138	252	174	206	677	343	237	508	0	2,760
1957	629	0	12	19	55	202	4,430	21,040	10,710	1,810	362	613	39,880
1958	6,940	2,220	1,360	1,420	4,030	14,030	4,390	13,600	6,720	9,150	2,570	6,380	72,810
1959	6,570	2,350	2,160	2,320	2,820	2,720	3,050	39,050	18,560	26,570	3,000	7,480	116,600
1960	22,870	4,770	3,400	6,850	8,900	23,250	10,590	7,190	8,770	2,880	2,150	4,230	105,800

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950								
1951								
1952								
1953								
1954	1340	565	June 16, 1954	-	-	-	8.99	6,510
1955	1390	2,510	July 1, 1955	0	12.3	8,890	12.5	9,050
1956	1440	356	Aug. 10, 1956	0	3.81	2,760	4.37	3,170
1957	1510	4,530	May 17, 1957	0	55.1	39,880	68.7	49,760
1958	1560	6,200	May 4, 1958	4.2	101	72,810	101	73,370
1959	1630	14,100	May 17, 1959	25	161	116,600	189	136,600
1960	1710	4,260	Oct. 5, 1959	16	146	105,800	-	-

8790. Smoky Hill River at Junction City, Kans.

Location.--Lat 39°01'24", long 96°48'23", on line between sec.7 and special sec.9, T.12 S., R.6 E., at downstream side of left abutment of abandoned bridge (formerly on State Highway 57), 0.3 mile upstream from U. S. Highway 40, 1.0 mile east of city limits of Junction City, and at mile 6.4.

Drainage area.--19,900 sq mi, approximately.

Records available.--October 1951 to September 1957.

Gage.--Water-stage recorder. Datum of gage is 1,044.63 ft above mean sea level, datum of 1929. Prior to June 16, 1952, wire-weight gage at same site and datum.

Average discharge.--6 years (1951-57), 1,094 cfs (792,000 acre-ft per year).

Extremes.--1951-57: Maximum discharge, 18,000 cfs June 28, 1957 (gage height, 17.00 ft, from graph based on gage readings); minimum, 41 cfs Jan. 22, 1957.  
Flood of July 12, 1951, reached a stage of 35.9 ft, from floodmarks.

Remarks.--Natural flow of stream affected by Cedar Bluff, Kanopolis, Kirwin, and Webster Reservoirs (see elsewhere in this report), and by numerous small diversions for irrigation above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952	5,619	2,827	1,803	1,564	1,528	2,470	5,101	3,329	2,195	1,029	1,134	599	2,435
1953	454	549	559	578	606	682	551	1,457	715	707	521	308	642
1954	214	270	345	245	311	294	267	792	2,979	429	265	219	550
1955	237	191	181	204	241	239	534	210	928	628	194	552	360
1956	987	196	170	154	179	201	191	136	452	644	339	133	317
1957	168	114	80.3	65.3	92.9	105	715	4,239	8,387	7,405	3,074	2,568	2,261
1958													
1960													

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952	345,500	168,200	110,900	96,140	87,870	151,900	303,600	204,700	130,600	63,280	69,740	35,630	1,768,000
1953	27,920	32,650	34,390	35,520	35,650	41,930	32,770	89,610	42,560	43,500	32,010	18,350	464,900
1954	13,170	16,090	21,220	15,070	17,250	18,050	15,920	48,680	177,200	26,370	16,300	13,040	398,400
1955	14,550	11,350	11,150	12,540	13,400	14,680	31,760	12,920	55,210	36,600	11,930	32,870	261,000
1956	60,710	11,690	10,450	9,450	10,300	12,340	11,380	8,390	26,870	39,590	20,870	7,900	229,900
1957	10,340	6,810	4,930	4,010	5,160	6,480	42,560	260,700	499,100	455,300	189,000	52,800	1,637,000
1958													
1959													
1960													

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950								
1951								
1952	1240	13,800	Apr. 22, 1952	484	2,435	1,768,000	1,706	1,238,000
1953	1280	13,300	May 29, 1953	237	642	464,900	581	420,400
1954	1340	11,000	June 3, 1954	150	550	398,400	532	385,000
1955	1390	3,630	July 2, 1955	76	360	261,000	424	306,800
1956	1440	4,050	Oct. 6, 1955	52	317	229,900	233	169,200
1957	1510	18,000	June 28, 1957	42	2,261	1,637,000	-	-
1958								
1959								
1960								

8792. Clark Creek near Junction City, Kans.

Location.--Lat 39°00'28", long 96°44'21", in W $\frac{1}{2}$  sec.14, T.12 S., R.6 E., on left bank at upstream side of bridge on State Highway 57, 5 miles southeast of Junction City, 7.5 miles upstream from Humbolt Creek, and 14.6 miles upstream from mouth.

Drainage area.--200 sq mi, approximately.

Records available.--October 1957 to September 1960.

Gage.--Water-stage recorder. Altitude of gage is 1,090 ft (from topographic map). Prior to Apr. 21, 1958, wire-weight gage at same site and datum.

Extremes.--1957-60: Maximum discharge, 18,700 cfs Oct. 7, 1958 (gage height, 17.38 ft), from rating curve extended above 2,600 cfs; minimum observed, 1.7 cfs Oct. 2, 5, 8, 1957.

Flood of July 10, 1951, reached a stage of 19.5 ft, from floodmarks.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1958	48.9	15.6	8.98	11.0	36.1	168	55.6	115	147	297	56.7	135	91.7
1959	245	33.8	24.3	30.9	59.5	45.1	58.8	258	212	404	38.6	50.8	123
1960	253	50.7	30.8	83.6	114	351	227	98.5	83.9	57.8	23.2	95.0	122

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1958	3,010	930	552	678	2,010	10,320	3,310	7,070	8,760	18,250	3,480	8,040	66,410
1959	15,080	2,010	1,490	1,900	3,300	2,770	3,500	15,860	12,630	24,830	2,370	3,020	88,760
1960	15,540	3,020	1,900	5,140	6,540	21,600	13,490	6,060	4,990	3,550	1,430	5,650	88,910

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1958	1560,1710	4,840	June 25, 1958	1.9	91.7	66,410	111	80,500
1959	1630,1710	18,700	Oct. 7, 1958	13	123	88,760	125	90,640
1960	1710	5,090	Mar. 26, 1960	10	122	88,910	-	-

8795. Kansas River at Ogden, Kans.

Location.--Lat 39°06'15", long 96°41'55", in SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec.7, T.11 S., R.7 E., on downstream side of first pier from right bank of highway bridge, three-quarters of a mile south of Ogden and 10 miles downstream from confluence of Smoky Hill and Republican Rivers.

Drainage area.--45,240 sq mi, approximately, of which about 39,540 sq mi contributes directly to surface runoff.

Records available.--June 1917 to September 1951.

Gage.--Water-stage recorder. Datum of gage is 1,020.83 ft above mean sea level (levels by Corps of Engineers). Prior to May 1, 1934, chain gage at same site and datum.

Average discharge.--34 years (1917-51), 2,992 cfs (2,166,000 acre-ft per year).

Extremes.--1917-51: Maximum discharge, 298,000 cfs July 12, 1951 (gage height, 30.53 ft), from rating curve extended above 60,000 cfs on basis of slope-area measurement of peak flow; minimum, 51 cfs Aug. 20, 1934.

Flood in May 1903 reached a stage of about 28.5 ft, from information by Corps of Engineers.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	7,259	2,645	1,492	1,229	1,577	2,335	3,396	12,520	37,560	71,480	12,280	21,910	14,730

Monthly and yearly discharge, in thousands of acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	446.3	157.4	91.74	75.59	87.59	143.6	202.1	769.8	2,235	4,395	754.9	1,304	10,660

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	5,183	3,753,000
1951	1210	298,000	July 12, 1951	600	14,730	10,660,000	-	-

8800. Lincoln Creek near Seward, Nebr.

Location.--Lat 40°55'00", long 97°08'40", in NE $\frac{1}{4}$  sec.24, T.11 N., R.2 E., on left bank 2 miles west of Seward and 2 $\frac{1}{2}$  miles upstream from mouth.

Drainage area.--420 sq mi, approximately.

Records available.--October 1953 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 1,429.27 ft above mean sea level, datum of 1929.

Average discharge.--7 years (1953-60), 48.6 cfs (35,180 acre-ft per year).

Extremes.--1953-60: Maximum discharge, 10,100 cfs June 17, 1957 (gage height, 20.53 ft); minimum daily, 1.3 cfs July 31, 1955.

Remarks.--Small diversions for irrigation above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952													
1953													
1954	*9.0	*11.3	12.8	10.7	16.1	14.2	36.9	35.8	286	14.7	74.0	12.0	*44.2
1955	17.1	13.9	12.4	13.3	25.9	36.2	15.8	12.7	52.3	*9.84	3.99	11.8	18.7
1956	7.12	8.30	8.75	9.12	12.2	16.8	11.2	10.2	17.5	5.55	4.82	4.49	9.65
1957	4.64	6.19	5.81	6.01	6.31	8.96	20.4	30.5	830	159	68.2	114	104
1958	14.6	10.8	10.7	11.4	41.0	113	36.8	14.8	10.9	189	23.5	70.1	45.7
1959	9.27	10.5	9.60	9.66	15.9	22.3	35.0	152	34.8	36.7	31.0	12.3	31.8
1960	10.8	8.78	8.84	10.7	12.0	350	152	59.6	210	103	83.4	17.1	85.8

\* Not previously published; estimated on basis of records for stations on Big Blue River at Seward and near Crete.

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952													
1953													
1954	*553	*673	766	661	893	871	2,190	2,200	17,020	902	4,550	714	*32,010
1955	1,050	827	760	819	1,440	2,220	938	783	3,110	605	245	704	13,500
1956	438	494	538	561	701	1,030	669	624	1,040	341	296	267	7,000
1957	285	368	357	370	350	551	1,210	1,870	49,410	9,770	4,190	6,780	75,510
1958	900	643	659	700	2,280	6,940	2,190	908	647	11,620	1,450	4,170	33,110
1959	570	626	590	594	884	1,370	2,080	9,360	2,070	2,260	1,910	732	23,050
1960	665	522	544	660	691	21,540	9,060	3,660	12,470	6,350	5,130	1,020	62,310

\* Not previously published; see footnote to preceding table.

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950								
1951								
1952								
1953								
1954	1340	2,540	June 18, 1954	-	*44.2	*32,010	45.1	32,640
1955	1390	346	June 19, 1955	1.3	18.7	13,500	17.0	12,330
1956	1440	204	June 28, 1956	1.7	9.65	7,000	9.02	6,540
1957	1510	10,100	June 17, 1957	2.9	104	75,510	106	76,700
1958	1560	676	Sept. 7, 1958	9.1	45.7	33,110	45.2	32,690
1959	1630	503	May 6, 1959	7.6	31.8	23,050	6.5	22,990
1960	1710	3,300	Mar. 29, 1960	6.5	85.8	62,310	-	-

\* Not previously published.

## 8805. Big Blue River at Seward, Nebr.

Location.--Lat 40°54'10", long 97°06'40", in SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec.20, T.11 N., R.3 E., at downstream end of first pier from right abutment of bridge on State Highway 2 at west edge of Seward, 0.2 mile downstream from Lincoln Creek.

Drainage area.--1,070 sq mi, approximately.

Records available.--October 1953 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 1,421.49 ft above mean sea level, datum of 1929.

Average discharge.--7 years (1953-60), 102 cfs (73,840 acre-ft per year).

Extremes.--1954-60: Maximum discharge, 15,300 cfs June 18, 1957 (gage height, 22.34 ft); no flow July 30, 31, 1955 (result of irrigation pumping).

Remarks.--Many small diversions for irrigation above station.

## Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1954	*14.0	*18.0	*20.0	*19.0	23.9	24.8	49.1	65.0	346	27.0	64.8	16.7	*58.9
1955	21.7	13.1	14.2	19.3	39.2	52.3	27.0	15.6	75.7	12.7	5.17	19.7	26.1
1956	10.4	11.0	9.86	11.3	15.3	23.9	13.5	40.2	20.7	5.38	3.67	4.12	14.1
1957	3.84	5.22	8.34	8.08	9.49	15.4	35.9	44.1	1,731	274	146	186	204
1958	24.1	20.1	19.6	18.2	78.6	309	98.0	31.2	18.7	605	54.2	106	116
1959	14.3	16.9	18.3	15.6	28.9	41.9	62.7	371	118	201	104	19.1	86.7
1960	22.2	17.6	17.6	19.5	23.2	814	527	199	390	127	264	35.5	205

\* Not previously published; estimated on basis of records for station at Crete and Lincoln Creek near Seward.

## Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1954	*861	*1,070	*1,210	*1,170	1,320	1,530	2,920	3,990	20,710	1,660	5,210	992	*42,640
1955	1,330	781	871	1,180	2,180	3,210	1,600	982	4,510	781	318	1,170	18,890
1956	638	656	606	697	878	1,470	801	2,470	1,230	331	226	245	10,250
1957	236	311	513	495	527	948	2,130	2,710	103,000	16,830	9,000	11,090	147,800
1958	1,480	1,200	1,200	1,120	4,380	18,990	5,830	1,920	1,110	37,170	3,330	6,320	83,990
1959	881	1,000	1,120	962	1,600	2,580	4,920	22,820	7,000	12,360	6,400	1,140	62,780
1960	1,360	1,060	1,080	1,200	1,330	50,080	31,330	12,210	23,220	7,790	16,210	2,110	149,000

\* Not previously published; see footnote to preceding table.

## Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet		
		Discharge	Date							
1954	1340	2,800	June 18, 1954	2.2	*58.9	*42,640	*58.7	*42,480		
1955	1390	378	June 19, 1955	0	26.1	18,890	24.6	17,810		
1956	1440	534	May 16, 1956	.6	14.1	10,250	13.0	9,410		
1957	1510	15,300	June 18, 1957	2.4	204	147,800	208	150,800		
1958	1560	2,920	July 25, 1958	10	116	83,990	115	83,170		
1959	1630	1,140	May 6, 1959	11	66.7	62,780	87.4	63,280		
1960	1710	8,200	Mar. 30, 1960	11	205	149,000	-	-		

\* Not previously published.

## 8808. West Fork Big Blue River near Dorchester, Nebr.

Location.--Lat 40°43'55", long 97°10'40", in NW $\frac{1}{4}$ SW $\frac{1}{4}$  sec.23, T.9 N., R.2 E., on left bank at downstream side of pier of bridge on county road, 6 $\frac{1}{4}$  miles northwest of Dorchester and 19 miles upstream from mouth.

Drainage area.--1,210 sq mi, approximately.

Records available.--August 1958 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 1,403.48 ft above mean sea level, datum of 1929.

Extremes.--1958-60: Maximum discharge, 11,200 cfs Mar. 30, 1960 (gage height, 20.28 ft); minimum daily, 49 cfs Dec. 6, 1958, Feb. 13, 1960.

Flood of July 10, 1950, reached a stage of 24.8 ft, present datum, from floodmarks (discharge, 49,400 cfs, from contracted-opening and flow-over-road measurement of peak flow).

Remarks.--Some diversion by pumping for irrigation above station. Natural flow of stream affected by ground-water withdrawals for irrigation and return flow from irrigated areas.

## Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1958	-	-	-	-	-	-	-	-	-	-	225	334	-
1959	74.3	72.4	73.2	74.5	99.5	99.1	121	880	159	522	260	114	214
1960	83.8	85.3	73.0	65.8	73.9	1,048	619	412	856	239	158	81.1	317

## Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1958	-	-	-	-	-	-	-	-	-	-	13,830	19,850	-
1959	4,570	4,310	4,500	4,580	5,530	6,090	7,190	54,120	9,470	32,120	15,960	6,790	155,200
1960	5,150	5,070	4,490	4,040	4,250	64,440	36,860	25,310	50,940	14,710	9,700	4,830	229,800

## Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet		
		Discharge	Date							
1958	1630	1,800	Sept. 8, 1958	79	-	-	-	-		
1959	1650	2,890	July 7, 1959	49	214	155,200	216	156,600		
1960	1710	11,200	Mar. 30, 1960	49	317	229,800	-	-		

## 8810. Big Blue River near Crete, Nebr.

Location.--Lat 40°35'40", long 96°57'35", in S $\frac{1}{2}$  sec.3, T.7 N., R.4 E., on downstream side of right pier of bridge on State Highway 82, 1.8 miles south of Missouri Pacific Railroad Co. station in Crete, 3.3 miles downstream from Walnut Creek, and 3.6 miles upstream from Squaw Creek.

Drainage area.--2,680 sq mi, approximately.

Records available.--March 1945 to September 1960. Prior to Oct. 1, 1953, discharge published only for stages above 12.0 ft because of variable backwater from dam downstream until 1952 and diurnal fluctuation from powerplant upstream in 1952-53.

Gage.--Water-stage recorder. Datum of gage is 1,311.7 ft above mean sea level, datum of 1929. Prior to Jan. 20, 1954, wire-weight gage at same site and datum.

Average discharge.--7 years (1953-60), 356 cfs (257,700 acre-ft per year).

Extremes.--1945-60: Maximum discharge, 27,600 cfs July 10, 1950 (gage height, 28.74 ft); minimum daily, 13 cfs Oct. 28, 1956.

Remarks.--Diurnal fluctuation caused by powerplant upstream. Power dam downstream which caused backwater at gage was destroyed during 1950-52.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	-	-	-	-	-	-	-	-	-
1952	-	-	-	-	-	-	-	-	-	-	-	-	-
1953	-	-	-	-	-	-	-	-	-	-	-	-	-
1954	83.7	106	110	86.8	124	124	186	323	1,210	102	754	137	279
1955	136	98.8	99.6	104	292	211	133	96.1	372	90.2	28.4	60.4	142
1956	75.5	70.8	82.4	87.3	100	124	109	141	279	119	96.9	99.3	115
1957	46.5	41.1	64.0	70.2	80.7	106	128	187	3,260	616	319	444	444
1958	105	98.2	87.2	94.7	185	674	462	134	144	2,360	368	620	448
1959	106	100	106	102	163	216	240	1,781	368	852	339	171	382
1960	135	146	104	119	133	2,148	1,768	850	1,446	655	488	169	681

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	-	-	-	-	-	-	-	-	-
1952	-	-	-	-	-	-	-	-	-	-	-	-	-
1953	-	-	-	-	-	-	-	-	-	-	-	-	-
1954	5,150	6,290	6,770	5,340	6,860	7,620	11,090	19,890	72,360	6,270	46,380	8,180	202,200
1955	8,350	5,880	6,120	6,370	16,220	12,990	7,910	5,910	22,160	5,540	1,740	3,590	102,800
1956	4,640	4,210	5,070	5,370	5,770	7,630	6,470	8,670	16,570	7,320	5,960	5,910	83,590
1957	2,860	2,440	3,940	4,320	4,480	6,520	7,590	11,490	94,000	37,850	19,600	26,390	321,500
1958	6,450	5,840	5,360	5,820	10,270	41,450	27,480	8,210	8,570	45,100	22,620	56,880	324,100
1959	6,500	5,970	6,540	6,270	9,050	13,300	14,290	109,500	21,920	52,410	20,820	10,150	276,700
1960	8,300	8,710	6,380	7,310	7,650	32,100	108,200	52,270	86,040	40,260	29,980	10,050	494,200

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean
		Discharge	Date				
1950	-	-	-	-	-	-	-
1951	1210	25,500	June 3, 1951	-	-	-	-
1952	1240	10,600	June 27, 1952	-	-	-	-
1953	-	241,530	July 21, 1953	-	-	-	-
1954	1340	5,080	June 19, 1954	33	279	202,200	282
1955	1390	1,600	June 19, 1955	19	142	102,800	133
1956	1440	922	July 2, 1956	22	115	83,590	109
1957	1510	22,200	June 19, 1957	13	444	321,500	456
1958	1560	5,430	July 24, 1958	64	448	324,100	449
1959	1630	3,700	May 6, 1959	62	382	276,700	388
1960	1710	23,000	Mar. 30-31, 1960	49	681	494,200	-

\* Not previously published.  
 † Observed.

## 8812. Turkey Creek near Wilber, Nebr.

Location.--Lat 40°28', long 97°00', in NE $\frac{1}{4}$  sec.19, T.6 N., R.4 E., on left bank a quarter of a mile downstream from bridge on State Highway 41, 3 miles southwest of Wilber.

Drainage area.--490 sq mi, approximately.

Records available.--October 1959 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 1,322.00 ft above mean sea level (State Highway Department bench mark).

Extremes.--1959-60: Maximum discharge, 7,300 cfs Mar. 28, 1960 (gage height, 14.92 ft); minimum daily, 8.5 cfs Jan. 23.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1960	32.7	20.3	16.1	11.9	21.8	632	266	241	366	275	117	22.2	169

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1960	2,010	1,210	988	733	1,250	38,880	15,830	14,840	21,760	16,900	7,170	1,320	122,900



## 8820. Big Blue River at Barneston, Nebr.

Location.--Lat 40°03', long 96°35', in NE $\frac{1}{4}$ SW $\frac{1}{4}$  sec.13, T.1 N., R.7 E., near left bank in tailrace of powerplant, three-quarters of a mile northwest of Barneston, 2 miles upstream from Plum Creek, and 5 miles upstream from Nebraska-Kansas State line.

Drainage area.--4,420 sq mi, approximately.

Records available.--May 1932 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 1,164.2 ft above mean sea level, datum of 1929, Kansas City supplementary adjustment of 1943, revision of 1954. Prior to June 9, 1941, water-stage recorder at site 1 mile downstream at datum 0.44 ft lower. June 9 to Nov. 17, 1941, float gage at present site and datum.

Average discharge.--28 years (1932-60), 779 cfs (564,000 acre-ft per year).

Extremes.--1932-60: Maximum discharge, 57,700 cfs June 9, 1941 (gage height, 34.3 ft); minimum daily, 1 cfs Nov. 30, 1945.

Remarks.--Low flow regulated by powerplant at Barneston, which has pondage of about 1,500 acre-ft. No large tributaries between station and Nebraska-Kansas State line. Some pump diversions for irrigation above station. Natural flow of stream affected by ground-water withdrawals for irrigation and return flow from irrigated areas.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	2,149	292	228	211	378	987	1,202	1,647	10,460	4,152	2,600	2,204	2,210
1952	489	366	305	430	386	1,954	2,482	990	1,820	2,984	1,120	347	1,142
1953	206	263	317	307	467	359	288	418	550	289	227	126	315
1954	125	215	240	178	254	210	269	1,010	2,813	227	5,227	311	929
1955	450	214	196	207	963	425	250	184	748	378	53.5	98.1	342
1956	135	110	131	137	165	189	143	240	817	1,251	230	137	306
1957	93.5	98.2	124	115	154	175	350	486	4,283	813	431	768	654
1958	343	183	155	168	795	1,248	705	295	418	5,461	650	2,589	1,088
1959	189	183	176	164	472	646	371	4,180	771	1,897	401	427	830
1960	965	257	191	232	525	3,966	4,417	1,483	2,685	1,351	1,115	424	1,468

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	132,100	17,350	14,040	12,990	20,990	60,700	71,530	101,200	22,600	255,300	159,700	151,100	1,600,000
1952	30,060	21,760	18,780	26,470	22,180	20,200	147,700	60,900	105,300	183,500	68,850	20,640	829,300
1953	12,660	15,670	19,470	18,850	25,960	22,060	17,120	25,720	31,530	17,750	13,970	7,490	228,200
1954	7,710	12,810	14,760	10,960	14,130	12,900	16,020	62,110	167,400	13,940	321,400	18,490	672,600
1955	27,680	12,720	12,030	12,710	53,500	26,160	14,850	11,300	44,500	23,230	3,290	5,840	247,800
1956	8,270	6,520	8,080	8,430	9,490	11,640	8,520	14,760	48,640	76,940	14,160	8,170	223,600
1957	5,750	5,850	7,610	7,080	6,560	10,740	20,850	29,890	254,900	50,000	26,520	45,720	473,500
1958	21,070	10,870	9,550	10,320	44,160	76,750	41,980	18,160	24,900	555,800	39,970	154,100	787,600
1959	11,630	10,910	10,820	10,060	26,190	39,740	22,080	257,000	45,860	116,600	24,650	25,440	501,000
1960	59,340	15,260	11,760	14,270	30,210	243,600	262,800	91,190	159,800	83,060	68,580	25,250	1,065,000

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	1,127	815,600
1951	1210	26,000	June 4, 1951	160	2,210	1,600,000	2,081	1,507,000
1952	1240	17,100	June 30, 1952	193	1,142	829,300	1,111	806,500
1953	1280	2,210	June 9, 1953	91	315	228,200	298	215,700
1954	1340	28,300	Aug. 8, 1954	48	929	672,600	953	689,800
1955	1390	6,170	Feb. 19, 1955	28	342	247,800	301	218,200
1956	1440	17,700	July 3, 1956	20	308	223,600	304	220,000
1957	1510	16,700	June 22, 1957	14	654	473,500	685	495,800
1958	1560	22,200	July 11, 1958	66	1,088	787,600	1,077	779,500
1959	1630	14,800	July 4, 1959	97	830	601,000	903	654,000
1960	1710	29,400	Mar. 28, 1960	125	1,468	1,065,000	-	-

## 8830. Little Blue River near Deweese, Nebr.

Location.--Lat 40°20'00", long 98°04'10", in NE $\frac{1}{4}$  sec.11, T.4 N., R.7 W., on right bank about 1,500 ft above bridge on State Highway 14, 1 mile upstream from Walnut Creek,  $\frac{3}{8}$  miles southeast of Deweese, and 6 miles northwest of Angus.

Drainage area.--1,140 sq mi, approximately.

Records available.--February 1953 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 1,632.67 ft above mean sea level, datum of 1929. Prior to May 16, 1957, wire-weight gage at site 1,500 ft downstream at same datum.

Average discharge.--7 years (1953-60), 147 cfs (106,400 acre-ft per year).

Extremes.--1953-60: Maximum discharge, 13,000 cfs June 17, 1957 (gage height, 15.00 ft); minimum daily, 25 cfs Aug. 29, 1955, July 30, 31, 1956.

Flood of June 26, 1951, reached a stage of 14.9 ft at previous site, from information by local resident (discharge, 16,000 cfs, based on records for former station at Angus).

Remarks.--Natural flow affected by irrigation development above station. Records of suspended sediment loads and water temperatures for the period August 1956 to September 1960 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	-	-	-	-	-	-	-	-	-
1952	-	-	-	-	-	-	-	-	-	-	-	-	-
1953	-	-	-	-	-	-	-	-	-	-	-	-	-
1954	61.6	71.2	77.5	77.2	78.2	81.4	133	221	86.7	47.0	266	65.3	106
1955	66.6	64.9	72.8	75.1	120	95.5	74.6	71.5	380	63.8	32.3	91.4	99.9
1956	65.1	65.3	68.1	64.2	76.9	78.0	70.6	71.7	153	112	104	52.0	81.7
1957	52.8	62.7	65.2	53.2	63.3	68.6	75.2	288	1,145	86.8	161	75.9	182
1958	68.2	70.9	68.6	71.9	66.4	154	182	81.2	116	319	270	109	132
1959	64.7	68.8	69.4	69.0	92.5	111	137	527	151	433	86.5	231	171
1960	85.6	71.3	75.0	70.7	74.8	744	308	471	807	180	65.3	78.8	253

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	-	-	-	-	-	-	-	-	-
1952	-	-	-	-	-	-	-	-	-	-	-	-	-
1953	-	-	-	-	-	-	-	-	-	-	-	-	-
1954	3,790	4,240	4,770	4,750	4,340	4,900	7,910	13,610	5,160	2,890	16,340	5,880	76,580
1955	4,100	3,860	4,470	4,620	6,670	5,880	4,440	4,400	22,580	3,920	1,980	5,440	72,360
1956	4,000	3,880	4,190	3,950	4,420	4,800	4,200	4,410	9,100	6,890	6,390	3,100	59,330
1957	3,250	3,730	4,010	3,270	3,520	4,220	4,470	17,730	68,110	5,340	9,910	4,510	132,100
1958	4,190	4,220	4,220	4,420	3,690	9,480	10,830	4,990	6,890	19,640	16,600	6,510	95,680
1959	3,980	4,090	4,270	4,240	5,140	6,820	8,150	32,410	8,960	26,610	5,320	13,770	123,800
1960	5,270	4,240	4,610	4,350	4,300	45,740	18,300	28,970	48,020	11,090	4,010	4,690	185,600

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950								
1951								
1952								
1953	1280	1,360	June 7, 1953	a38	-	-	-	-
1954	1340	2,070	May 23, 1954	37	106	76,580	105	76,210
1955	1390	1,800	June 6, 1955	25	99.9	72,360	99.4	72,000
1956	1440	2,210	June 26, 1956	25	81.7	59,330	80.2	58,230
1957	1510	13,000	June 17, 1957	30	182	132,100	185	133,700
1958	1560	2,810	Aug. 16, 1958	52	132	95,680	132	95,390
1959	1630	4,940	July 4, 1959	32	171	123,800	173	125,500
1960	1710	11,800	Mar. 27, 1960	36	253	185,600	-	-

a Minimum during period February to September.

## 8835. Little Blue River at Angus, Nebr.

Location--Lat 40°16'30", long 97°58'15", in NW $\frac{1}{4}$  sec.35, T.4 N., R.6 W., near center of span on downstream side of highway bridge, half a mile downstream from Ox Bow Creek and half a mile southeast of Angus.

Records available--July to October 1912 (gage heights only, published as "at Blue Bluff"), September 1950 to January 1953.

Gage--Wire-weight gage. July 16 to Oct. 31, 1912, staff gage at site  $3\frac{3}{4}$  miles upstream at different datum.

Extremes--1950-53: Maximum discharge, 18,500 cfs June 26, 1951 (gage height, 13.40 ft), from rating curve extended above 6,000 cfs; minimum daily, 59 cfs Sept. 8, 12, 1952.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	236	90.0	81.5	82.2	95.8	112	110	158	2,020	895	116	211	350
1952	96.7	94.2	82.0	83.2	93.8	119	135	123	189	430	71.6	62.0	132
1953	70.0	76.4	79.4	-	84.4	-	-	-	-	-	-	-	-

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	14,490	5,360	5,010	5,050	5,320	6,870	6,560	9,720	120,200	55,060	7,140	12,550	253,300
1952	5,950	5,610	5,040	5,120	5,390	7,320	8,060	7,570	11,250	26,460	4,400	3,690	95,860
1953	4,310	4,540	4,880	5,190	-	-	-	-	-	-	-	-	-

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	-	-	-
1951	1210	18,500	June 26, 1951	63	350	253,300	339	245,100	
1952	1240	7,910	July 15, 1952	59	132	95,860	128	92,990	
1953	1280	-	-	-	-	-	-	-	-

## 8835.7 (revised). Little Blue River near Gilead, Nebr.

Location--Lat 40°11'20", long 97°24'30", in NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec.34, T.3 N., R.1 W., near right bank on upstream side of highway bridge, 3 miles north of Gilead,  $7\frac{1}{2}$  miles downstream from Dry Creek, and 8 miles upstream from Big Sandy Creek.

Drainage area--1,400 sq mi, approximately.

Records available--July 1959 to September 1960.

Gage--Water-stage recorder. Datum of gage is 1,371.29 ft above mean sea level, datum of 1929 (levels by Bureau of Reclamation).

Extremes--1959-60: Maximum discharge, 25,600 cfs Mar. 28, 1960 (gage height, 17.30 ft); minimum daily, 54 cfs Aug. 13, 1959.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1959	-	-	-	-	-	-	-	-	-	-	-	-	-
1960	212	109	106	99.9	125	1,504	585	423	1,241	845	127	271	412
										316	126	95.4	

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1959	-	-	-	-	-	-	-	-	-	51,950	7,790	16,100	-
1960	13,040	6,460	6,530	6,140	7,190	92,490	34,820	26,030	73,870	19,400	7,740	5,680	299,400

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1959	1710	-	-	-	-	-	-	-	-
1960	1710	25,600	Mar. 28, 1960	64	412	299,400	-	-	-

## 8840. Little Blue River near Fairbury, Nebr.

Location.--Lat 40°06'56", long 97°10'23", in sec.26, T.2 N., R.2 E., on right bank 20 ft downstream from bridge on State Highway 15, three-quarters of a mile south of Fairbury, and 5½ miles upstream from Rose Creek.

Drainage area.--2,320 sq mi, approximately.

Records available.--May 1908 to September 1915, October 1928 to September 1960. Published as "near Endicott" October 1928 to September 1956. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 1,282.19 ft above mean sea level, datum of 1929, May 23, 1908, to Sept. 30, 1915, chain gage at present site at different datum. Apr. 26, 1929, to Sept. 24, 1957, chain gage or water-stage recorder at site 3½ miles downstream at various datums.

Average discharge.--39 years (1908-15, 1928-60), 370 cfs (267,900 acre-ft per year).

Extremes.--1908-15, 1928-60: Maximum discharge, 36,800 cfs June 27, 1951 (site and datum then in use), from rating curve extended above 26,000 cfs; maximum gage height, 16.82 ft June 27, 1951; minimum discharge, 14 cfs Nov. 22, 1929 (discharge measurement).

Remarks.--Some regulation at low stage by powerplants above station. Natural flow of stream affected by ground-water withdrawals for irrigation and return flow from irrigated areas.

Corrections.--In WSP 1116 and 1310, the calendar year mean and runoff for 1947 are listed in error; they should be 433 cfs and 313,600 acre-ft, respectively.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	961	206	180	181	197	391	451	460	4,735	2,582	733	910	999
1952	266	208	176	216	201	470	688	333	1,013	918	219	147	404
1953	150	159	165	197	198	179	175	265	551	143	99.1	113	199
1954	164	237	253	140	182	161	267	687	362	89.4	435	122	259
1955	137	133	130	137	264	195	157	128	780	260	61.8	139	209
1956	114	112	110	112	152	150	136	149	343	455	136	83.4	171
1957	92.2	117	107	97.0	107	143	185	520	1,932	317	856	282	396
1958	125	129	126	134	150	462	429	221	346,189.4	402	913	447	447
1959	144	132	125	102	248	268	242	1,729	296,114.7	201	378	421	421
1960	416	150	149	128	188	2,262	935	687	1,910	464	236	134	639

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	59,080	12,260	11,070	11,160	10,930	24,010	26,830	28,290	281,800	158,700	45,060	54,150	723,300
1952	16,370	12,380	10,820	13,300	11,560	28,920	40,930	20,450	60,250	58,430	13,440	8,740	293,600
1953	9,230	9,480	10,140	12,110	10,980	11,030	10,430	16,290	32,770	8,780	6,090	6,720	144,000
1954	10,100	14,090	15,530	8,630	10,090	9,910	15,890	42,220	21,510	5,500	26,750	7,250	187,500
1955	8,430	7,920	8,000	8,400	14,650	12,010	9,350	7,890	46,440	16,010	3,800	8,280	151,200
1956	7,020	6,690	6,790	6,890	8,770	9,240	8,070	9,180	20,420	27,960	8,390	4,960	124,400
1957	5,670	6,970	6,590	5,960	5,950	8,790	10,890	31,990	14,900	19,520	52,650	16,790	286,700
1958	7,690	7,680	7,770	8,270	8,310	28,410	25,520	13,580	20,560	116,500	24,720	54,340	323,400
1959	8,880	7,660	7,680	6,250	13,760	16,460	14,580	106,300	17,620	70,530	12,380	22,460	304,500
1960	25,590	8,920	9,190	7,680	10,820	139,100	55,640	42,230	113,600	28,540	14,520	7,990	464,000

† Corrected.

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	601	435,400
1951	1210	36,800	June 27, 1951	84	999	723,300	940	680,500
1952	1240	18,700	June 28, 1952	108	404	293,600	390	282,900
1953	1280	5,210	June 9, 1953	86	199	144,000	214	154,900
1954	1340	4,680	May 2, 1954	67	259	187,500	238	172,100
1955	1390	4,450	June 19, 1955	35	209	151,200	203	147,300
1956	1440	4,200	July 3, 1956	31	171	124,400	170	123,100
1957	1510	19,400	June 19, 1957	39	396	286,700	401	290,600
1958	1560	11,000	July 25, 1958	73	447	323,400	448	324,600
1959	1630	8,790	July 6, 1959	48	421	304,500	447	323,800
1960	1710	31,700	Mar. 28, 1960	81	639	464,000	-	-

## 8842. Mill Creek at Washington, Kans.

Location.--Lat 39°48'50", long 97°02'20", on south line of sec.1, T.3 S., R.3 E., at downstream side of bridge on U. S. Highway 36, 0.5 mile east of Washington and about 26 miles upstream from mouth.

Drainage area.--344 sq mi.

Records available.--October 1959 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 1,261.56 ft above mean sea level, datum of 1929.

Extremes.--1959-60: Maximum discharge, 9,690 cfs Mar. 28, 1960 (gage height, 25.58 ft); minimum, 0.6 cfs Sept. 19-24, 1959.

Maximum stages known since at least 1903, about 36 ft June 8, 1941, and about 34 ft in 1903 and 1908, from information by local residents and newspaper files.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1960	167	9.48	7.78	44.7	164	616	182	142	218	48.6	17.5	6.25	136

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1960	10,270	564	449	2,750	9,440	37,900	10,850	8,700	12,970	2,990	1,080	372	98,360

## 8845. Little Blue River at Waterville, Kans.

Location.--Lat 39°46'40", long 96°51'40", on west line of sec.22, T.3 S., R.5 E., near right bank at downstream side of bridge on State Highway 15 E., 0.4 mile downstream from Malone Creek, 9 miles northwest of Waterville, and 18 miles upstream from mouth.

Drainage area.--3,330 sq mi, approximately.

Records available.--June 1922 to June 1925, August 1928 to September 1960.

Gage.--water-stage recorder. Datum of gage is 1,140.06 ft above mean sea level (levels by Corps of Engineers). Prior to Mar. 23, 1938, chain gage and Mar. 23, 1938, to Apr. 28, 1958, wire-weight gage, at highway bridge 11.5 miles downstream at datum 1,110.87 ft above mean sea level, datum of 1929.

Average discharge.--34 years (1922-24, 1926-60), 645 cfs (467,000 acre-ft per year).

Extremes.--1922-25, 1928-60: Maximum discharge, 50,400 cfs June 10, 1941 (gage height, 26.20 ft, from floodmarks, site and datum then in use), from rating curve extended above 25,000 cfs on basis of velocity-area study; minimum observed, 26 cfs Sept. 4, 1956.

Flood of May 31, 1903, reached a stage of about 28 ft, former site and datum, from information by local resident.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	3,326	425	380	321	399	844	1,248	1,358	8,788	7,146	1,935	3,066	2,443
1952	773	505	381	425	401	1,375	2,307	844	1,036	1,128	314	182	806
1953	163	193	220	250	334	319	263	480	582	284	121	119	277
1954	159	252	286	158	254	198	261	1,090	1,043	1,171	1,543	178	464
1955	156	150	153	156	465	259	215	143	1,087	549	66.8	120	291
1956	119	116	122	133	168	174	161	175	700	715	129	67.5	232
1957	82.8	104	111	97.0	135	169	358	880	2,499	451	1,279	594	563
1958	168	168	160	168	219	705	549	728	486	3,155	591	1,729	740
1959	203	173	161	155	435	493	325	2,915	432	1,990	210	536	674
1960	991	212	183	213	547	3,421	1,833	1,250	2,749	702	295	189	1,049

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	204,500	25,310	23,390	19,760	22,150	51,880	74,270	83,500	522,900	439,400	119,000	182,500	1,769,000
1952	47,560	30,070	23,420	26,130	23,040	84,560	137,300	51,930	61,620	69,340	19,310	10,840	585,100
1953	10,040	11,480	13,540	15,380	18,570	19,590	15,670	29,510	34,650	17,460	7,430	7,080	200,400
1954	9,750	15,020	17,590	9,740	14,100	12,150	15,530	67,050	62,080	7,210	94,870	10,590	335,700
1955	9,590	8,950	9,400	9,610	25,820	15,930	12,780	8,770	64,660	33,760	4,110	7,130	210,500
1956	7,320	6,870	7,490	8,190	9,680	10,670	9,560	10,790	41,680	43,940	7,940	4,010	168,100
1957	5,090	6,210	6,840	5,960	7,470	10,380	21,290	54,100	48,700	27,720	78,650	35,330	407,700
1958	10,320	10,000	9,820	10,340	12,140	43,340	32,670	44,760	28,940	194,000	36,360	102,900	535,600
1959	12,450	10,290	9,900	9,500	24,160	30,310	19,350	179,200	25,680	122,400	12,920	31,910	488,100
1960	60,960	12,640	11,230	13,110	31,480	210,400	109,100	76,880	163,600	43,160	18,140	11,240	761,900

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	1,462	1,059,000
1951	1210	38,200	July 13, 1951	234	2,443	1,769,000	2,233	1,616,000
1952	1240	12,000	June 29, 1952	156	806	585,100	715	519,100
1953	1280	4,550	June 9, 1953	78	277	200,400	287	207,700
1954	1340	12,000	Aug. 24, 1954	62	464	335,700	444	321,300
1955	1390	4,720	June 6, 1955	27	291	210,500	282	204,200
1956	1440	6,080	July 4, 1956	32	232	168,100	227	164,600
1957	1510	16,900	June 20, 1957	40	563	407,700	580	419,700
1958	1560	11,500	Sept. 8, 1958	75	740	535,600	743	538,100
1959	1630	13,300	July 4, 1959	100	674	488,100	746	540,300
1960	1710	38,800	Mar. 29, 1960	125	1,049	761,900	-	-

8850. Snipe Creek near Beattie, Kans.

Location.--Lat 39°47'10", long 96°25'00", in S½ sec.16, T.3 S., R.9 E., on left bank at downstream side of bridge on State Highway 99, 3.5 miles upstream from mouth and 5 miles south of Beattie.

Drainage area.--18 sq mi, approximately.

Records available.--August 1954 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 1,197.67 ft above mean sea level, datum of 1929 (levels by U. S. Soil Conservation Service).

Extremes.--1954-58: Maximum discharge, 975 cfs July 15, 1958 (gage height, 11.25 ft); no flow for many days in each year.  
Flood in August 1948 reached a stage of about 25 ft, from information by local residents.

Remarks.--Flows are affected by detention reservoirs and watershed treatment practices calculated to minimize surface runoff.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1954	-	-	-	-	-	-	-	-	-	-	-	0	-
1955	0	0	0	0	5.55	0.22	0.83	0.09	0.17	0	0	0	0.53
1956	0	0	0	0	0	0	0	0	3.96	.55	0	0	.37
1957	0	0	0	0	0	0	1.77	7.48	2.04	.01	0	1.47	1.07
1958	.16	.06	0	.05	7.53	11.4	.38	2.92	.19	42.5	2.28	17.0	7.06

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1954	-	-	-	-	-	-	-	-	-	-	-	0	-
1955	0	0	0	0	308	13	49	5.6	9.9	0	0	0	386
1956	0	0	0	0	0	0	0	0	236	34	0	0	270
1957	0	0	0	0	0	0	106	460	122	.8	0	88	777
1958	9.9	3.4	0	3.0	418	700	23	180	11	2,610	140	1,010	5,110

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1954	1390	-	-	-	-	-	-	-
1955	1390	189	Feb. 18, 1955	0	0.53	386	0.53	386
1956	1440	330	June 27, 1956	0	.37	270	.37	270
1957	1510	896	May 24, 1957	0	1.07	777	1.09	790
1958	1560	975	July 15, 1958	0	7.06	5,110	-	-

8855. Black Vermillion River near Frankfort, Kans.

Location.--Lat 39°40'50", long 96°26'40", on south line of sec.20, T.4 S., R.9 E., on right bank at downstream side of bridge on State Highway 9, a quarter of a mile downstream from Vermillion Creek and 2.2 miles southwest of Frankfort.

Drainage area.--412 sq mi.

Records available.--December 1953 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 1,106.91 ft above mean sea level, datum of 1929. Prior to May 13, 1954, wire-weight gage at same site and datum.

Average discharge.--6 years (1954-60), 121 cfs (87,600 acre-ft per year).

Extremes.--1953-60: Maximum discharge, 38,300 cfs May 30, 1959 (gage height, 29.40 ft); no flow at times in 1955-57.

Flood of Aug. 3, 1948, reached a stage of 30.2 ft, present site and datum, from flood-marks. Flood in June 1951 reached a stage of 28.6 ft, present site and datum, from floodmarks (discharge, 30,400 cfs based on contracted-opening measurement of peak flow).

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952													
1953													
1954	#0.5	#2.3	#9.1	3.34	14.6	5.75	5.39	95.7	272	2.38	142	1.45	#46.2
1955	.35	1.18	5.33	5.80	268	28.2	54.1	14.4	28.1	10.3	.22	.16	32.9
1956	.13	.57	1.44	1.64	2.00	2.87	3.18	3.88	80.9	33.5	11.8	0	11.8
1957	0	.02	.51	.49	2.09	4.53	53.6	77.7	156	16.0	1.80	56.8	30.7
1958	69.8	27.6	3.27	7.61	186	159	15.9	106	27.5	944	276	612	203
1959	22.2	27.3	19.2	19.3	223	86.7	95.4	1,100	78.3	374	14.6	436	208
1960	528	51.7	60.9	294	198	959	212	153	254	86.1	55.2	24.7	241

# Not previously published; partly estimated on basis of records for nearby stations.

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952													
1953													
1954	#31	#137	#559	205	812	353	321	5,680	16,190	146	8,740	86	#33,460
1955	22	70	328	357	14,860	1,730	3,220	886	1,670	633	13	9.5	23,800
1956	8.1	34	89	101	115	176	189	238	4,810	2,060	727	0	8,550
1957	0	1.2	32	30	116	278	3,190	4,780	9,300	987	110	3,380	22,200
1958	4,290	1,640	201	468	10,340	9,760	948	6,500	1,640	58,040	16,970	5,430	147,200
1959	1,560	1,620	1,180	1,180	12,390	5,330	5,680	67,660	4,680	23,000	900	2,950	150,900
1960	32,440	3,070	3,740	18,080	11,400	58,940	12,640	9,440	15,120	5,290	3,390	1,470	175,000

# Not previously published; partly estimated on basis of records for nearby stations.

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950								
1951								
1952								
1953								
1954	1440	4,210	June 1, 1954	-	#46.2	#33,460	45.8	33,150
1955	1440	2,840	Feb. 19, 1955	0	32.9	23,800	32.5	23,510
1956	1440	1,890	June 28, 1956	0	11.8	8,550	11.6	8,450
1957	1510	1,400	May 25, 1957	0	30.7	22,200	39.1	28,300
1958	1560	12,800	July 31, 1958	.6	203	147,200	201	145,300
1959	1630	38,300	May 30, 1959	1.9	208	150,900	257	186,000
1960	1710	25,100	Mar. 28, 1960	4.4	241	175,000	-	-

# Not previously published.

## 8860. Big Blue River at Randolph, Kans.

Location.--Lat 39°27', long 96°43', in SW $\frac{1}{4}$  sec.12, T.7 S., R.6 E., near right bank on downstream side of pier of bridge on State Highway 16, half a mile upstream from Fancy Creek, three-quarters of a mile east of Randolph, and at mile 32.3.

Drainage area.--9,100 sq mi, approximately.

Records available.--April 1918 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 1,034.90 ft above mean sea level, datum of 1929. Prior to May 15, 1934, chain or staff gage at same site and datum.

Average discharge.--42 years (1918-60), 1,686 cfs (1,221,000 acre-ft per year).

Extremes.--1918-60: Maximum discharge, 98,000 cfs June 10, 1941 (gage height, 30.81 ft), from rating curve extended above 53,000 cfs on basis of velocity-area study; minimum, 31 cfs Aug. 10, 1934 (gage height, 1.85 ft). Flood of June 10, 1941, is probably the highest since at least 1897. Flood of May 31, 1903, reached a stage of 30.6 ft, from floodmark, and is probably second highest.

Remarks.--Some diurnal fluctuation caused by powerplants above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	6,920	920	708	590	815	2,051	2,745	5,329	27,030	16,460	5,063	7,756	6,376
1952	1,569	1,212	873	987	897	4,674	6,750	2,757	2,511	4,616	1,865	733	2,460
1953	464	617	742	742	897	942	797	1,108	1,417	694	455	242	759
1954	288	492	658	395	582	443	528	2,059	4,657	300	6,203	662	1,444
1955	592	408	387	386	1,677	842	557	386	1,574	951	149	168	665
1956	273	226	259	297	350	394	328	392	1,634	1,838	353	212	547
1957	172	184	223	203	288	392	902	1,511	6,547	1,540	1,571	1,455	1,246
1958	625	399	328	343	786	2,651	1,561	1,483	1,113	9,587	2,446	5,725	2,284
1959	690	514	447	453	1,433	1,483	1,238	6,753	2,100	4,903	898	2,239	2,106
1960	3,861	830	684	1,747	2,268	8,813	9,485	4,020	6,107	2,833	1,548	927	3,593

Monthly and yearly discharge, in thousands of acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	425.5	54.75	43.51	36.28	45.25	126.1	163.4	327.7	1,608	1,012	311.3	461.5	4,615
1952	97.71	72.12	53.68	60.71	51.61	287.4	401.6	169.5	149.4	283.8	114.7	43.59	1,786
1953	28.56	36.72	45.64	45.62	49.8	57.95	47.45	68.11	84.31	42.7	27.98	14.43	549.3
1954	17.69	29.25	40.49	24.26	32.35	27.24	31.42	126.6	277.1	18.47	381.4	39.42	1,046
1955	36.41	24.3	23.8	23.76	95.14	51.76	33.15	23.73	92.68	58.44	9.17	9.99	481.4
1956	16.79	13.43	15.95	18.25	20.13	24.25	19.4	24.11	97.22	113	21.68	12.6	396.8
1957	10.55	10.96	13.71	12.46	16.02	24.07	53.69	92.88	389.6	94.71	96.6	86.6	901.8
1958	38.41	23.75	20.19	21.1	43.68	175.3	92.91	91.16	66.22	589.5	150.4	340.7	1,653
1959	42.4	30.57	27.48	27.87	79.6	91.18	73.65	537	125	301.5	55.21	133.2	1,525
1960	237.4	49.36	42.07	107.4	130.5	541.9	564.4	247.2	363.4	174.2	95.18	55.18	2,608

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	3,073	2,225,000	
1951	1210	77,800	July 13, 1951	480	6,378	4,615,000	5,961	4,315,000	
1952	1240	21,300	June 30, 1952	495	2,460	1,786,000	2,305	1,673,000	
1953	1280	6,710	June 27, 1953	194	759	549,300	726	525,800	
1954	1340	26,300	Aug. 9, 1954	165	1,444	1,046,000	1,440	1,043,000	
1955	1390	11,300	Feb. 19, 1955	54	665	481,400	612	443,000	
1956	1440	18,000	July 4, 1956	94	547	396,800	532	385,900	
1957	1510	23,400	June 20, 1957	93	1,246	901,800	1,311	949,000	
1958	1560	28,600	July 13, 1958	145	2,284	1,653,000	2,309	1,671,000	
1959	1630	32,500	July 5, 1959	330	2,106	1,525,000	2,421	1,753,000	
1960	1710	74,000	Mar. 30, 1960	400	3,593	2,608,000	-	-	



8865. Fancy Creek at Winkler, Kans.

Location.--Lat 39°28'30", long 96°50'10", in SE $\frac{1}{4}$  sec.2, T.7 S., R.5 E., on left bank at downstream side of highway bridge, 0.2 mile downstream from Otter Creek and 0.4 mile south of Winkler.

Drainage area.--176 sq mi.

Records available.--December 1953 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 1,101.17 ft above mean sea level (levels by Corps of Engineers). Prior to May 5, 1954, wire-weight gage at same site and datum.

Average discharge.--6 years (1954-60), 33.1 cfs (23,960 acre-ft per year).

Extremes.--1953-60: Maximum discharge, 19,600 cfs Sept. 5, 1958 (gage height, 21.80 ft); no flow at times.

Maximum stage known since at least 1915, 22.3 ft in August 1944, from floodmark.

Flood in July 1951 reached a stage of 21.0 ft, from floodmark.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952													
1953													
1954	-	-	4.80	4.40	11.2	5.07	4.22	19.1	26.1	0.75	11.6	0.10	-
1955	0.12	0.25	1.50	1.33	18.9	2.70	1.96	.73	10.4	.70	0	.04	3.08
1956	.63	0	0	0	.06	.03	.08	0	13.0	10.4	0	0	2.03
1957	0	0	0	0	0	0	15.3	25.9	22.5	7.44	.006	.49	5.98
1958	0	0	.14	.24	.87	13.0	6.64	42.6	25.3	99.1	27.1	336	46.0
1959	17.3	11.3	8.42	8.10	70.0	25.5	39.4	70.0	33.8	26.8	29.4	94.2	35.8
1960	176	22.5	22.0	93.3	61.1	295	153	207	121	59.6	13.9	18.0	106

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952													
1953													
1954	-	-	295	271	620	312	251	1,170	1,670	46	711	6.1	-
1955	7.1	15	92	82	1,050	166	116	45	617	43	0	2.6	2,240
1956	51	0	0	0	3.2	2.0	4.6	0	771	642	0	0	1,470
1957	0	0	0	0	0	0	911	1,590	1,340	457	.4	29	4,330
1958	0	0	8.7	14	48	799	407	2,620	1,680	6,090	1,670	19,990	33,330
1959	1,060	673	517	498	5,890	1,570	2,340	4,300	2,010	1,650	1,810	5,610	25,930
1960	10,820	1,340	1,350	5,730	4,670	18,150	9,130	12,720	7,200	3,660	854	1,070	76,690

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950								
1951								
1952								
1953								
1954	1340	472	May 2, 1954	0	-	-	7.15	5,170
1955	1390, 1630	554	June 29, 1955	0	3.06	2,240	3.00	2,170
1956	1440, 1630	880	June 17, 1956	0	2.03	1,470	1.96	1,420
1957	1510, 1630	1,290	June 27, 1957	0	5.98	4,330	5.99	4,340
1958	1560	19,600	Sept. 5, 1958	0	46.0	33,330	49.1	35,570
1959	1630	1,870	July 21, 1959	2.4	35.8	25,930	51.4	37,190
1960	1710	8,720	Mar. 27, 1960	6.5	106	76,690	-	-

8870. Big Blue River near Manhattan, Kans.

Location.--Lat 39°14'14", long 96°34'16", in S½ sec.30, T.9 S., R.8 E., on right bank at downstream side of highway bridge, 4 miles north of Manhattan and 7.0 miles upstream from mouth.

Drainage area.--9,560 sq mi, approximately.

Records available.--May to July 1951 (published in WSP 1139), October 1954 to September 1960. Records for April 1895 to October 1905, published in previous Annual Reports and Water-Supply Papers, have been found to be unreliable and should not be used.

Gage.--Water-stage recorder. Datum of gage is 991.86 ft above mean sea level, datum of 1929. May 1 to July 31, 1951, wire-weight gage above power dam 1 mile upstream at datum 5.34 ft higher. Oct. 1 to Nov. 17, 1954, wire-weight gage at present site and datum.

Average discharge.--6 years (1954-1960), 1,775 cfs (1,285,000 acre-ft per year).

Extremes.--1951, 1954-60: Maximum discharge, 93,400 cfs July 12, 1951 (gage height, 33.04 ft, present site and datum, from floodmarks), from rating curve extended above 35,000 cfs on basis of slope-area measurement of peak flow; minimum daily, 48 cfs Aug. 28, 1955.

Flood of May 31, 1903, reached a stage of 35.85 ft, from floodmarks and information by local resident. Flood in June 1941 reached a stage of about 34.1 ft, from floodmarks and information by local resident.

Remarks.--Low flow regulated by powerplant 1 mile upstream. Occasional regulation (during 1950 water year) by operation of partially completed Tuttle Creek Dam 2.4 miles upstream. Records of chemical analyses and water temperatures for water years 1956-58 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	-	-	-	6,402	27,820	20,120	-	-	-
1952													
1953													
1954													
1955	670	411	415	392	1,770	889	569	377	1,647	1,006	156	188	699
1956	310	232	271	295	364	381	307	351	1,694	2,000	372	222	567
1957	168	186	230	204	312	357	920	1,452	6,561	1,646	1,530	1,437	1,247
1958	630	412	361	350	678	3,078	1,577	1,604	1,149	9,985	2,570	6,687	2,437
1959	791	587	500	491	1,463	1,446	1,196	8,773	2,267	4,703	809	2,088	2,104
1960	3,832	858	709	1,696	2,155	4,468	13,240	4,447	6,258	2,939	1,623	1,043	3,594

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	-	-	-	393,600	1,555,000	1,237,000	-	-	-
1952													
1953													
1954													
1955	41,210	24,440	25,490	24,090	98,300	54,670	33,860	23,160	98,010	61,830	9,610	11,180	505,800
1956	19,080	13,780	16,660	18,120	20,940	23,400	18,280	21,570	100,800	123,000	22,880	13,240	411,800
1957	10,300	11,070	14,150	12,530	17,350	21,950	54,720	89,270	590,400	101,200	94,070	85,530	902,500
1958	38,740	24,530	22,220	21,520	37,660	189,300	93,830	98,630	68,350	13,900	158,000	897,900	1,765,000
1959	48,640	34,920	30,760	30,180	81,260	88,940	71,180	539,500	134,900	289,100	49,760	124,200	1,523,000
1960	235,800	51,060	43,570	104,300	123,900	274,700	787,600	273,400	572,400	180,700	99,760	62,040	2,609,000

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean
		Discharge	Date				
1950							
1951	1139	93,400	July 12, 1951	-	-	-	-
1952							
1953							
1954							
1955	1390	10,600	Feb. 19, 1955	48	699	505,800	641
1956	1440	18,800	July 5, 1956	103	567	411,800	548
1957	1510	23,900	June 21, 1957	98	1,247	902,500	1,316
1958	1560	30,400	Sept. 6, 1958	150	2,437	1,765,000	2,477
1959	1630	32,300	July 6, 1959	300	2,104	1,523,000	2,402
1960	1710	31,400	Apr. 5, 1960	432	3,594	2,609,000	-

## 8875. Kansas River at Wamego, Kans.

Location.--Lat 39°11'52", long 96°18'16", at center of sec.9, T.10 S., R.10 E., on left bank at downstream side of bridge on State Highway 99 at Wamego, 3 miles downstream from Antelope Creek and at mile 129.1.

Drainage area.--55,240 sq mi, approximately, of which a large area is probably noncontributing.

Records available.--January 1919 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 950.82 ft above mean sea level, datum of 1929. Prior to Aug. 1, 1934, chain gage and Aug. 1, 1934, to Sept. 30, 1955, water-stage recorder, at same site at datum 3 ft higher.

Average discharge.--41 years (1919-60), 4,785 cfs (3,464,000 acre-ft per year).

Extremes.--1919-60: Maximum discharge, 400,000 cfs July 13, 1951 (gage height, 30.56 ft, present datum), from rating curve extended above 170,000 cfs on basis of slope-area measurement of peak flow and flood routing studies; minimum, 73 cfs Dec. 14, 1940.

Flood in May 1903 reached a stage of 29.3 ft, present datum, determined by U. S. Weather Bureau, from floodmarks.

Remarks.--Natural flow of stream affected by 11 reservoirs in Colorado, Nebraska, and Kansas, and by numerous small diversions for irrigation above station. Records of chemical analyses for the period August 1956 to September 1958, suspended sediment loads for the period October 1957 to September 1960, and water temperatures for the period August 1956 to September 1960 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	13,620	3,708	2,126	1,788	2,080	4,061	5,957	17,780	64,620	98,420	19,240	32,530	22,280
1952	9,657	6,360	4,145	3,788	3,751	8,975	16,120	8,732	5,543	7,168	3,355	1,793	6,620
1953	1,109	1,542	1,583	1,647	2,474	2,239	1,707	3,135	3,192	1,618	1,169	819	1,849
1954	625	870	1,312	714	1,169	952	881	2,983	9,845	1,120	7,458	1,121	2,423
1955	1,023	757	724	763	2,292	1,549	1,362	851	3,855	1,995	424	833	1,358
1956	1,721	552	513	546	700	763	608	499	2,794	3,557	946	398	1,135
1957	336	390	394	322	494	591	1,927	6,942	17,370	12,700	5,172	4,831	4,300
1958	3,443	1,762	1,406	1,352	1,677	7,390	8,275	8,713	5,369	17,260	7,497	14,240	6,563
1959	4,038	2,335	1,750	1,611	4,021	3,831	3,585	15,340	6,177	8,176	1,648	3,685	4,704
1960	8,686	2,443	1,630	3,240	5,260	12,830	26,860	13,290	13,840	7,151	3,702	4,487	8,601

Monthly and yearly discharge, in thousands of acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	837.7	220.7	130.8	109.9	115.5	249.7	354.4	1,093	3,845	6,052	1,183	1,566	16,130
1952	593.8	378.4	254.9	232.9	214.6	551.8	959.2	536.9	329.9	440.8	206.3	106.7	4,806
1953	68.19	79.83	97.33	101.3	137.4	137.7	101.6	192.8	189.9	111.8	71.85	48.73	1,338
1954	38.45	51.78	80.68	43.90	64.90	58.55	52.44	183.4	585.8	68.85	458.6	66.70	1,754
1955	62.91	45.02	44.50	46.91	127.3	95.27	81.03	52.32	229.4	122.7	26.10	49.55	983.0
1956	105.8	32.85	31.57	33.59	40.26	46.91	36.08	30.67	166.3	218.7	58.16	23.06	824.0
1957	20.68	23.19	23.58	19.80	27.41	36.35	114.7	426.8	1,034	781.1	318.0	287.4	3,113
1958	221.7	104.8	86.48	83.16	93.14	454.4	492.4	535.7	319.5	1,062	461.0	847.4	4,452
1959	246.3	132.4	107.6	99.07	223.3	235.5	213.3	943.0	367.6	502.8	113.6	219.3	3,406
1960	543.1	145.3	100.2	199.2	302.5	789.1	1,598	817.1	823.6	439.7	227.6	267.0	6,243

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary		Date	Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	maximum						
1950	-	-	-	-	-	-	-	8,141	5,894,000
1951	1210	400,000	July 13, 1951	700	22,280	16,130,000	22,330	16,170,000	
1952	1240	39,200	Apr. 23, 1952	1,190	6,620	4,806,000	5,268	3,824,000	
1953	1280	19,500	May 30, 1953	550	1,849	1,339,000	1,746	1,284,000	
1954	1340	27,200	June 3, 1954	470	2,423	1,754,000	2,397	1,736,000	
1955	1390	11,700	Feb. 20, 1955	195	1,358	983,000	1,382	1,001,000	
1956	1440	18,300	July 5, 1956	200	1,135	824,000	993	721,200	
1957	1510	46,000	June 21, 1957	160	4,300	3,113,000	4,763	3,449,000	
1958	1560	54,200	Sept. 8, 1958	850	6,563	4,752,000	6,681	4,837,000	
1959	1630	41,600	May 7, 1959	1,100	4,704	3,406,000	5,107	3,697,000	
1960	1710	69,400	Mar. 29, 1960	1,120	8,601	6,243,000	-	-	

8880. Vermillion Creek near Wamego, Kans.

Location.--Lat 39°21'00", long 96°13'10", in NW¼ sec.20, T.8 S., R.11 E., at downstream side of highway bridge, 1 mile upstream from Indian Creek, 14 miles northeast of Wamego, and at mile 19.3.

Drainage area.--243 sq mi.

Records available.--April 1936 to June 1946, January 1954 to September 1960. Prior to October 1937, published as Red Vermillion Creek near Wamego.

Gage.--Water-stage recorder. Datum of gage is 992.20 ft above mean sea level, datum of 1929 (levels by Corps of Engineers). Prior to Dec. 3, 1956, wire-weight gage at present site and datum.

Average discharge.--15 years (1936-45, 1954-60), 79.9 cfs (57,850 acre-ft per year).

Extremes.--1936-46, 1954-60: Maximum discharge, 23,500 cfs Oct. 9, 1941 (gage height, 29.40 ft), from rating curve extended above 4,000 cfs on basis of velocity-area study; no flow at times in 1937, 1939-40, 1955-57.

Maximum stage known since at least 1873, 30.9 ft in 1915, from floodmark and information by local resident (discharge, 38,500 cfs, from rating curve extended above 4,000 cfs on basis of velocity-area study).

Flood of July 13, 1951, reached a stage of 29.7 ft, from floodmarks.

Remarks.--Probably diversions for irrigation above station. Records of suspended sediment loads and water temperatures for the period April 1958 to September 1960 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952													
1953													
1954				1.27	4.00	2.87	2.36	21.0	162	1.13	13.8	0.53	-
1955	0.22	0.34	0.49	2.16	109	23.1	74.8	10.1	14.6	2.38	1.99	0	19.2
1956	1.11	.29	.42	.40	2.22	.33	.31	1.01	8.14	8.16	.18	0	1.58
1957	0	0	0	0	.29	.73	53.4	107	143	112	2.15	2.74	35.2
1958	54.9	68.2	15.5	27.5	97.7	159	44.8	103	196	544	189	245	146
1959	35.3	75.2	27.9	23.7	184	110	159	619	126	225	11.6	20.3	135
1960	157	37.8	26.5	79.5	120	495	179	98.8	264	31.6	16.5	24.6	127

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952													
1953													
1954	-	-	-	78	222	176	141	1,290	9,630	70	849	32	-
1955	13.7	20.0	30.3	133	6,040	1,420	4,450	619	872	147	122	0	13,870
1956	68	17	26	25	128	20	18	62	484	502	11	0	1,360
1957	0	0	0	0	16	45	3,180	6,570	8,480	6,890	132	163	25,480
1958	3,380	4,060	956	1,690	5,430	9,760	2,670	6,350	11,680	33,460	11,610	14,600	105,600
1959	2,170	4,470	1,720	1,460	10,230	6,790	9,470	38,070	7,470	13,800	713	1,210	97,570
1960	9,630	2,250	1,630	4,890	6,900	30,450	10,630	5,950	15,690	1,950	1,010	1,460	92,440

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950									
1951									
1952									
1953									
1954	1340	4,700	June 1, 1954	-	-	-	17.3	12,550	
1955	1390	1,920	Feb. 19, 1955	0	19.2	13,870	19.2	13,910	
1956	1440	451	June 28, 1956	0	1.88	1,360	1.72	1,250	
1957	1510	3,110	July 1, 1957	0	35.2	25,480	46.8	33,870	
1958	1560	6,390	July 31, 1958	.4	146	105,600	146	105,600	
1959	1630	10,300	May 30, 1959	3.4	135	97,570	142	102,700	
1960	1710	8,800	Mar. 28, 1960	3.8	127	92,440	-	-	

## 8883. Rock Creek near Louisville, Kans.

Location.--Lat 39°16'00", long 96°22'50", in sec.14, T.9 S., R.9 E., at downstream side of highway bridge, 1.6 miles downstream from Camp Creek, 3.8 miles upstream from Brush Creek, 4 miles west of Louisville, and 15.4 miles upstream from mouth.

Drainage area.--128 sq mi, approximately.

Records available.--October 1958 to September 1960.

Gage.--Water-stage recorder. Altitude of gage is 1,000 ft (from topographic map). Prior to May 9, 1960, wire-weight gage at same site and datum.

Extremes.--1958-60: Maximum discharge, 6,040 cfs May 5, 1959 (gage height, 27.8 ft, from floodmark); minimum daily, 1.5 cfs Sept. 17, 1959.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1959	52.3	26.8	19.7	14.5	63.1	34.4	57.3	343	99.8	30.6	6.22	4.36	62.8
1960	60.2	12.9	10.5	49.9	41.5	206	125	85.3	66.1	22.4	34.9	9.60	60.5

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1959	3,210	1,590	1,210	889	3,510	2,110	3,410	21,060	5,940	1,880	382	259	45,450
1960	3,700	770	646	3,070	2,390	12,660	7,430	5,240	3,930	1,370	2,150	571	43,930

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year			
		Discharge	Maximum Date	Minimum day	Mean	Acre-feet	Mean	Acre-feet	
1959	1630	6,040	May 5, 1959	1.5	62.8	45,450	61.8	44,560	
1960	1710	5,960	Mar. 27, 1960	2.5	60.5	43,930	-	-	

## 8885. Mill Creek near Paxico, Kans.

Location.--Lat 39°03'15", long 96°10'52", in SW $\frac{1}{4}$  sec.27, T.11 S., R.11 E., at downstream side of bridge on U. S. Highway 40, 1 mile southwest of Paxico, 2.0 miles downstream from Kuenzli Creek, and 16 miles upstream from mouth.

Drainage area.--316 sq mi.

Records available.--December 1953 to September 1960.

Gage.--Water-stage recorder. Altitude of gage is 965 ft (from topographic map). Prior to Apr. 15, 1958, wire-weight gage at same site and datum.

Average discharge.--6 years (1954-60), 122 cfs (88,320 acre-ft per year).

Extremes.--1953-60: Maximum discharge, 14,000 cfs Oct. 7, 1958 (gage height, 24.38 ft); no flow at times.

Maximum stage known, 34.7 ft July 12, 1951, from floodmarks (discharge, 77,200 cfs, from contracted-opening measurement of peak flow).

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952													
1953													
1954				2.22	3.27	1.55	1.51	5.91	228	5.46	19.6	0.44	-
1955	0.62	0.23	1.84	2.76	6.24	3.45	105	36.3	84.4	11.6	.05	4.20	21.2
1956	4.91	1.08	1.75	1.88	2.90	2.59	11.2	3.97	14.4	1.82	37.5	2.04	7.02
1957	0	0	0	0	0	197	86.8	549	315	185	9.97	21.2	97.9
1958	88.8	173	72.8	102	271	489	188.8	149	206	824	294	315	263
1959	411	88.5	63.0	66.9	128	150	244	429	135	67.2	26.7	28.7	154
1960	230	47.1	29.7	77.8	202	672	388	198	112	45.1	114	178	191

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952													
1953													
1954				136	181	95	90	363	13,540	336	1,210	26	-
1955	38	13	113	170	347	212	6,260	2,250	5,020	711	3.4	250	15,370
1956	302	64	108	115	167	159	668	244	855	112	2,300	2.4	5,090
1957	0	0	0	0	0	60	5,160	33,780	18,780	11,270	613	1,260	70,900
1958	5,460	10,320	4,470	6,240	15,030	30,080	9,890	9,150	12,270	50,670	18,080	18,740	190,400
1959	25,280	5,260	3,880	4,110	7,130	9,250	14,520	26,370	8,030	4,130	1,640	1,710	111,300
1960	14,150	2,800	1,830	4,790	11,600	41,290	23,090	12,150	6,640	2,770	7,000	10,610	138,700

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year			
		Discharge	Maximum Date	Minimum day	Mean	Acre-feet	Mean	Acre-feet	
1950									
1951									
1952									
1953									
1954	1340, 1560	7,930	June 12, 1954	-	-	-	22.3	16,140	
1955	1390	3,220	Apr. 13, 1955	0	21.2	15,370	21.7	15,680	
1956	1440	1,280	June 17, 1956	0	7.02	5,090	6.37	4,620	
1957	1510, 1560	8,170	May 16, 1957	0	97.9	70,900	126	91,150	
1958	1560	11,100	Aug. 21, 1958	10	263	190,400	283	204,600	
1959	1650	14,000	Oct. 7, 1958	7.8	154	111,300	132	95,670	
1960	1710	11,100	Mar. 27, 1960	13	191	138,700	-	-	

## 8890. Kansas River at Topeka, Kans.

Location.--Lat 39°03'47", long 95°40'29", in SE $\frac{1}{4}$  sec.30, T.11 S., R.16 E., near right bank in downstream end of pier of Topeka Avenue Bridge in Topeka, 2.2 miles upstream from Soldier Creek and at mile 85.5.

Drainage area.--56,710 sq mi, approximately, of which a large area is probably noncontributing.

Records available.--April to August 1904 (gage heights only), June 1917 to September 1960. Gage-height records in this vicinity since August 1904 are contained in reports of U. S. Weather Bureau.

Gage.--Water-stage recorder. Datum of gage is 854.57 ft above mean sea level, datum of 1929. Apr. 24 to Aug. 31, 1904, staff gage at Chicago, Rock Island and Pacific Railroad Co. bridge 400 ft upstream at different datum. June 12, 1917, to Apr. 3, 1918, chain gage at Chicago, Rock Island and Pacific Railroad Co. bridge at datum 0.75 ft higher. Apr. 4 to May 30, 1918, water-stage recorder, May 31, 1918, to Oct. 1, 1918, staff gage, and Oct. 2, 1918, to Sept. 30, 1927, water-stage recorder, at site 130 ft downstream at datum 0.75 ft higher. Oct. 1, 1927, to Sept. 30, 1934, chain gage at Melan Bridge 1,700 ft downstream at present datum. Oct. 1, 1934, to Sept. 30, 1939, water-stage recorder at Sardou Bridge 7,300 ft downstream at datum 1.74 ft lower.

Average discharge.--43 years (1917-60), 5,287 cfs (3,828,000 acre-ft per year).

Extremes.--1917-60: Maximum discharge, 469,000 cfs July 13, 1951 (gage height, 36.34 ft); minimum, 112 cfs Dec. 16, 1940, result of freezeup. Maximum stage known since 1844, that of July 13, 1951. Flood of May 30, 1903 (second highest since 1844), reached a stage of 31.4 ft, present datum, from floodmarks at site 1,700 ft downstream (discharge, about 300,000 cfs). A flood in the spring of 1844 is known to have been higher than that in 1903, and on the basis of legendary marks or deductions, is comparable to the flood in 1951.

Remarks.--Natural flow of stream affected by 11 reservoirs in Colorado, Nebraska, and Kansas, and by numerous small diversions for irrigation above stations. Records of chemical analyses and water temperatures for the period November 1955 to September 1958 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	14,710	4,100	2,335	2,024	2,209	4,578	6,733	22,240	64,670	109,100	19,410	34,840	24,050
1952	9,956	6,546	4,233	3,949	3,937	10,850	18,460	9,761	5,643	8,000	3,741	2,284	7,288
1953	1,193	1,330	1,625	1,814	2,598	2,441	1,851	2,834	3,309	1,948	1,251	831	1,914
1954	635	913	1,359	742	1,186	934	821	2,923	10,540	1,278	7,089	1,443	2,489
1955	1,155	820	754	729	2,466	1,751	1,587	5,891	2,152	472	732	1,443	
1956	1,854	581	469	541	728	762	650	585	2,405	3,594	995	425	1,138
1957	348	406	383	328	500	609	2,269	8,011	17,730	12,910	5,075	4,723	4,453
1958	3,672	2,407	1,624	1,548	2,094	8,455	8,622	9,494	6,329	21,780	8,821	15,690	7,581
1959	5,314	2,325	1,957	1,866	4,071	4,286	4,616	17,390	7,384	8,700	1,999	3,673	5,318
1960	9,983	2,691	1,985	3,692	5,905	14,110	28,660	13,720	14,040	7,486	4,300	4,945	9,275

Monthly and yearly discharge, in thousands of acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	904.7	244.0	143.6	124.5	122.7	281.5	400.6	1,367	3,848	6,707	1,135	2,073	17,410
1952	612.2	389.5	260.3	242.8	226.5	687.1	1,099	600.2	335.8	491.9	230	135.9	5,291
1953	73.35	79.12	99.91	111.6	144.5	150.1	110.1	174.3	196.9	119.8	76.94	49.47	1,586
1954	39.07	54.35	83.54	45.65	65.89	57.46	48.87	179.7	627.0	78.58	435.9	85.84	1,802
1955	71.04	48.82	46.37	44.80	137.0	107.7	94.42	58.11	231.5	132.3	29.05	43.56	1,045
1956	114.0	34.54	30.09	33.27	41.88	46.86	38.65	35.95	143.1	221.0	61.17	25.29	825.8
1957	21.38	24.14	23.56	20.19	27.75	37.43	135.0	492.6	1,055	794.0	312.1	281.0	3,224
1958	225.8	143.2	99.85	95.19	116.3	519.8	513.1	583.8	376.6	1,339	542.4	933.6	5,489
1959	326.7	158.4	120.3	114.7	226.1	263.6	274.7	1,069	439.4	534.9	122.9	218.6	3,849
1960	613.8	106.1	122.0	227.0	339.7	867.4	1,706	843.4	835.2	460.3	264.4	294.3	6,734

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean
		Discharge	Date				
1950	-	-	-	-	-	-	9,014
1951	1210	469,000	July 13, 1951	1,100	24,050	17,410,000	24,010
1952	1240	47,600	Apr. 23, 1952	1,380	7,288	5,291,000	5,897
1953	1280	16,800	May 30, 1953	600	1,914	1,386,000	1,810
1954	1340	35,600	June 12, 1954	401	2,489	1,802,000	2,474
1955	1390	11,000	Feb. 21, 1955	192	1,443	1,045,000	1,460
1956	1440	17,800	July 6, 1956	230	1,138	825,800	987
1957	1510	47,300	June 22, 1957	170	4,453	3,224,000	5,006
1958	1560	56,900	Sept. 8, 1958	1,100	7,581	5,489,000	7,742
1959	1630	45,500	May 8, 1959	1,340	5,318	3,849,000	5,747
1960	1710	74,000	Mar. 30, 1960	1,500	9,275	6,734,000	-

## 8892. Soldier Creek near Delia, Kans.

Location.--Lat 39°12'08", long 95°52'25", on south line of sec.5, T.10 S., R.14 E., at upstream side of highway bridge, 5.1 miles upstream from Walnut Creek and 5½ miles southeast of Delia.

Drainage area.--157 sq mi.

Records available.--October 1958 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 931.34 ft above mean sea level, datum of 1929.

Extremes.--1958-60: Maximum discharge, 3,380 cfs Mar. 28, 1960 (gage height, 20.40 ft); minimum, 1.2 cfs Sept. 16, 17, 1959.

Maximum stage known since at least 1909, about 24 ft June 21, 1951, from floodmarks and information by local residents.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1959	86.8	30.5	18.9	17.8	103	87.3	120	286	52.1	80.1	6.19	18.8	75.6
1960	125	22.1	18.1	48.2	77.6	277	89.5	41.4	36.3	10.5	77.7	32.0	71.6

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1959	5,340	1,810	1,160	1,090	5,740	5,370	7,110	17,600	3,100	4,930	380	1,120	54,750
1960	7,710	1,320	1,110	2,970	4,460	17,010	5,320	2,550	2,160	646	4,770	1,910	51,940

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1959	1630	2,700	Oct. 7, 1958	1.3	75.6	54,750	78.2	56,580	
1960	1710	3,380	Mar. 28, 1960	1.8	71.6	51,940	-	-	

## 8895. Soldier Creek near Topeka, Kans.

Location.--Lat 39°06'18", long 95°42'20", on east line of sec.14, T.11 S., R.15 E., at downstream side of highway bridge, 0.4 mile upstream from Halfday Creek, 2 miles northwest of Topeka, and 4 miles upstream from mouth.

Drainage area.--268 sq mi.

Records available.--May 1929 to September 1932, August 1935 to September 1960. Prior to October 1935, published as "at Topeka." Records for October 1932 to July 1935, published in WSP 746, 761, and 786, have been found to be unreliable and should not be used.

Gage.--Wire-weight gage read once daily. Altitude of gage is 865 ft (from topographic map). Prior to July 27, 1935, chain gage at site 1 mile downstream at different datum. Aug. 1, 1935, to June 16, 1958, wire-weight gage and June 17, 1958, to May 24, 1960, water-stage recorder; at site 1.1 miles upstream at datum 866.95 ft above mean sea level, datum of 1929.

Average discharge.--28 years (1929-32, 1935-60), 123 cfs (89,050 acre-ft per year).

Extremes.--1929-32, 1935-60: Maximum discharge, 11,400 cfs June 22, 1951 (gage height, 28.15 ft, site and datum then in use); maximum gage height, 29.06 ft, site and datum then in use, July 12, 1951, from floodmark (backwater from Kansas River); no flow at times in 1931, 1935-40, 1953-57.

Remarks.--Divisions above station for irrigation.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	112	26.0	23.3	23.0	35.9	133	111	646	1,998	1,792	154	804	489
1952	84.3	117	58.3	55.0	48.7	316	318	100	31.4	11.2	6.42	9.53	96.1
1953	1.86	7.83	9.79	11.7	11.7	37.2	20.1	45.8	4.06	3.78	15.2	28	14.1
1954	1.19	.67	.93	.50	1.84	1.45	8.61	37.2	86.4	2.05	50.7	.40	15.8
1955	4.86	.20	.19	1.58	95.9	36.3	35.5	28.2	26.7	5.36	6.31	17.3	20.9
1956	10.1	.07	.05	.01	1.26	.14	1.03	5.17	13.3	4.19	25.0	0	5.07
1957	0	0	0	0	.18	.20	44.3	186	107	180	.27	13.2	44.7
1958	218	149	31.5	46.8	133	244	84.3	98.1	277	574	265	130	188
1959	256	65.3	57.4	30.0	145	161	216	441	64.9	117	10.5	31.5	130
1960	212	31.3	26.6	73.2	116	447	164	101	89.9	21.4	169	60.0	126

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	8,870	1,550	1,430	1,410	2,000	8,200	6,610	39,740	118,900	110,200	9,480	47,850	354,200
1952	5,180	6,940	3,590	3,360	2,600	19,410	18,800	6,160	1,870	686	395	567	69,780
1953	114	466	602	716	548	2,290	1,200	2,820	241	232	997	15	10,240
1954	12	40	57	31	102	89	393	2,290	5,140	126	3,120	24	11,420
1955	299	12	12	97	5,320	2,230	2,110	1,730	1,590	329	388	1,030	15,150
1956	819	4.2	3.2	.4	72	8.5	61	318	794	257	1,540	0	3,680
1957	0	0	0	0	3.7	12	2,610	11,440	6,390	11,060	16	786	32,340
1958	13,420	8,870	1,950	2,890	7,390	15,030	5,010	6,030	18,470	35,310	16,290	7,730	136,300
1959	14,490	3,770	2,300	1,850	8,060	9,690	12,840	27,120	3,860	7,170	648	1,860	93,860
1960	13,020	1,860	1,640	4,500	6,880	27,460	9,740	6,220	5,350	1,320	10,370	3,570	91,710

## KANSAS RIVER BASIN

Yearly discharge, in cubic feet per second, of Soldier Creek near Topeka, Kans.

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	184	133,400
1951	1210	11,400	June 22, 1951	14	489	354,200	497	360,100
1952	1240	3,390	Mar. 10, 1952	2.0	96.1	69,780	76.1	55,250
1953	1280	580	Aug. 5, 1953	0	14.1	10,240	12.7	9,170
1954	1340	2,960	June 12, 1954	0	15.8	11,420	16.1	11,640
1955	1390	750	Feb. 20, 1955	0	20.9	15,150	21.4	15,450
1956	1440	805	Aug. 10, 1956	0	5.07	3,680	4.20	3,050
1957	1510	4,690	July 10, 1957	0	44.7	32,340	79.1	56,560
1958	1560	4,610	July 11, 1958	2	188	138,300	183	132,700
1959	1630	7,620	Oct. 7, 1958	2.4	130	93,860	124	89,820
1960	1710	4,470	Mar. 28, 1960	4.3	126	91,710	-	-

8900. Little Delaware River near Horton, Kans.

Location.--Lat 39°41'50", long 95°33'50", in SW $\frac{1}{4}$  sec.18, T.4 S., R.17 E., on left bank at downstream side of county highway bridge, 3 miles northwest of Horton and 4 miles upstream from Mission Creek.

Drainage area.--19 sq mi, approximately.

Records available.--August 1954 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 1,026.22 ft above mean sea level, datum of 1929 (levels by U. S. Soil Conservation Service).

Average discharge.--6 years (1954-60), 7.75 cfs (5,610 acre-ft per year).

Extremes.--1954-60: Maximum discharge, 893 cfs July 31, 1958 (gage height, 14.63 ft); no flow at times in most years.

Flood in July 1951 reached a stage of about 18 ft.

Remarks.--Flows are affected by detention dams and watershed treatment practices designed to minimize surface runoff.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1954	-	-	-	-	-	-	-	-	-	-	-	0.41	-
1955	2.23	0.50	0.56	2.97	53.0	10.1	4.15	1.10	16.7	0.49	0.03	0	7.31
1956	0	0	.03	.02	.60	.11	.02	.30	0	.03	0	.04	.09
1957	0	0	0	0	.04	.24	11.5	15.9	31.5	.91	0	.007	4.99
1958	33.4	10.8	1.25	1.89	26.0	11.9	2.64	3.70	8.78	63.5	31.0	4.11	16.6
1959	.91	.68	.54	.75	16.6	11.9	6.50	13.9	3.26	25.8	.94	3.64	7.09
1960	24.7	1.83	1.82	9.72	15.2	55.1	9.23	1.71	3.48	.61	.35	.27	10.4

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1954	-	-	-	-	-	-	-	-	-	-	-	24	-
1955	137	30	34	182	2,950	624	247	68	996	30	1.6	0	5,300
1956	0	0	1.8	1.0	34	6.7	1.2	18	0	2.0	0	2.6	67
1957	0	0	0	0	2.2	14	686	976	1,870	56	0	.4	3,600
1958	2,050	640	77	116	1,440	734	157	227	522	3,900	1,910	245	12,020
1959	56	40	33	46	924	735	387	854	194	1,590	56	217	5,130
1960	1,520	109	112	598	877	3,390	549	106	207	37	22	16	7,540

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1954	1390,1510	a582	Aug. 22, 1954	-	-	-	-	-
1955	1390,1510	673	(b)	0	7.31	5,300	7.04	5,100
1956	1440,1510	34	May 7, 1956	0	.09	67	.09	65.5
1957	1510	644	May 24, 1957	0	4.99	3,600	8.81	6,370
1958	1560	893	July 31, 1958	0	16.6	12,020	13.0	9,380
1959	1630	731	July 4, 1959	0	7.09	5,130	9.31	6,750
1960	1710	804	Mar. 27, 1960	0	10.4	7,540	-	-

a Maximum during period August to September.

b Feb. 18, June 24, 1955<sup>a</sup>.



## 8905. Delaware River at Valley Falls, Kans.

Location.--Lat 39°21', long 95°27', in SW $\frac{1}{4}$  sec.18, T.8 S., R.18 E., on right bank on downstream side of highway bridge, 200 ft downstream from Walnut Creek, 300 ft upstream from The Atchison, Topeka and Santa Fe Railway Co. bridge, a quarter of a mile north of Valley Falls, and at mile 30.6.

Drainage area.--922 sq mi.

Records available.--June 1922 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 885.04 ft above mean sea level, datum of 1929. Prior to May 27, 1930, chain gage on upstream side of previous highway bridge at present site and datum. May 27, 1930, to Apr. 12, 1938, chain gage 300 ft downstream on The Atchison, Topeka and Santa Fe Railway Co. bridge at same datum. Apr. 13, 1938, to Aug. 25, 1952, wire-weight gage at present site and datum.

Average discharge.--38 years (1922-60), 385 cfs (278,700 acre-ft per year).

Extremes.--1922-60: Maximum discharge, 94,600 cfs June 21, 1951 (gage height, 32.08 ft, from floodmarks), from rating curve extended above 46,000 cfs on basis of contracted-opening measurement of peak flow; minimum, about 0.1 cfs at times in 1934. Maximum stage known since at least 1865, that of June 21, 1951; second highest known reached a stage of 31.7 ft in 1865, from information by U. S. Weather Bureau.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	418	91.4	79.3	62.1	115	733	1,078	1,438	6,202	4,139	861	2,522	1,479
1952	279	376	132	181	149	1,453	1,264	296	118	26.4	50.6	79.8	367
1953	9.07	40.4	49.2	65.3	64.4	185	123	150	42.6	4.78	2.90	3.62	61.8
1954	5.13	8.09	14.1	4.31	11.9	11.2	24.3	205	888	32.4	99.7	20.4	186
1955	92.2	11.5	18.9	1.12	829	280	257	99.0	257	38.2	17.3	2.45	156
1956	21.3	5.67	6.40	5.03	10.5	7.22	26.6	30.1	23.9	113	1.73	2.76	21.4
1957	1.40	3.82	3.24	1.87	4.12	13.1	227	498	811	91.0	2.54	33.0	141
1958	550	280	81.6	88.4	57.7	750	207	510	487	5,098	1,455	438	712
1959	172	142	69.8	77.7	406	498	606	1,314	203	828	79.4	449	404
1960	1,135	135	149	350	537	1,869	431	313	289	126	358	93.4	485

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	25,720	5,440	4,870	3,820	6,410	45,090	64,150	88,410	369,100	254,500	52,930	150,100	1,071,000
1952	17,180	22,400	8,100	11,100	8,590	89,360	75,240	18,230	6,910	1,620	3,110	4,750	266,600
1953	559	2,400	3,020	4,010	3,580	11,380	7,310	9,240	2,540	293	178	215	44,720
1954	316	482	869	265	662	888	1,450	12,620	52,840	2,000	61,330	1,210	134,700
1955	5,670	684	1,040	1,920	46,030	17,230	15,270	6,090	15,300	2,350	1,070	148	112,800
1956	1,310	337	394	309	608	444	1,590	1,850	1,420	6,980	106	164	15,510
1957	86	228	199	115	229	803	13,500	30,620	48,260	5,600	156	1,960	101,800
1958	35,800	16,660	3,790	5,430	32,070	46,110	12,320	31,340	28,960	190,500	88,210	26,060	515,200
1959	10,590	8,450	4,290	4,780	22,570	30,600	36,060	80,810	12,100	50,940	4,880	26,740	292,800
1960	69,770	8,060	9,160	21,530	30,910	114,900	25,620	19,270	17,180	7,770	22,030	5,560	351,800

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	411	297,800
1951	1210	94,600	June 21, 1951	20	1,479	1,071,000	1,495	1,082,000
1952	1240	14,800	Mar. 10, 1952	8.6	367	266,600	310	224,900
1953	1280	1,220	Apr. 1, 1953	1.4	61.8	44,720	55.8	40,410
1954	1340	11,700	Aug. 2, 1954	.9	186	134,700	194	140,500
1955	1390	9,400	Feb. 19, 1955	.5	156	112,800	148	107,400
1956	1440	1,840	July 13, 1956	.3	21.4	15,510	19.3	13,980
1957	1510	14,300	June 8, 1957	.3	141	101,800	215	155,500
1958	1560	41,500	Aug. 1, 1958	1.8	712	515,200	669	494,300
1959	1630	15,700	July 4, 1959†	11	404	292,800	492	356,500
1960	1710	23,700	Mar. 28, 1960	14	485	351,800	-	-

† Corrected.

## 8910. Kansas River at Lecompton, Kans.

Location.--Lat 39°02'59", long 95°23'30", in E $\frac{1}{2}$  sec.34, T.11 S., R.18 E., on downstream side of second pier from right bank of highway bridge at Lecompton, half a mile downstream from Delaware River and at mile 64.7.

Drainage area.--58,420 sq mi, approximately, of which a large area is noncontributing.

Records available.--January to November 1896 and April to July 1906 (gage heights only), March 1936 to September 1960. Records for April 1899 to December 1905, published in WSP 37, 39, 50, 52, 66, 75, 84, 99, 131, 172, and 796-B, have been found to be unreliable and should not be used.

Gage.--Water-stage recorder. Datum of gage is 821.84 ft above mean sea level, datum of 1929. Prior to Mar. 16, 1936, staff gage and Mar. 16, 1936, to July 30, 1952, wire-weight gage, at same site and datum.

Average discharge.--24 years (1936-60), 7,101 cfs (5,141,000 acre-ft per year).

Extremes.--1936-60: Maximum discharge, 483,000 cfs July 13, 1951 (gage height, 30.23 ft), from rating curve extended above 120,000 cfs on basis of slope-area measurement of peak flow; minimum daily, 185 cfs Oct. 13, 1956.  
Maximum stage known since 1844, that of July 13, 1951. Flood of May 31, 1903 (second highest since 1844), reached a stage of 27.9 ft, from floodmark.

Remarks.--Natural flow of stream affected by 11 reservoirs in Colorado, Nebraska, and Kansas, and by numerous small diversions for irrigation above station. Records of chemical analyses for the period October 1957 to September 1958 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	15,090	4,503	2,962	2,403	2,880	5,101	7,863	26,510	81,580	116,500	20,510	36,200	26,970
1952	10,490	7,145	4,633	4,358	4,502	12,280	20,380	10,870	5,901	8,455	3,868	2,428	7,949
1953	1,251	1,535	1,837	1,923	2,781	2,713	2,058	3,051	3,559	2,054	1,306	861	2,072
1954	658	899	1,357	795	1,193	2,378	922	3,106	12,330	1,508	8,754	1,885	2,949
1955	1,364	838	740	782	3,428	2,115	1,870	1,125	4,240	2,561	602	766	1,686
1956	2,203	608	529	545	758	762	774	784	2,415	4,362	1,046	448	1,275
1957	349	417	377	329	496	628	2,432	8,830	19,150	13,910	5,309	5,152	4,795
1958	4,696	2,809	1,787	1,721	2,841	9,795	8,789	9,933	7,518	23,770	11,950	15,500	8,470
1959	5,946	2,758	2,197	2,188	4,549	5,139	6,164	18,010	8,230	9,921	2,383	4,426	6,011
1960	10,800	3,118	2,471	4,275	6,774	16,040	30,630	15,930	14,260	7,749	4,967	5,700	10,210

Monthly and yearly discharge, in thousands of acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	928.0	268.0	182.1	147.7	158.8	313.7	467.9	1,630	4,853	7,161	1,261	2,154	19,530
1952	644.8	425.2	284.8	268.0	259.0	755.0	1,213	668.2	351.1	519.9	237.7	144.5	5,771
1953	76.92	91.34	112.9	118.3	154.5	186.8	122.4	187.6	211.8	126.3	80.51	51.23	1,500
1954	40.54	52.9	83.44	48.87	66.27	60.12	54.87	191.1	735.9	92.61	538.2	100.2	2,063
1955	83.98	49.86	45.47	48.07	190.4	130.1	111.3	69.18	252.3	157.5	36.99	45.6	1,221
1956	135.5	36.16	32.5	33.48	43.59	46.86	46.08	48.2	143.7	268.2	64.54	26.65	925.3
1957	21.46	24.8	23.16	20.22	27.56	39.59	144.7	543.0	1,140	855.1	326.4	306.5	3,471
1958	288.8	167.2	109.9	105.8	157.8	602.3	532.0	610.8	447.4	1,462	734.8	922.6	6,132
1959	365.6	164.1	135.1	134.5	252.6	316.0	366.8	1,107	489.7	610	146.5	263.3	4,351
1960	663.8	185.4	151.9	262.9	389.7	986.5	1,822	979.8	848.4	476.5	305.4	339.2	7,412

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	9,948	7,202,000
1951	1210	483,000	July 13, 1951	1,500	26,970	19,530,000	26,940	19,500,000
1952	1240	56,300	Apr. 23, 1952	1,340	7,949	5,771,000	6,470	4,698,000
1953	1280	17,700	May 31, 1953	610	2,072	1,500,000	1,928	1,396,000
1954	1340	40,700	June 12, 1954	490	2,849	2,063,000	2,853	2,065,000
1955	1390	13,600	Feb. 19, 1955	221	1,686	1,221,000	1,720	1,246,000
1956	1440	19,500	July 6, 1956	266	1,275	925,300	1,089	790,500
1957	1510	44,900	June 22, 1957	185	4,795	3,471,000	5,480	3,968,000
1958	1560	83,600	July 18, 1958	900	8,470	6,132,000	8,607	6,231,000
1959	1630	43,700	May 8, 1959	1,470	6,011	4,351,000	6,476	4,889,000
1960	1710	95,500	Mar. 29, 1960	1,600	10,210	7,412,000	-	-

## 8915. Wakarusa River near Lawrence, Kans.

Location.--Lat 38°54'40", long 95°15'37", in NW¼ sec.24, T.13 S., R.19 E., at downstream side of bridge on U. S. Highway 59, 4 miles south of Lawrence and at mile 13.3.

Drainage area.--458 sq mi.

Records available.--April 1929 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 799.26 ft (corrected) above mean sea level (levels by Kansas State Geological Survey), datum of 1929. Prior to May 7, 1959, chain or wire-weight gages at same site and datum.

Average discharge.--31 years (1929-60), 166 cfs (120,200 acre-ft per year).

Extremes.--1929-60: Maximum discharge, 24,200 cfs July 12, 1951 (gage height, 31.59 ft, from floodmarks), from rating curve extended above 15,000 cfs by logarithmic plotting; no flow at times.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	123	16.7	14.5	15.2	30.1	54.8	97.5	470	1,864	5,638	71.3	708	596
1952	198	159	74.8	77.7	61.3	630	730	185	28.4	3.59	2.44		179
1953	.02	.65	1.28	1.40	1.72	6.08	10.0	92.4	7.15	.22	0	0	10.2
1954	0	0	0	0	.71	.10	.07	11.9	152	2.53	40.0	.47	17.2
1955	13.4	0	.02	.52	52.2	4.59	4.22	25.6	14.3	153	.38	0	22.3
1956	3.03	0	0	.12	.36	.18	7.91	79.4	28.1	121	7.44	0	20.7
1957	0	0	0	0	.22	4.92	180	259	385	790	3.68	9.33	137
1958	52.6	48.7	28.4	59.7	188	303	198	95.5	81.1	142	242	97.5	213
1959	349	456	99.2	105	202	260	435	190	44.1	70.2	6.99	1.50	184
1960	296	31.8	53.9	88.8	226	884	378	140	163	83.4	40.1	8.06	199

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	7,570	996	895	934	1,670	3,370	5,800	28,900	110,900	223,700	4,390	42,140	431,300
1952	12,160	9,480	4,600	4,780	3,520	38,740	43,440	11,400	1,690	221	150	21	130,200
1953	1.0	.38	.79	.86	.96	.374	.597	5,680	425	13	0	0	7,390
1954	0	0	0	0	.39	6.1	4.4	729	9,060	156	2,460	28	12,480
1955	824	0	1.4	32	2,900	282	251	1,580	850	9,380	24	0	16,120
1956	188	0	0	7.1	.12	.11	470	4,880	1,550	7,440	458	0	15,020
1957	0	0	0	0	.21	302	10,680	15,920	22,890	48,590	227	555	99,170
1958	3,230	2,900	1,750	3,670	10,310	18,990	11,810	5,870	4,820	70,230	14,900	5,800	154,300
1959	21,480	27,120	6,100	5,440	11,220	16,000	25,910	11,700	2,630	4,320	430	89	133,400
1960	17,570	1,890	3,310	5,460	12,980	54,330	22,470	8,610	9,690	5,130	2,460	480	144,400

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	263	190,300
1951	1210	24,200	July 12, 1951	11	596	431,300	619	448,000
1952	1240	5,700	Mar. 10, 1952	.1	179	130,200	143	104,100
1953	1280	1,000	May 27, 1953	0	10.2	7,390	10.0	7,270
1954	1340	2,540	June 3, 1954	0	17.2	12,480	18.4	13,310
1955	1390	4,950	July 6, 1955	0	22.3	16,120	21.4	15,480
1956	1440	2,550	May 7, 1956	0	20.7	15,020	20.4	14,480
1957	1510	12,500	July 11, 1957	0	137	99,170	148	107,000
1958	1560	6,370	July 11, 1958	.4	213	154,300	278	201,000
1959	1630	8,000	Nov. 18, 1958	.7	184	133,400	140	101,500
1960	1710	7,100	Mar. 27, 1960	1.6	199	144,400	-	-

8920. Stranger Creek near Tonganoxie, Kans.

Location--Lat 39°06'59", long 95°00'39", on north line of sec.7, T.11 S., R.22 E., at downstream side of bridge on U. S. Highway 40, 2.0 miles upstream from Tonganoxie Creek, 4 miles east of Tonganoxie, and at mile 18.4.

Drainage area--406 sq mi.

Records available--April 1929 to September 1960.

Gage--Water-stage recorder. Datum of gage is 801.95 ft above mean sea level (levels by Corps of Engineers). Apr. 30, 1929, to June 1, 1939, wire-weight or chain gage and June 2, 1939, to June 1, 1960, water-stage recorder, both at site 1.3 miles downstream at datum 5.00 ft lower.

Average discharge--31 years (1929-60), 187 cfs (135,400 acre-ft per year).

Extremes--1929-60: Maximum discharge, 33,100 cfs July 12, 1951 (gage height, 27.64 ft, present site and datum), from rating curve extended above 16,000 cfs on basis of contracted-opening measurement of peak flow; maximum stage, 28.54 ft (present site and datum) Aug. 1, 1958; no flow at times in 1934-41, 1946, 1953-54, 1956-57.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	57.9	17.9	13.9	14.4	40.4	114	112	495	1,953	2,545	556	1,754	641
1952	180	246	80.3	88.0	84.4	619	527	201	235	49.5	7.00	7.35	194
1953	.71	5.53	7.77	8.60	13.5	54.2	64.3	184	20.3	3.73	.15	.04	30.5
1954	0	.12	.83	.45	3.03	2.85	11.0	29.6	119	1.69	258	3.58	36.1
1955	91.5	2.24	3.61	13.0	485	75.4	49.4	105	44.8	187	10.2	5.87	86.9
1956	23.5	.17	.51	.78	3.39	3.78	23.0	108	49.6	138	3.96	0	29.8
1957	0	.01	.12	.10	.54	3.68	65.4	121	609	104	.56	15.7	76.2
1958	133	27.3	17.2	28.9	198	404	197	485	511	1,478	898	48.6	372
1959	87.0	281	42.2	37.5	207	313	342	203	36.1	237	22.9	86.6	157
1960	496	41.6	59.7	127	216	918	314	249	128	103	150	10.4	236

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	3,560	1,070	855	887	2,250	7,010	6,680	30,420	116,200	156,500	34,190	104,400	464,000
1952	11,080	14,620	4,940	5,410	4,880	38,080	31,340	12,360	15,990	3,040	431	438	140,600
1953	45	329	478	529	752	3,330	3,830	11,330	1,210	229	9.1	2.6	22,070
1954	0	.73	51	27	168	175	655	1,820	7,060	104	15,870	201	26,140
1955	5,630	133	222	800	26,920	4,640	2,940	6,470	2,660	11,490	627	349	62,880
1956	1,440	.99	31	48	195	232	1,370	6,620	2,950	8,470	243	0	21,610
1957	0	.8	.73	.63	.30	226	3,890	7,440	36,240	6,400	35	932	55,210
1958	8,190	1,620	1,060	1,780	10,970	24,820	11,720	29,810	30,400	90,850	55,190	2,890	269,300
1959	5,350	16,700	2,590	2,300	11,520	19,270	20,370	12,480	2,150	14,570	1,410	5,150	113,800
1960	30,490	2,470	3,670	7,780	12,430	56,450	18,690	15,340	7,600	6,330	9,250	617	171,100

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	255	184,700
1951	1210	33,100	July 12, 1951	5	641	464,000	676	489,200
1952	1240	3,610	Mar. 12, 1952	.9	194	140,600	153	110,800
1953	1280	1,200	May 27, 1953	0	30.5	22,070	29.4	21,260
1954	1340	2,020	Aug. 3, 1954	0	36.1	26,140	44.3	32,060
1955	1390	3,250	Feb. 21, 1955	.4	86.9	62,880	80.6	58,380
1956	1440	2,170	May 30, 1956	0	29.8	21,610	27.7	20,140
1957	1510	5,270	June 30, 1957	0	76.2	55,210	91.3	66,070
1958	1560	19,100	Aug. 1, 1958	0	372	269,300	391	283,100
1959	1630	4,120	Nov. 17, 1958	4.4	157	113,800	174	125,800
1960	1710	9,540	Mar. 29, 1960	3.7	236	171,100	-	-

## 8925. Kansas River at Bonner Springs, Kans.

Location.--Lat 39°03'20", long 94°52'45", NE $\frac{1}{4}$  sec.32, T.11 S., R.23 E., on left bank at downstream side of bridge on State Highway 7 at Bonner Springs, half a mile downstream from Wolf Creek and at mile 20.8.

Drainage area.--59,890 sq mi, approximately, of which a large area is noncontributing.

Records available.--July 1917 to September 1960. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 747.06 ft above mean sea level, datum of 1929. Prior to Apr. 24, 1934, chain gage at same site and datum.

Average discharge.--43 years (1917-60), 6,563 cfs (4,751,000 acre-ft per year).

Extremes.--1917-60: Maximum discharge, 510,000 cfs July 13, 1951 (gage height, 38.58 ft, from floodmark in gage shelter), from rating curve extended above 230,000 cfs on basis of slope-area measurement of peak flow; minimum observed, 160 cfs Oct. 11, 1956.

Maximum stage known since 1844, that of July 13, 1951. Flood of June 1, 1903 (second highest since 1844), reached a stage of about 34 ft, from information by Corps of Engineers.

Remarks.--Natural flow of stream affected by 11 reservoirs in Colorado, Nebraska, and Kansas, and by numerous small diversions for irrigation above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	15,890	4,618	3,094	2,663	3,027	5,852	7,561	27,820	78,870	133,200	23,390	44,660	29,350
1952	12,200	8,644	5,211	4,901	5,074	13,660	21,990	11,580	6,092	8,479	3,966	2,595	8,707
1953	1,306	1,567	1,802	2,004	2,842	2,788	2,117	3,078	4,030	2,222	1,390	941	2,168
1954	726	968	1,380	820	1,191	1,032	917	2,795	12,320	1,541	8,393	1,738	2,819
1955	1,502	874	793	799	3,912	2,388	1,882	1,614	4,201	3,260	689	591	1,859
1956	2,200	637	599	563	803	852	845	1,028	2,190	4,499	1,093	525	1,326
1957	365	504	455	364	635	774	2,876	8,415	15,590	243.9	5,439	5,237	4,977
1958	4,802	2,991	1,907	1,792	2,448	10,550	9,793	10,780	8,257	27,660	14,440	15,910	3,353
1959	8,803	4,540	2,757	2,482	5,139	6,125	7,449	19,500	9,610	10,870	2,754	4,465	6,890
1960	12,600	3,348	2,378	4,252	7,033	17,460	32,120	15,360	14,100	8,400	5,200	5,039	10,590

Monthly and yearly discharge, in thousands of acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	977.2	274.8	190.2	163.7	168.1	347.5	449.9	1,699	4,693	8,189	1,438	2,658	21,250
1952	750.1	514.3	320.4	301.4	291.9	840.0	1,309	712.2	562.5	521.4	243.9	154.4	6,322
1953	80.31	93.22	110.8	123.2	157.8	171.4	126.0	189.2	239.8	136.8	85.44	58.01	1,570
1954	44.62	57.63	64.83	50.40	66.13	63.46	54.57	171.8	733.4	94.77	516.1	103.4	2,041
1955	92.35	52.00	48.74	49.14	217.3	146.9	112.0	99.23	250.0	200.5	42.36	35.19	1,346
1956	135.3	37.90	36.81	34.62	46.56	52.41	50.28	63.21	130.3	276.7	67.21	31.23	962.5
1957	22.46	30.00	28.59	22.37	35.26	47.58	171.1	517.4	1,126	958.8	332.2	311.6	3,605
1958	295.3	178.0	117.2	110.2	135.9	648.8	582.7	682.6	491.3	1,701	887.7	946.6	6,757
1959	418.3	270.2	169.5	151.4	285.4	376.6	443.2	1,199	571.8	668.2	169.3	285.7	4,989
1960	774.9	199.2	146.2	261.5	404.5	1,073	1,911	944.4	639.1	516.5	319.7	299.8	7,690

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-			-	-	10,760	7,788,000
1951	1210	510,000	July 13, 1951	1,600	29,350	21,250,000	29,550	21,390,000
1952	1240	63,400	Apr. 24, 1952	1,400	8,707	6,322,000	6,916	5,021,000
1953	1280	17,800	May 31, 1953	708	2,168	1,570,000	2,034	1,473,000
1954	1340	35,800	June 13, 1954	600	2,819	2,041,000	2,828	2,047,000
1955	1390	17,000	July 7, 1955	235	1,659	1,346,000	1,682	1,363,000
1956	1440	16,500	July 7, 1956	324	1,326	962,500	1,148	833,600
1957	1510	60,300	June 30, 1957	160	4,977	3,603,000	5,680	4,113,000
1958	1560	68,600	July 19, 1958	1,000	9,333	6,757,000	9,703	7,025,000
1959	1630	44,800	May 8, 1959	1,550	6,890	4,989,000	7,253	5,251,000
1960	1710	103,000	Mar. 30, 1960	1,340	10,590	7,690,000	-	-

## MISSOURI RIVER MAIN STEM

8930. Missouri River at Kansas City, Mo.

Location.--Lat 39°06'43", long 94°35'16", in sec.32, T.50 N., R.33 W., on downstream side of right pier of Chicago, Burlington, & Quincy Railroad bridge at Kansas City, 1.4 miles downstream from Kansas River.

Drainage area.--489,200 sq mi, approximately.

Records available.--October 1897 to September 1960. Prior to August 1928 monthly discharge only, published in WSP 1310. Gage-height records collected at same site 1873-99 are contained in reports of Missouri River Commission; those since 1900 in reports of U. S. Weather Bureau.

Gage.--Water-stage recorder. Datum of gage is 716.40 ft above mean sea level, datum of 1929. Prior to Nov. 20, 1928, wire-weight gage, Nov. 20, 1928, to May 3, 1931, chain gage, and May 4, 1931, to Aug. 23, 1934, water-stage recorder, at present site and datum. Aug. 24, 1934, to May 15, 1947, water-stage recorder at site 200 ft upstream at same datum. May 16, 1947, to Feb. 28, 1948, wire-weight gage at present site and datum.

Average discharge.--63 years (1897-1960), 55,490 cfs (40,170,000 acre-ft per year).

Extremes.--1897-1960: Maximum discharge, 573,000 cfs July 14, 1951; maximum gage height, 38.2 ft July 14, 1951; minimum discharge, about 1,500 cfs Jan. 9, 10, 1937 (gage height, -2.70 ft).  
Maximum stage known, 38.0 ft June 16, 1844 (discharge, about 625,000 cfs, computed by Corps of Engineers).

Remarks.--Flow partly regulated by many reservoirs above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	62,390	41,200	17,810	25,160	28,020	54,050	110,800	115,100	189,200	222,900	99,160	121,300	90,840
1952	71,910	63,410	27,220	27,590	53,520	73,370	215,000	102,700	81,140	64,560	46,930	43,120	72,330
1953	37,280	37,870	20,310	20,530	32,880	53,160	47,730	60,180	78,160	53,590	38,320	36,340	43,030
1954	36,020	27,760	21,150	13,360	26,330	33,330	37,320	43,440	71,050	38,190	52,250	36,540	36,400
1955	41,300	21,420	17,950	13,180	23,750	36,270	37,690	36,110	45,740	40,080	28,930	35,950	31,550
1956	37,770	21,030	10,790	13,690	15,410	30,210	35,390	35,780	37,280	42,060	39,530	36,360	29,650
1957	31,650	18,840	12,150	11,100	14,040	16,090	26,030	46,890	71,910	55,490	38,920	39,660	31,970
1958	42,330	25,990	19,220	16,420	20,220	41,400	45,120	48,810	46,900	44,670	64,250	61,340	43,990
1959	42,830	28,190	16,560	16,060	27,390	38,200	48,780	77,150	57,590	51,880	45,270	45,800	41,380
1960	55,350	27,220	20,460	25,890	29,420	48,720	132,200	69,190	64,830	52,690	49,070	44,750	51,600

Monthly and yearly discharge, in thousands of acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	3,836	2,452	1,095	1,547	1,556	3,323	6,596	7,075	11,260	13,710	6,097	7,221	65,770
1952	4,421	3,773	1,673	1,697	3,078	4,512	12,790	6,315	4,828	3,969	2,885	2,566	52,510
1953	2,292	2,253	1,249	1,262	1,626	3,269	2,840	3,700	4,651	3,293	2,356	2,162	31,160
1954	2,215	1,652	1,301	821	1,462	2,049	2,220	2,671	4,228	2,348	3,213	2,174	26,350
1955	2,540	1,275	1,104	810.2	1,319	2,230	2,243	2,220	2,722	2,465	1,779	2,133	22,850
1956	2,322	1,252	663.4	841.6	886.6	1,858	2,106	2,200	2,218	2,586	2,431	2,163	21,530
1957	1,946	1,121	746.9	682.3	779.7	989.4	1,549	2,883	4,279	3,412	2,393	2,360	23,140
1958	2,603	1,547	1,120	1,009	1,123	2,545	2,685	3,001	2,791	5,821	3,951	3,650	31,850
1959	2,633	1,877	1,018	987.2	1,521	2,349	2,902	4,743	3,427	3,190	2,783	2,725	29,960
1960	3,403	1,620	1,258	1,592	1,692	2,996	7,864	4,254	3,858	3,240	3,017	2,663	37,460

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	60,940	44,120,000
1951	1210	573,000	July 14, 1951	6,500	90,840	65,770,000	94,270	68,250,000
1952	1240	400,000	Apr. 24, 1952	7,200	72,330	52,510,000	66,720	48,430,000
1953	1280	128,000	May 8, 1953	13,700	43,030	31,160,000	42,170	30,530,000
1954	1340	122,000	June 23, 1954	6,700	36,400	26,350,000	36,060	26,100,000
1955	1390	111,000	June 25, 1955	8,850	31,550	22,850,000	30,610	22,160,000
1956	1440	71,500	July 4, 1956	7,120	29,650	21,530,000	29,070	21,100,000
1957	1510	143,000	June 19, 1957	4,120	31,970	23,140,000	33,980	24,600,000
1958	1560	193,000	July 31, 1958	8,800	43,990	31,850,000	44,070	31,900,000
1959	1630	155,000	May 31, 1959	6,820	41,380	29,960,000	42,700	30,910,000
1960	1710	251,000	Apr. 4, 1960	8,720	51,600	37,460,000	-	-

## 8935. Blue River near Kansas City, Mo.

Location--Lat 38°57'25", long 94°33'32", in SE $\frac{1}{4}$ NE $\frac{1}{4}$  sec.28, T.48 N., R.33 W., on downstream side of right pier of bridge on County Highway W, 0.4 mile downstream from Indian Creek and 1.7 miles southeast of Kansas City.

Drainage area--188 sq mi.

Records available--May 1939 to September 1960.

Gage--Water-stage recorder. Datum of gage is 753.73 ft above mean sea level (levels by Corps of Engineers). Prior to July 1, 1939, wire-weight gage at same site and datum.

Average discharge--21 years (1939-60), 130 cfs (94,120 acre-ft per year).

Extremes--1939-60: Maximum discharge, 31,100 cfs July 11, 1951 (gage height, 38.30 ft); no flow September 1939 to February 1940 and in August 1946.

Maximum stage known, about 39 ft Nov. 17, 1928, from information by city of Kansas City.

Remarks--Low flow regulated by powerplants above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	12.0	7.87	6.52	7.36	18.1	45.3	137	231	713	1,616	75.4	593	290
1952	194	183	61.2	59.6	40.9	510	364	80.8	13.5	21.2	48.5	12.7	133
1953	2.81	5.04	4.71	4.17	6.77	32.5	84.7	105	7.44	3.81	2.45	2.59	21.9
1954	2.56	2.42	2.35	1.99	3.22	6.18	6.41	65.1	62.8	3.20	110	2.93	22.6
1955	146	8.03	4.50	42.1	162	31.7	18.4	281	125	206	36.8	34.5	91.2
1956	42.3	3.74	2.92	2.93	9.35	5.11	16.7	17.8	19.8	23.3	6.16	3.58	12.8
1957	2.83	3.51	3.84	3.52	4.12	4.36	13.3	107	349	94.0	7.59	79.4	55.8
1958	55.1	39.9	41.4	54.1	140	260	234	91.7	100	1170	429	135	231
1959	34.7	25.7	17.5	24.6	64.4	171	263	105	30.6	24.9	13.5	12.1	65.4
1960	138	10.6	11.9	18.4	53.6	252	410	140	109	16.7	10.1	3.71	97.7

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	740	468	401	453	1,000	2,780	8,150	14,180	42,410	99,350	4,630	35,270	209,800
1952	11,940	10,860	3,760	3,670	2,350	31,350	21,680	4,970	805	1,300	2,980	757	96,420
1953	173	300	290	256	376	2,000	5,040	6,440	443	234	151	154	15,860
1954	157	144	145	123	179	380	361	4,000	3,740	197	6,750	174	16,370
1955	8,990	478	277	2,590	9,000	1,950	1,090	17,250	7,440	12,650	2,260	2,050	166,020
1956	2,600	223	173	180	538	314	992	1,090	1,180	1,430	379	213	9,310
1957	174	209	236	216	229	268	789	6,550	20,760	5,780	467	4,730	40,410
1958	3,390	2,370	2,550	3,320	7,770	15,980	13,930	5,640	5,950	71,950	26,390	8,020	167,300
1959	2,140	1,530	1,080	1,510	3,580	10,500	15,660	6,480	1,820	1,530	830	719	47,380
1960	8,480	630	731	1,130	3,080	15,470	24,390	8,630	6,500	1,030	623	221	70,920

† Corrected.

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30							Calendar year			
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff		
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet	
1950	-	-	-	-	-	-	-	-	109	7.87	78,940	-
1951	1210	31,100	July 11, 1951	3.3	290	1.54	20.94	209,800	324	23.43	234,800	-
1952	1240	8,380	Mar. 10, 1952	2.4	133	.707	9.63	96,420	97.3	7.06	70,620	-
1953	1280	1,760	Apr. 30, 1953	1.2	21.9	.116	1.59	15,860	21.5	-	15,540	-
1954	1340	4,750	Aug. 2, 1954	1.2	22.6	-	-	16,370	35.4	-	25,670	-
1955	1390	8,560	May 28, 1955	.9	91.2	-	-	166,020	81.9	-	59,280	-
1956	1440	1,270	Oct. 5, 1955	2.2	12.8	-	-	9,310	9.56	-	16,940	-
1957	1510	14,500	June 30, 1957	2.1	55.8	-	-	40,410	66.4	-	48,100	-
1958	1560	21,700	July 31, 1958	4.5	231	-	-	167,300	226	-	163,700	-
1959	1630	5,120	Apr. 27, 1959	4.8	65.4	-	-	47,380	72.5	-	52,470	-
1960	1710	7,980	Apr. 16, 1960	.5	97.7	-	-	70,920	-	-	-	-

† Corrected.

8940. Little Blue River near Lake City, Mo.

Location.--Lat 39°06'00", long 94°18'00", in SW<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub> sec.35, T.50 N., R.31 W., at downstream side of right pier of upstream bridge on dual State Highway 78, 3 miles southwest of Lake City and 10<sup>1</sup>/<sub>2</sub> miles upstream from mouth.

Drainage area.--184 sq mi.

Records available.--March 1948 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 719.15 ft above mean sea level, datum of 1929. Prior to July 24, 1957, wire-weight gage at site 50 ft downstream at same datum.

Average discharge.--12 years (1948-60), 82.7 cfs (59,870 acre-ft per year).

Extremes.--1948-60: Maximum discharge, 6,400 cfs July 12, 1951 (gage height, 26.1 ft, from floodmark); no flow at times in 1953-54.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	5.77	6.25	5.40	6.10	20.1	75.9	135	126	325	928	86.3	377	176
1952	200	178	62.2	78.1	54.4	423	287	55.4	25.3	54.5	93.4	8.84	127
1953	3.19	5.89	5.45	4.71	7.02	32.3	215	195	10.3	2.47	.02	.20	40.2
1954	.13	3.43	1.87	1.74	15.7	35.6	11.3	160	67.4	.26	21.5	.42	26.7
1955	75.9	3.96	4.02	26.2	144	27.2	14.6	285	90.7	6.63	26.4	13.5	59.5
1956	25.9	1.97	1.36	1.64	10.2	4.15	13.3	27.9	13.2	33.8	3.66	.36	11.5
1957	.22	.49	1.71	1.36	3.09	12.1	18.9	69.9	56.4	71.4	1.85	35.1	22.8
1958	53.2	32.8	48.3	64.8	166	230	171	83.0	153	252	257	66.1	131
1959	23.5	18.7	11.1	17.6	58.4	120	180	39.5	24.9	14.9	22.7	18.4	45.6
1960	126	13.1	16.7	32.3	50.1	227	197	194	90.2	21.8	23.0	5.10	83.3

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	355	372	332	375	1,110	4,670	8,050	7,730	19,360	57,080	5,310	22,420	127,200
1952	12,270	10,580	5,830	4,800	3,130	25,990	17,050	3,410	1,510	3,350	5,740	526	92,190
1953	196	350	335	289	390	1,990	12,790	11,980	611	152	1.0	12	29,100
1954	7.9	204	115	107	873	2,190	673	9,810	4,010	16	1,320	25	19,350
1955	4,670	235	247	1,610	8,010	1,670	871	17,530	5,400	408	1,630	804	43,080
1956	1,590	117	84	101	589	255	790	1,720	782	2,080	237	22	8,370
1957	13	29	105	84	172	741	1,130	4,300	3,350	4,390	114	2,090	16,520
1958	3,270	1,950	2,970	3,980	9,210	14,140	10,160	5,100	9,090	15,470	15,810	3,930	195,080
1959	1,450	1,110	683	1,080	3,240	7,360	10,730	2,430	1,480	917	1,400	1,100	32,980
1960	7,750	781	1,030	1,980	2,880	13,930	11,710	11,940	5,370	1,340	1,410	303	60,420

† Corrected.

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30						Calendar year			
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff	
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet
1950	-	-	-	-	-	-	-	-	69.6	5.14	50,420
1951	1210	6,400	July 12, 1951	2	176	0.957	12.96	127,200	211	15.57	152,800
1952	1240	3,690	Mar. 10, 1952	4.5	127	.690	9.40	92,190	91.5	6.77	66,390
1953	1280	2,140	Apr. 30, 1953	0	40.2	.218	2.96	29,100	39.4	2.90	29,540
1954	1340	2,820	May 3, 1954	0	26.7	.145	1.97	19,350	33.4	2.46	24,190
1955	1390	4,000	May 29, 1955	.2	59.5	.323	4.40	43,080	54.9	4.05	39,720
1956	1440	408	July 2, 1956	.1	11.5	.062	.85	8,370	9.26	.69	6,720
1957	1510	1,680	July 1, 1957	.1	22.8	.124	1.68	16,520	33.9	2.50	24,560
1958	1560	4,350	Aug. 1, 1958	.8	131	.712	9.70	195,080	124	9.20	90,130
1959	1630	1,290	Apr. 28, 1959	1.6	45.6	.248	3.35	32,980	54.3	3.99	39,300
1960	1710	2,600	May 1, 1960	4.0	83.3	.452	6.15	60,420	-	-	-

† Corrected.



8945. East Fork Fishing River at Excelsior Springs, Mo.

Location.--Lat 39°20'20", long 94°12'45", in SE $\frac{1}{4}$  sec.1, T.52 N., R.30 W., on downstream side of right abutment of Golf Hill Bridge in Excelsior Springs, three-quarters of a mile upstream from Dry Fork Fishing River and 6 $\frac{1}{4}$  miles upstream from mouth.

Drainage area.--20.0 sq mi.

Records available.--October 1950 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 758 ft above mean sea level, datum of 1929.

Average discharge.--10 years (1950-60), 9.67 cfs (7,000 acre-ft per year).

Extremes.--1950-60: Maximum discharge, 23,100 cfs July 6, 1951 (gage height, 15.3 ft), from rating curve extended above 1,500 cfs on basis of slope-area measurement of peak flow; no flow at times in 1953-57, 1960.

Flood of June 22, 1947, reached a stage 3.7 ft higher than flood of July 6, 1951, at a point 200 ft upstream.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	*0.19	*0.10	*0.16	*0.16	4.08	19.8	23.7	8.04	62.5	185	69.1	35.7	*34.4
1952	7.07	11.3	5.27	5.39	5.49	48.0	26.0	6.36	7.16	.722	9.30	.398	11.1
1953	.102	.110	.051	.098	.461	11.8	19.3	27.9	1.19	.346	.093	.007	5.16
1954	0	.018	.143	.075	.106	4.90	3.38	7.96	1.58	.017	.202	0	1.17
1955	1.93	.11	.09	.83	16.9	4.66	.93	14.5	12.4	.91	4.37	.13	4.75
1956	7.37	.17	.10	.05	.77	.25	.10	1.74	.44	31.4	.37	.02	3.62
1957	0	.03	.01	.03	.05	.09	5.90	7.87	4.69	.50	.33	2.43	1.83
1958	1.84	.98	5.24	2.84	16.3	18.3	12.7	11.7	25.5	59.5	7.53	1.77	13.7
1959	13.5	9.18	2.30	2.94	17.2	20.2	14.1	5.06	1.25	6.27	1.89	.44	7.80
1960	15.1	1.14	3.98	7.24	12.8	40.4	27.3	20.2	15.5	14.2	.38	.10	13.2

\* Not previously published; estimated on basis of records for Crooked River near Richmond.

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	*12	*6.0	*9.9	*9.9	227	1,220	1,410	492	3,720	11,390	4,250	2,120	24,870
1952	435	674	324	332	316	2,950	1,550	391	426	44	572	24	8,040
1953	6.3	6.5	3.2	6.0	26	727	1,150	1,710	71	21	5.7	.4	3,730
1954	0	1.1	8.8	4.6	5.9	30	201	489	94	1.0	12	0	847
1955	118	6.5	5.4	51	939	299	55	895	739	56	269	7.5	3,440
1956	453	9.9	6.1	3.0	44	15	107	26	1,930	23	25	1.0	2,620
1957	0	2.0	.6	2.0	2.8	5.8	351	484	279	31	20	144	1,320
1958	113	58	322	175	1,020	1,130	754	718	1,400	5,660	463	105	19,920
1959	829	546	141	181	956	1,240	839	311	75	386	116	26	5,650
1960	930	68	245	445	735	2,490	1,630	1,240	922	875	23	5.8	9,610

† Corrected.

\* Not previously published; see footnote to preceding table.

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30						Calendar year			
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff	
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet
1950											
1951	1210	23,100	July 6, 1951	-	*34.4	*1.72	*23.30	*24,870	*36.3	*24.62	*26,270
1952	1240	1,440	Aug. 21, 1952	0.08	11.1	.555	7.54	8,040	9.12	6.22	6,620
1953	1280	750	May 5, 1953	0	5.16	.258	3.51	3,730	5.15	3.50	3,730
1954	1340	865	May 2, 1954	0	1.17	.058	.80	847	1.34	.91	967
1955	1390	1,480	June 25, 1955	0	4.75	.238	3.22	3,440	5.22	3.53	3,780
1956	1440	4,210	July 13, 1956	0	3.62	.181	2.44	2,620	2.97	2.01	2,160
1957	1510	685	May 16, 1957	0	1.83	.092	1.24	1,320	2.50	1.70	1,810
1958	1560	6,370	July 11, 1958	0	13.7	.685	9.28	19,920	15.1	10.24	10,940
1959	1630	1,730	Oct. 7, 1958	.1	7.80	.390	5.29	5,650	7.42	5.03	5,370
1960	1710	1,920	Mar. 27, 1960	0	13.2	.660	8.98	9,610	-	-	-

† Corrected.

\* Not previously published.

8950. Crooked River near Richmond, Mo.

Location.--Lat 39°20', long 93°59', in NW¼ sec.7, T.52 N., R.27 W., on downstream side of third pier from left end of bridge on State Highway 13, 4 miles north of Richmond, 8½ miles upstream from West Fork Crooked River, and 24½ miles upstream from mouth.

Drainage area.--159 sq mi.

Records available.--March 1948 to September 1960.

Gage.--Water-stage recorder and wire-weight gage. Datum of gage is 706.34 ft above mean sea level, datum of 1929. Prior to Dec. 4, 1951, wire-weight gage at same site and datum.

Average discharge.--12 years (1948-60), 82.0 cfs (59,370 acre-ft per year).

Extremes.--1948-60: Maximum discharge, 27,000 cfs July 6, 1951 (gage height, 28.8 ft, from floodmark); no flow at times in 1948, 1953-57.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1.53	0.78	1.37	1.37	45.3	90.5	116	43.8	439	1,412	402	387	247
1952	77.9	89.8	55.8	43.6	40.3	383	205	41.9	68.6	8.81	153	10.4	96.8
1953	1.65	3.83	4.60	4.43	9.64	95.7	164	224	11.1	7.15	.64	.08	44.2
1954	0	.05	.22	.10	1.18	13.1	42.7	88.5	42.8	.09	2.12	.78	16.0
1955	37.3	.80	.49	14.2	193	37.6	7.83	83.2	96.5	12.9	34.8	2.55	42.4
1956	70.4	.68	.94	.72	9.82	4.87	6.32	8.11	3.21	120	2.18	.03	19.2
1957	0	0	0	0	.29	1.01	40.5	56.9	7.44	5.69	2.12	16.8	10.9
1958	27.8	32.6	74.6	40.5	190	146	98.5	161	253	625	69.5	16.3	145
1959	79.3	162	22.5	28.7	143	175	176	59.6	7.50	12.7	9.37	9.92	73.1
1960	92.5	5.31	23.0	59.0	80.3	338	297	144	142	239	6.60	.57	119

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	94	47	84	84	2,510	5,560	6,880	2,690	26,130	86,790	24,740	23,050	178,700
1952	4,780	5,350	2,200	2,680	2,320	23,540	12,200	2,570	4,080	542	9,400	616	70,290
1953	102	228	283	272	536	5,890	9,730	13,780	663	440	39	6	31,970
1954	0	3.2	13	6.3	65	805	2,540	5,440	2,550	5.4	130	47	11,600
1955	2,290	48	30	871	10,730	2,310	466	5,120	5,740	794	2,140	152	†30,690
1956	4,330	40	58	44	565	299	376	499	191	7,370	134	1.8	13,910
1957	0	0	0	0	16	62	2,410	3,500	443	350	131	1,000	7,910
1958	1,710	940	4,590	2,490	10,530	8,990	5,860	9,880	15,040	58,450	4,270	971	104,700
1959	4,880	8,660	1,380	1,760	7,950	10,780	10,480	3,670	446	781	576	590	52,950
1960	5,690	316	1,410	3,630	4,620	20,800	17,700	8,820	8,460	14,680	406	34	86,570

† Corrected.

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30							Calendar year				
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff			
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet		
1950	-	-	-	-	-	-	-	-	37.8	3.22	27,340	-	-
1951	1210	27,000	July 6, 1951	0.2	247	1.55	21.08	178,700	264	22.50	190,800	-	-
1952	1240	3,580	Mar. 11, 1952	2.6	96.8	.609	8.28	70,290	80.7	6.90	58,560	-	-
1953	1280	2,760	May 6, 1953	0	44.2	.278	5.77	31,970	43.3	3.70	31,370	-	-
1954	1340	1,800	May 2, 1954	0	16.0	.101	1.37	11,600	19.3	1.64	13,960	-	-
1955	1390	2,860	Feb. 19, 1955	0	42.4	.267	3.61	†30,690	45.2	3.85	32,750	-	-
1956	1440	1,820	July 13, 1956	0	19.2	.121	1.65	13,910	13.1	1.13	9,480	-	-
1957	1510	1,220	May 17, 1957	0	10.9	.069	.93	7,910	22.3	1.90	16,150	-	-
1958	1560	5,470	July 12, 1958	.1	145	.912	12.33	104,700	155	13.24	112,400	-	-
1959	1630	3,840	Nov. 18, 1958	.1	73.1	.460	6.25	52,950	61.4	5.25	44,450	-	-
1960	1710	5,790	Mar. 28, 1960	.2	119	.748	10.21	86,570	-	-	-	-	-

† Corrected.

## 8955. Missouri River at Waverly, Mo.

Location.--Lat 39°12'51", long 93°30'57", in sec.14, T.51 N., R.24 W., on downstream side of second pier from right bank of bridge on U. S. Highway 65 at Waverly.

Drainage area.--491,200 sq mi, approximately.

Records available.--March 1929 to September 1960. Gage-height records collected at same site 1878-79, 1883-99 are contained in reports of Missouri River Commission; since 1915, in reports of U. S. Weather Bureau.

Gage.--Water-stage recorder. Datum of gage is 646.00 ft above mean sea level, datum of 1929. Prior to Apr. 1, 1929, staff gage, Apr. 1 to Oct. 22, 1929, chain gage, and Oct. 23, 1929, to Dec. 31, 1933, wire-weight gage, at same site at datum 5.00 ft lower. Jan. 1 to Apr. 4, 1934, wire-weight gage, Apr. 5, 1934, to June 13, 1943, water-stage recorder, and June 14, 1943, to Sept. 15, 1944, wire-weight gage, at present site and datum.

Average discharge.--31 years (1929-60), 45,750 cfs (33,120,000 acre-ft per year).

Extremes.--1929-60: Maximum discharge, 549,000 cfs July 16, 1951; maximum gage height, 28.20 ft July 14, 1951; minimum discharge, about 1,700 cfs Jan. 9, 1940; minimum gage height, 0.4 ft, present datum, Jan. 12, 1930.

Remarks.--Flow regulated by many reservoirs above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	63,990	42,270	18,070	26,020	27,330	53,340	115,100	115,700	190,900	246,400	100,400	126,600	94,120
1952	72,450	65,710	30,360	30,020	55,960	78,840	220,600	110,400	81,730	67,360	46,450	42,160	74,980
1953	35,220	36,680	19,910	19,410	32,360	52,490	52,140	62,590	80,970	54,930	38,340	35,900	43,410
1954	34,850	28,140	21,430	13,550	26,010	34,270	37,290	42,030	69,630	36,580	52,320	36,390	36,030
1955	40,590	22,370	17,860	14,340	24,560	36,960	37,060	37,380	45,310	40,500	29,860	35,530	31,890
1956	37,620	21,910	11,210	13,610	15,020	28,190	34,420	34,500	35,830	41,860	38,350	36,010	29,090
1957	32,180	19,450	12,720	11,480	14,600	16,850	25,860	47,590	71,390	57,190	37,920	39,200	32,270
1958	41,260	25,640	18,610	16,090	20,230	43,070	46,450	48,480	47,460	90,880	65,160	60,980	43,870
1959	42,200	27,910	16,510	16,390	26,580	37,460	47,980	74,320	58,660	52,200	43,860	45,160	40,840
1960	56,180	27,900	20,340	27,520	29,600	47,210	136,200	70,110	64,160	54,550	48,370	45,720	52,270

Monthly and yearly discharge, in thousands of acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	3,935	2,515	1,111	1,600	1,518	3,280	6,850	7,112	11,360	15,150	6,176	7,533	68,140
1952	4,455	3,910	1,867	1,846	3,219	4,848	13,130	6,788	4,863	4,142	2,856	2,509	54,430
1953	2,165	2,183	1,224	1,193	1,797	3,228	3,103	3,849	4,818	3,377	2,358	2,136	31,430
1954	2,143	1,675	1,317	852	1,445	2,107	2,219	2,584	4,143	2,237	3,217	2,165	26,080
1955	2,496	1,331	1,098	881	1,364	2,273	2,205	2,299	2,696	2,490	1,836	2,114	23,080
1956	2,313	1,304	689.5	836.8	863.6	1,733	2,048	2,121	2,132	2,574	2,358	2,143	21,120
1957	1,979	1,157	782.3	705.7	810.8	1,036	1,539	2,926	4,246	3,516	2,331	2,333	23,360
1958	2,537	1,526	1,144	989.3	1,123	2,649	2,764	2,981	2,824	5,568	4,007	3,628	31,760
1959	2,595	1,661	1,015	1,008	1,476	2,304	2,855	4,570	3,491	3,210	2,697	2,687	29,570
1960	3,454	1,660	1,251	1,692	1,702	2,903	8,104	4,311	3,818	3,354	2,974	2,721	37,940

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary		Maximum	Minimum day	Mean	Acre-feet	Mean
		Discharge	Date					
1950	-	-	-	-	-	-	-	61,200
1951	1210	549,000	July 16, 1951	8,000	94,120	68,140,000	97,810	44,310,000
1952	1240	369,000	Apr. 26, 1952	9,000	74,980	54,430,000	68,560	49,770,000
1953	1280	126,000	May 8, 1953	12,300	43,410	31,430,000	42,810	30,990,000
1954	1340	119,000	June 23, 1954	8,000	36,030	26,080,000	35,740	25,870,000
1955	1390	106,000	June 26, 1955	9,000	31,890	23,080,000	31,030	22,470,000
1956	1440	67,500	July 5, 1956	8,020	29,090	21,120,000	28,550	20,730,000
1957	1510	142,000	June 19, 1957	5,500	32,270	23,360,000	34,050	24,650,000
1958	1560	184,000	Aug. 1, 1958	8,230	43,870	31,760,000	43,960	31,820,000
1959	1630	154,000	June 1, 1959	7,480	40,840	29,570,000	42,350	30,660,000
1960	1710	249,000	Mar. 31, 1960	9,920	52,270	37,940,000	-	-

## 8960. Wakenda Creek at Carrollton, Mo.

Location.--Lat 39°21', long 93°30', in NE $\frac{1}{4}$ SE $\frac{1}{4}$  sec.5, T.52 N., R.23 W., on left bank near upstream side of bridge on U. S. Highway 65 in Carrollton, half a mile downstream from Brush Creek and 14 miles upstream from mouth.

Drainage area.--248 sq mi.

Records available.--March 1948 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 641.17 ft above mean sea level, datum of 1929. Prior to May 21, 1958, wire-weight gage at same site and datum.

Average discharge.--12 years (1948-60), 122 cfs (88,320 acre-ft per year).

Extremes.--1948-60: Maximum discharge, 7,000 cfs Mar. 20, 1948, and July 2, 1960 (gage height, 22.6 ft); maximum gage height, 23.4 ft July 17, 1951, from graph based on gage readings (backwater and overflow from Missouri River); minimum discharge, 0.2 cfs Sept. 22, 1954, Dec. 27, 28, 1956, Jan. 10 to Feb. 2, Oct. 3, 6, 1957; minimum gage height observed, 4.25 ft Aug. 25, 1959.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	6.2	6.95	4.07	3.97	40.7	219	266	31.0	835	1,288	849	351	327
1952	154	196	29.9	69.9	51.1	502	213	37.7	85.4	46.8	300	26.4	140
1953	4.50	6.46	7.51	6.54	33.3	154	233	478	13.5	4.69	2.76	1.85	79.4
1954	1.52	1.53	1.63	1.88	8.74	41.9	11.0	38.2	12.6	.58	.0	.52	10.9
1955	106	1.02	.96	47.0	223	42.3	5.41	121	45.8	12.6	441	6.53	87.4
1956	93.4	2.01	2.70	1.99	11.8	1.81	1.13	4.11	7.86	115	2.75	.56	20.6
1957	.38	.34	.40	.23	.73	.98	1.10	92.1	34.9	28.1	8.33	102	22.5
1958	181	46.8	244	51.9	300	176	98.9	129	322	523	277	16.1	197
1959	108	15.3	5.88	24.8	207	159	106	36.1	8.69	29.6	18.7	14.2	60.1
1960	94.4	4.32	12.6	36.1	86.9	405	222	493	127	368	6.35	2.63	158

† Corrected.

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	379	414	251	244	2,260	13,470	15,840	1,910	49,710	79,190	52,190	20,890	236,700
1952	9,440	11,670	1,840	4,300	2,940	30,880	12,700	2,320	2,700	2,880	18,440	1,570	101,700
1953	277	384	462	402	1,850	9,450	13,860	29,400	803	289	170	110	57,460
1954	95	91	100	116	485	2,570	657	2,350	751	36	615	31	7,900
1955	6,510	61	59	2,890	12,400	2,600	322	7,430	2,720	778	27,150	389	63,310
1956	5,740	119	166	123	679	111	67	253	468	7,050	169	33	14,980
1957	23	20	25	14	40	60	65	5,660	2,070	1,730	512	6,100	16,320
1958	11,120	2,790	15,020	3,190	16,680	10,800	5,880	7,950	19,180	32,150	17,030	958	142,700
1959	6,670	908	361	1,520	11,510	9,800	6,300	2,220	517	1,820	1,030	844	43,500
1960	5,800	257	774	2,220	5,000	24,910	13,200	30,340	7,570	23,850	390	156	114,500

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30							Calendar year			
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff		
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet	
1950	-	-	-	-	-	-	-	-	145	7.92	104,800	-
1951	1210	6,640	July 7, 1951	1.5	327	1.32	17.91	236,700	357	19.56	258,700	-
1952	1240	4,590	Mar. 11, 1952	2.8	140	.565	7.67	101,700	110	6.02	79,850	-
1953	1280	2,940	May 6, 1953	1.2	79.4	.320	4.33	57,460	78.2	4.27	56,620	-
1954	1340	1,850	Mar. 25, 1954	.2	10.9	.044	.61	7,900	19.7	1.08	14,240	-
1955	1390	5,000	Aug. 7, 1955	.7	87.4	.352	4.79	63,310	86.6	4.74	62,700	-
1956	1440	2,330	Oct. 5, 1955	.4	20.6	.083	1.12	14,980	12.4	.68	9,020	-
1957	1510	3,230	May 17, 1957	.2	22.5	.091	1.24	16,320	62.4	3.42	45,180	-
1958	1560	3,950	Feb. 28, 1958	.2	197	.794	10.79	142,700	168	9.20	121,800	-
1959	1630	2,720	Feb. 10, 1959	1.1	60.1	.242	3.30	43,500	58.6	3.22	42,390	-
1960	1710	7,000	July 2, 1960	2.2	158	.637	8.65	114,500	-	-	-	-

## 8965. Thompson Branch near Albany, Mo.

Location.--Lat 40°12'50", long 94°19'55", in SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec.36, T.63 N., R.31 W., at bridge on State Highway 85, 1.8 miles upstream from East Fork Grand River and 2 miles south of Albany.

Drainage area.--5.58 sq mi.

Records available.--August 1955 to September 1959, water year 1960 (annual maximum).

Gage.--Crest-stage gage. Altitude of gage is 845 ft (from topographic map). Prior to Oct. 30, 1959, water-stage recorder at same site and datum.

Extremes.--1955-60: Maximum discharge, 1,700 cfs Sept. 23, 1959 (gage height, 11.6 ft), from rating curve extended above 550 cfs on basis of contracted-opening measurement at gage height 11.32 ft.

1955-59: No flow for many days.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1955	-	-	-	-	-	-	-	-	-	-	0	0	-
1956	0	0	0	0	0	0	0	0	0	0	2.11	0	0.179
1957	0	0	0	0	0	0	1.13	.46	.45	.13	.18	.04	.198
1958	.09	0	0	0	2.23	2.25	.04	9.54	2.50	25.1	.35	.65	3.60
1959	.39	4.94	.28	.48	4.29	5.21	4.70	10.9	.64	.09	.59	16.1	4.03

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1955	-	-	-	-	-	-	-	-	-	-	0	0	-
1956	0	0	0	0	0	0	0	0	0	0	130	0	130
1957	0	0	0	0	0	0	67	28	27	8.1	11	2.2	143
1958	5.6	0	0	0	+124	138	2.4	587	149	1,540	22	39	2,610
1959	24	294	17	29	238	320	280	673	38	5.4	36	960	2,910

† Corrected.

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30						Calendar year			
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff	Mean	Runoff		
		Discharge	Date						Inches	Acre-feet	
1955	1560	-	-	-	-	-	-	-	-	-	-
1956	1560	456	Aug. 1, 1956	0	0.179	0.032	0.44	130	0.179	0.44	130
1957	1560	148	Apr. 3, 1957	0	.198	.035	.50	143	.206	.52	149
1958	1560	1,630	May 3, 1958	0	3.60	.645	8.78	2,610	4.06	9.89	2,940
1959	1630	1,700	Sept. 23, 1959	0	4.03	.722	9.81	2,910	-	-	-
1960	-	936	Oct. 6, 1959	-	-	-	-	-	-	-	-

## 8970. East Fork Big Creek near Bethany, Mo.

Location.--Lat 40°17'50", long 94°01'55", in SE $\frac{1}{4}$  sec.34, T.64 N., R.28 W., on right bank 50 ft downstream from bridge on U. S. Highway 69, 2 miles north of Bethany, and 4 miles upstream from confluence with West Fork.

Drainage area.--95 sq mi, approximately.

Records available.--March 1934 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 854.74 ft above mean sea level, datum of 1929. Prior to June 26, 1934, wire-weight gage at site 70 ft upstream at same datum.

Average discharge.--26 years (1934-60), 46.7 cfs (33,810 acre-ft per year).

Extremes.--1934-60: Maximum discharge, 8,120 cfs June 6, 1947 (gage height, 17.65 ft), from rating curve extended above 2,600 cfs on basis of velocity-area studies; no flow at times in most years.

Maximum stage known, 23.8 ft July 6, 1909.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	0.35	0.40	0.35	0.40	57.3	64.1	131	166	244	66.6	31.4	24.6	65.3
1952	50.1	69.0	9.3	30.5	15.0	222	78.4	27.7	88.3	2.56	4.83	0	49.9
1953	0	.11	.62	.56	6.28	59.9	48.0	56.2	22.1	2.99	.02	0	16.5
1954	0	0	0	0	0	.04	23.3	52.7	89.4	0	1.96	.26	13.9
1955	20.0	.08	0	2.22	161	50.8	55.3	16.7	50.3	57.2	0	0	33.5
1956	0	0	0	0	0	0	0	0	0	69.8	92.0	.01	13.7
1957	0	0	0	0	.07	.61	93.4	78.8	43.6	40.6	.15	0	21.5
1958	3.56	1.02	1.63	.99	40.9	25.7	6.51	11.8	10.9	197	21.3	17.4	28.3
1959	97.1	108	5.08	4.45	110	135	195	244	23.7	8.39	94.1	105	93.9
1960	140	5.30	74.8	138	32.4	341	85.5	103	133	84.1	48.7	9.80	101

Monthly and yearly discharge, in acre-feet, of East Fork Big Creek near Bethany, Mo.

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	22	24	22	25	3,180	3,940	7,800	10,210	14,520	4,100	1,930	1,460	47,230
1952	3,080	4,100	571	1,870	863	13,650	4,660	1,710	5,250	157	297	0	36,210
1953	0	6.5	38	35	349	3,680	2,850	3,460	1,310	184	1.4	0	11,910
1954	0	0	0	0	0	2.2	1,390	3,240	5,320	0	120	15	10,090
1955	1,230	4.8	0	136	8,950	3,120	5,290	1,020	2,990	3,520	0	0	24,260
1956	0	0	0	0	0	0	0	0	0	4,290	5,660	0	9,950
1957	0	0	0	0	3.8	37	5,560	4,840	2,600	2,490	8.9	0	15,540
1958	219	60	100	61	2,270	1,580	388	725	647	12,110	1,310	1,040	20,510
1959	5,970	6,440	312	274	6,120	8,300	11,580	14,990	1,410	516	5,790	6,260	67,950
1960	8,630	315	4,600	8,490	1,860	20,950	5,090	6,360	7,920	5,170	2,990	563	72,950

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year				
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff	
		Discharge	Date				Inches	Acres-feet		Inches	Acres-feet
1950	-	-	-	-	-	-	-	-	-	22.1	3.16
1951	1210	2,920	May 1, 1951	0	65.3	0.687	9.34	47,230	75.9	10.86	54,920
1952	1240	2,970	June 21, 1952	0	49.9	.525	7.15	36,210	39.3	5.63	28,500
1953	1280	925	Mar. 31, 1953	0	16.5	.174	2.36	11,910	16.4	2.35	11,870
1954	1340	1,350	June 1, 1954	0	13.9	.146	1.98	10,090	15.6	2.22	11,320
1955	1390	2,240	June 25, 1955	0	33.5	.353	4.79	24,260	31.8	4.55	23,030
1956	1440	2,500	Aug. 2, 1956	0	13.7	.144	1.97	9,950	13.7	1.97	9,950
1957	1510	1,620	May 21, 1957	0	21.5	.226	3.07	15,540	22.0	3.14	15,920
1958	1560	1,780	July 15, 1958	0	28.3	.298	4.04	20,510	45.4	6.48	32,850
1959	1630	5,100	May 30, 1959	0	85.9	.888	13.42	67,950	95.0	13.58	68,780
1960	1710	4,740	June 30, 1960	0	101	1.06	14.40	72,960	-	-	-

8975. Grand River near Gallatin, Mo.

Location.--Lat 39°55'35", long 93°56'35", in SW 1/4 sec. 16, T.59 N., R.27 W., on downstream side of center pier of bridge on State Highway 6, 100 ft downstream from Chicago, Rock Island and Pacific Railroad Co. bridge, 1 mile northeast of Gallatin, and 6 miles upstream from Honey Creek.

Drainage area.--2,250 sq mi, approximately.

Records available.--June 1921 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 712.56 ft above mean sea level, datum of 1929. Prior to Jan. 31, 1922, chain gage at site 100 ft upstream at same datum. Jan. 31, 1922, to Apr. 8, 1936, chain gage and Apr. 9 to Nov. 15, 1936, wire-weight gage, at site about 1,100 ft upstream at datum 0.17 ft higher. Nov. 16, 1936, to Nov. 14, 1937, wire-weight gage at present site and datum.

Average discharge.--39 years (1921-60), 1,082 cfs (783,300 acre-ft per year).

Extremes.--1921-60: Maximum discharge, 69,100 cfs June 24, 1947; maximum gage height, 37.02 ft June 2, 1929 (present site and datum); minimum discharge, 2.2 cfs June 3, 4, Oct. 27, 28, 29, 1956; minimum gage height, 0.55 ft Oct. 26, 1940. Maximum stage known, about 40 ft July 8, 1909, from floodmarks.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	94.1	50.7	36.5	34.6	838	1,768	2,560	5,320	5,438	4,741	761	803	1,875
1952	627	1,582	345	659	454	4,118	1,737	1,161	1,154	217	165	165	1,034
1953	20.8	154	99.6	63.8	408	950	1,655	1,858	727	98.1	24.0	12.2	504
1954	9.3	11.5	17.0	8.9	23.6	781	1,068	1,068	1,395	19.5	358	40.0	313
1955	727	42.9	34.1	187	2,520	1,321	1,086	245	623	513	22.3	10.2	597
1956	76.8	10.5	7.97	8.65	13.4	23.0	12.0	15.4	254	260	966	18.6	225
1957	3.09	11.4	11.6	6.62	22.3	26.0	453	704	648	137	51.0	23.6	157
1958	80.2	33.8	40.8	27.0	897	978	230	1,736	6897	499	1,173	511	1,269
1959	1,288	1,565	203	136	2,232	5,244	3,581	3,692	2,357	813	1,443	3,652	2,007
1960	3,581	353	1,173	3,226	1,148	4,782	3,927	2,053	3,331	2,976	1,785	720	2,432

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	5,790	3,020	2,250	2,130	46,510	108,700	152,300	527,100	523,600	291,500	46,770	47,780	1,357,000
1952	38,560	94,120	21,240	40,510	26,130	253,200	103,400	71,390	68,660	13,360	10,000	9,800	†750,400
1953	1,280	7,970	6,120	3,920	22,680	58,400	98,500	114,300	43,280	6,030	1,480	726	364,700
1954	589	686	1,040	549	1,810	1,440	46,450	65,460	82,990	1,200	22,920	2,380	226,300
1955	44,700	2,550	2,090	11,480	39,900	61,220	64,650	15,090	37,070	31,510	1,370	608	432,200
1956	4,720	622	490	532	771	1,410	715	945	15,120	77,480	59,410	1,100	163,300
1957	190	681	715	407	1,240	1,600	85,480	43,300	38,450	8,420	3,140	1,400	186,000
1958	4,930	2,010	2,510	1,660	49,800	60,130	13,700	106,800	41,020	461,100	72,140	30,420	846,200
1959	79,230	93,120	12,480	8,360	23,900	99,400	213,100	227,000	140,300	49,980	88,700	21,300	1,453,000
1960	220,200	21,000	72,100	198,400	66,030	294,000	233,700	126,200	198,200	183,000	109,800	42,870	1,766,000

† Corrected.

Yearly discharge, in cubic feet per second, of Grand River near Gallatin, Mo.

Year	WSP	Water year ending Sept. 30						Calendar year			
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff	
		Discharge	Date				Inches	Acres-foot		Inches	Acres-foot
1950	-	-	-	-	-	-	-	-	753	4.54	545,200
1951	1210	38,100	July 7-8, 1951	12	1,875	0.833	11.34	1,357,000	2,072	12.52	1,500,000
1952	1240	21,500	Mar. 11, 1952	29	1,034	.460	6.24	1,750,400	843	5.09	611,800
1953	1280	13,000	Apr. 1, 1953	8	504	.224	3.04	354,700	486	2.93	351,600
1954	1340	15,200	May 3, 1954	6	313	.139	1.88	226,300	378	2.28	273,300
1955	1390	15,600	Feb. 20, 1955	4.7	597	.265	3.62	432,200	537	3.25	388,700
1956	1440	11,900	July 3, 1956	2.4	225	.100	1.37	163,300	219	1.34	159,100
1957	1510	14,300	Apr. 4, 1957	2.4	257	.114	1.55	186,000	268	1.61	193,900
1958	1560	27,100	July 17, 1958	3.5	1,169	.520	7.04	846,200	1,411	8.49	1,022,000
1959	1630	28,200	June 2, 1959	57	2,007	.892	12.11	1,453,000	2,184	13.17	1,581,000
1960	1710	49,300	Mar. 31, 1960	124	2,432	1.08	14.69	1,766,000	-	-	-

† Corrected.

8980. Thompson River at Davis City, Iowa

Location.--Lat 40°38'20", long 93°48'30", in SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec.35, T.68 N., R.26 W., on right bank 15 ft downstream from bridge on U. S. Highway 69 at Davis City, 5 $\frac{1}{2}$  miles upstream from Iowa-Missouri State line, and 9 miles downstream from Elk Creek.

Drainage area.--701 sq mi.

Records available.--May 1918 to July 1925, July 1941 to September 1960. Monthly discharge only for some periods, published in WSP 1310. Prior to October 1918, published as Grand River at Davis City.

Gage.--Water-stage recorder. Datum of gage is 875.55 ft above mean sea level, unadjusted (Corps of Engineers bench mark). May 14, 1918, to July 2, 1925, chain gage and July 14, 1941, to Feb. 24, 1942, wire-weight gage, at same site and datum.

Average discharge.--25 years (1918-24, 1941-60), 346 cfs (250,500 acre-ft per year).

Extremes.--1918-25, 1941-60: Maximum discharge, 21,300 cfs June 14, 1947 (gage height, 20.14 ft), from rating curve extended above 15,000 cfs on basis of velocity-area study; minimum daily, 0.1 cfs June 25, 1956.

Flood of Aug. 8, 1885, reached a stage of 22.8 ft, from floodmark (discharge, 30,000 cfs), from rating curve extended above 15,000 cfs on basis of velocity-area study. Minimum flow known prior to July 1941, 0.10 cfs Aug. 16, 1934 (discharge measurement).

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	14.1	13.2	5.61	6.41	7.71	950	1,344	2,600	1,279	558	196	155	648
1952	136	396	81.4	262	171	1,247	381	617	543	108	72.3	15.8	345
1953	7.89	202	49.7	54.5	451	521	546	274	370	47.0	12.4	4.13	210
1954	3.18	4.20	2.97	1.82	8.20	10.7	42.0	108	482	13.9	35.3	5.36	59.4
1955	170	5.08	8.02	24.9	369	365	133	34.1	20.5	187	9.35	5.12	110
1956	7.12	2.07	.94	.62	1.14	10.8	2.55	1.19	3.08	106	455	30.2	52.3
1957	1.41	3.91	3.06	2.01	2.86	20.6	665	428	282	46.0	16.3	10.2	125
1958	17.7	12.8	17.8	12.5	208	149	61.7	11.9	11.9	198	72.2	167	
1959	15.7	131	19.2	13.9	525	980	933	1,815	774	440	1,704	576	563
1960	353	129	354	1,292	279	1,431	1,132	796	416	264	263	362	592

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	866	788	345	394	42,800	52,260	79,970	159,900	76,130	34,330	12,050	9,200	469,000
1952	8,580	23,570	5,000	16,120	9,820	76,700	22,680	37,920	38,270	6,550	4,450	939	250,400
1953	485	11,990	3,050	3,350	25,060	32,620	32,490	16,850	22,040	2,890	761	246	151,800
1954	196	250	182	112	455	657	2,500	6,660	28,670	857	2,170	319	43,030
1955	10,430	302	493	1,530	20,490	22,440	7,910	2,100	1,220	11,480	575	305	79,280
1956	438	123	58	38	66	663	152	73	183	6,520	27,840	1,800	37,950
1957	86	233	188	124	159	1,250	39,550	26,290	16,770	2,830	1,000	608	89,100
1958	1,090	763	1,100	768	11,620	9,140	3,670	6,180	710	69,190	12,160	4,290	120,700
1959	963	7,790	1,180	855	29,180	60,850	55,510	11,600	46,070	27,080	104,800	34,280	480,200
1960	21,690	7,690	21,740	79,420	16,060	88,000	67,370	48,950	24,730	16,250	16,180	21,520	429,600

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30						Calendar year			
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff	
		Discharge	Date				Inches	Acres-foot		Inches	Acres-foot
1950	-	-	-	-	-	-	-	-	288	5.57	208,500
1951	1210	15,200	May 2, 1951	2.6	648	0.924	12.55	469,000	696	13.48	504,000
1952	1240	6,140	Mar. 13, 1952	8.0	345	.492	6.89	250,400	315	6.12	229,000
1953	1280	3,890	Mar. 30, 1953	1.8	210	.300	4.06	151,800	189	3.66	136,900
1954	1340	2,520	June 15, 1954	.8	59.4	.085	1.16	43,030	74.1	1.44	53,620
1955	1390	2,760	Mar. 3, 1955	.8	110	.157	2.13	79,280	94.9	1.84	68,670
1956	1440	2,670	Aug. 9, 1956	.1	52.3	.075	1.01	37,950	52.1	1.01	37,640
1957	1510, 1710	5,250	Apr. 3, 1957	.4	123	.175	2.39	89,100	126	2.46	91,550
1958	1560	7,400	July 15, 1958	2.2	167	.238	3.23	120,700	176	3.42	127,500
1959	1630	17,500	Aug. 6, 1959	8.2	663	.946	12.84	480,200	720	13.94	521,300
1960	1710	15,200	Mar. 30, 1960	28	592	.845	11.48	429,600	-	-	-





8990. Weldon River at Mill Grove, Mo.

Location.--Lat 40°18', long 93°36', in SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec.28, T.64 N., R.24 W., on left bank on downstream side of county highway bridge in Mill Grove, 8 $\frac{1}{4}$  miles upstream from West Muddy Creek.

Drainage area.--494 sq mi.

Records available.--April 1929 to September 1960.

Gage.--Water-stage recorder and wire-weight gage. Datum of gage is 786.03 ft above mean sea level, datum of 1929. Prior to Dec. 4, 1934, chain gage at same site and datum. Dec. 4, 1934, to Dec. 8, 1959, wire-weight gage at same site and datum.

Average discharge.--31 years (1929-60), 238 cfs (172,300 acre-ft per year).

Extremes.--1929-60: Maximum discharge, 46,000 cfs Aug. 7, 1959 (gage height, 26.02 ft); no flow at times in 1953-56.  
Maximum stage known prior to that of Aug. 7, 1959, about 23.9 ft in July 1909.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	10.9	8.64	5.50	4.92	461	390	943	998	1,355	481	137	48.6	400
1952	312	226	38.3	149	104	1,059	346	282	351	26.6	33.0	6.09	245
1953	3.48	23.2	16.0	13.4	94.6	418	445	248	90.0	19.0	4.00	0.63	114
1954	.53	1.95	2.35	.35	2.94	5.85	134	223	387	.78	30.4	3.97	65.9
1955	268	5.41	4.50	10.8	480	205	302	93.6	20.8	221	3.25	1.33	132
1956	2.17	1.37	.18	.06	.68	2.82	1.22	.22	.05	90.8	416	3.81	44.0
1957	.10	1.98	2.27	.64	5.65	8.84	386	205	239	18.1	1.99	5.06	72.5
1958	5.85	2.23	3.24	1.89	159	82.4	49.3	101	25.5	977	109	94.6	135
1959	199	210	27.3	19.6	700	1,022	1,080	1,380	152	122	1,676	422	635
1960	502	53.8	379	691	194	1,495	792	908	385	432	128	35.5	508

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	670	514	338	302	25,600	23,970	56,100	60,750	80,640	29,550	8,430	2,890	289,800
1952	19,200	13,420	2,360	9,150	5,960	65,110	20,570	17,360	20,910	1,630	2,030	362	178,100
1953	214	1,380	984	827	5,260	25,670	26,460	15,240	5,350	1,170	246	37	82,840
1954	33	116	145	21	163	360	7,970	13,730	23,040	48	1,870	236	47,730
1955	16,460	322	277	663	26,660	12,610	18,000	5,750	1,240	13,570	200	79	95,830
1956	134	81	11	4.0	39	174	73	13	32	5,580	25,600	227	31,940
1957	63	118	140	39	314	544	22,950	12,580	14,250	1,110	123	301	52,480
1958	359	132	199	116	8,850	5,060	2,940	6,230	1,520	60,070	6,710	5,630	97,820
1959	12,210	12,510	1,680	1,210	38,870	62,810	64,270	121,700	9,020	7,500	103,100	25,090	460,000
1960	30,880	3,200	23,330	42,470	11,140	91,950	47,110	55,820	22,910	26,590	7,860	5,680	368,900

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30						Calendar year			
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff	
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet
1950	-	-	-	-	-	-	-	-	240	6.61	174,000
1951	1210	12,000	July 22, 1951	0.9	400	0.810	11.00	289,800	446	12.27	323,200
1952	1240	8,200	June 21, 1952	2.4	245	.496	6.76	178,100	201	5.55	145,700
1953	1280	8,560	Mar. 30, 1953	0	114	.231	3.13	82,840	111	3.04	80,550
1954	1340	7,900	Apr. 27, 1954	0	65.9	.133	1.80	47,730	89.1	2.43	64,500
1955	1390	4,580	Oct. 5, 1954	0	132	.267	3.64	95,830	109	3.01	79,000
1956	1440	8,700	Aug. 2, 1956	0	44.0	.089	1.21	31,940	44.0	1.21	31,980
1957	1510	7,950	Apr. 3, 1957	0	72.5	.147	1.99	52,480	73.1	2.00	52,900
1958	1560	9,180	July 30, 1958	.1	135	.273	3.71	97,820	171	4.68	123,500
1959	1630	46,000	Aug. 7, 1959	4.0	635	1.29	17.44	460,000	678	18.63	491,000
1960	1710	17,100	Mar. 29, 1960	13	508	1.03	14.01	368,900	-	-	-

† Corrected.

8995. Thompson River at Trenton, Mo.

Location.--Lat 40°04'45", long 93°38'35", in SW $\frac{1}{4}$  sec.18, T.61 N., R.24 W., on right bank at downstream side of bridge on State Highway 6, 1 mile west of Trenton and  $\frac{1}{2}$  miles downstream from Weldon River.

Drainage area.--1,670 sq mi, approximately.

Records available.--June 1921 to September 1923 (published as "near Hickory"), August 1928 to September 1960. Monthly discharges only for August and September 1923, published in WSP 1310. Gage-height records collected in vicinity 1910-14 and since 1925 are contained in reports of U. S. Weather Bureau.

Gage.--Water-stage recorder and wire-weight gage. Datum of gage is 721.87 ft above mean sea level, datum of 1929. June 25, 1921, to Aug. 26, 1923, chain gage at two sites 12 miles downstream (by old channel route) at different datums. Aug. 1, 1928, to Sept. 15, 1930, chain gage at present site and datum. Sept. 16, 1930, to Sept. 4, 1934, chain gage and Sept. 5, 1934, to May 31, 1945, wire-weight gage at site  $\frac{1}{2}$  miles downstream at datum 3.46 ft lower. June 1, 1945, to Dec. 7, 1959, wire-weight gage at same site and datum.

Average discharge.--34 years (1921-23, 1928-60), 860 cfs (622,600 acre-ft per year).

Extremes.--1921-23, 1928-60: Maximum discharge, 95,000 cfs June 6, 1947 (gage height, 25.7 ft, from floodmark); minimum daily, 1 cfs June 17, 1956. Maximum stage known, 30.7 ft July 6, 1909, present site and datum, from information by local residents (discharge, 50,000 cfs, determined by Corps of Engineers, occurred before new channel was dredged).

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	51.5	38.9	24.5	33.7	1,244	1,708	3,131	3,972	4,641	1,879	477	287	1,453
1952	689	795	212	532	472	2,968	1,410	1,486	1,730	215	161	56.1	895
1953	27.1	247	85.0	102	555	1,477	1,709	1,390	856	172	36.4	14.5	554
1954	12.0	12.1	16.7	7.1	24.9	24.9	230	388	1,120	30.8	183	25.3	172
1955	501	26.9	20.6	84.1	1,176	992	460	363	391	558	28.4	12.9	380
1956	36.0	9.5	6.5	4.7	13.0	30.9	10.7	10.2	13.9	782	1,266	50.6	189
1957	11.1	18.6	22.5	12.3	32.0	31.3	1,416	883	552	134	28.3	24.8	263
1958	38.6	35.6	39.2	28.3	526	382	144	381	169	3,392	609	322	509
1959	842	672	101	66.8	1,803	3,176	2,992	4,639	1,447	608	3,990	1,659	1,835
1960	1,930	301	1,143	2,925	1,097	4,603	3,406	3,569	1,788	1,660	1,002	555	2,009

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	3,170	2,310	1,510	2,070	69,110	105,000	186,300	244,200	276,200	115,500	29,300	17,060	1,052,000
1952	42,370	47,330	13,020	32,740	27,170	182,500	83,900	91,390	102,900	13,220	9,880	3,340	649,800
1953	1,670	14,670	5,230	6,280	30,850	90,800	101,700	85,450	50,960	10,550	2,240	885	401,300
1954	740	718	1,030	434	1,380	1,530	13,690	23,860	66,640	1,900	11,270	1,500	124,700
1955	30,810	1,600	1,270	5,170	65,320	61,000	27,380	22,320	23,280	34,300	1,750	766	275,000
1956	2,210	567	395	292	746	1,900	639	628	827	48,100	77,860	3,010	137,200
1957	683	1,100	1,380	758	1,780	1,920	84,270	54,270	32,820	8,260	1,740	1,480	190,500
1958	2,370	2,120	2,410	1,740	29,190	23,490	8,540	23,420	10,040	208,500	37,450	19,180	368,400
1959	51,750	40,010	6,180	4,110	100,100	185,500	178,000	285,200	86,110	37,400	245,500	96,730	1,328,000
1960	118,700	17,330	70,280	179,900	63,090	283,000	202,700	219,400	106,400	102,100	61,610	33,010	1,458,000

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30						Calendar year			
		Momentary		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff	
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet
1950	-	-	-	-	-	-	-	-	665	5.43	481,500
1951	1210	20,800	May 2, 1951	7	1,453	0.870	11.82	1,052,000	1,585	12.89	1,147,000
1952	1240	16,600	June 21, 1952	38	895	.536	7.32	649,800	783	6.40	568,800
1953	1280	16,600	Mar. 30, 1953	10	554	.332	4.51	401,300	528	4.30	382,200
1954	1340	7,090	June 3, 1954	4	172	.103	1.41	124,700	215	1.76	155,900
1955	1390	9,590	June 25, 1955	5.6	380	.228	3.09	275,000	338	2.74	244,500
1956	1440	19,200	Aug. 2, 1956	1	189	.113	1.52	137,200	189	1.53	137,200
1957	1510	15,900	Apr. 3, 1957	7.3	263	.157	2.15	190,500	268	2.19	194,200
1958	1560	19,200	July 15, 1958	4.8	509	.305	4.14	368,400	635	5.16	459,500
1959	1630	47,500	Aug. 8, 1959	50	1,835	1.10	14.91	1,328,000	1,985	16.13	1,437,000
1960	1710	44,200	Mar. 30, 1960	93	2,009	1.20	16.37	1,458,000	-	-	-

## 8997. Shoal Creek near Braymer, Mo.

Location.--Lat 39°40'05", long 93°46'05", in NW $\frac{1}{4}$ NE $\frac{1}{4}$  sec.13, T.56 N., R.26 W., 50 ft upstream from bridge on Caldwell County Road 0, 1 $\frac{1}{4}$  miles downstream from Panther Creek, and 6 miles north of Braymer.

Drainage area.--391 sq mi.

Records available.--October 1957 to September 1960.

Gage.--Water-stage recorder and wire-weight gage. Altitude of gage is 700 ft (from topographic map).

Extremes.--1957-60: Maximum discharge, 7,840 cfs July 2, 1960 (gage height, 25.6 ft); no flow Oct. 12-14, 1957.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1958	32.2	29.8	108	44.2	384	341	148	166	254	1,149	575	95.1	278
1959	251	604	71.4	52.8	497	470	394	340	18.7	22.5	78.3	194	247
1960	231	26.0	100	213	246	859	560	249	618	803	66.3	5.46	331

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1958	1,980	1,770	6,620	2,720	21,300	20,990	8,790	10,210	15,090	70,660	35,330	5,660	201,100
1959	15,450	35,970	4,390	3,250	27,580	28,870	23,460	20,890	1,110	1,390	4,810	11,530	178,700
1960	14,200	1,550	6,170	13,090	14,170	51,600	33,350	15,290	36,800	49,350	4,080	325	240,000

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30						Calendar year			
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff	
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet
1958	1560	7,360	July 16, 1958	0	278	0.711	9.62	201,100	341	11.81	246,600
1959	1630	7,760	Nov. 18, 1958	.4	247	.632	8.55	178,700	200	6.93	144,800
1960	1710	7,840	July 2, 1960	2.6	331	.847	11.51	240,000	-	-	-

## 9000. Medicine Creek near Galt, Mo.

Location.--Lat 40°07'45", long 93°21'45", in SW $\frac{1}{4}$ NW $\frac{1}{4}$  sec.34, T.62 N., R.22 W., on left pier of bridge on State Highway 6, 1 $\frac{1}{4}$  miles east of Galt and 2 miles upstream from West Medicine Creek.

Drainage area.--225 sq mi.

Records available.--July 1921 to September 1960. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder and wire-weight gage. Datum of gage is 767.48 ft above mean sea level, datum of 1929. Prior to Dec. 3, 1934, chain gage at site 125 ft downstream at following datums: Prior to Oct. 1, 1924, at datum 6.97 ft higher; Oct. 1, 1924, to Sept. 30, 1926, at datum 4.97 ft higher; Oct. 1, 1926, to Dec. 2, 1934, at datum 1.97 ft higher. Dec. 3, 1934, to Apr. 25, 1956, wire-weight gage and Apr. 26 to Sept. 30, 1956, water-stage recorder, at present site at datum 2.00 ft higher.

Average discharge.--39 years (1921-60), 135 cfs (97,740 acre-ft per year).

Extremes.--1921-60: Maximum discharge, 24,200 cfs June 6, 1947 (gage height, 20.9 ft, present datum, from floodmark); no flow at times in 1934, 1936-37, 1940, 1954, 1956.

Flood in July 1909 reached a discharge of about 8,000 cfs, determined by Corps of Engineers.

Corrections.--In WSP 1310, the date of momentary maximum discharge for 1948 is listed in error; it should be Mar. 19, 1948.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	5.5	5.15	3.90	3.15	335	215	695	292	788	462	57.3	9.1	237
1952	69.3	67.5	21.5	52.4	44.3	554	377	95.5	215	15.4	11.8	6.50	127
1953	1.51	4.05	6.25	5.28	28.0	258	310	325	39.1	7.81	3.13	1.00	82.8
1954	.91	1.38	2.25	1.03	2.14	2.68	18.2	59.9	273	1.32	15.3	.99	31.4
1955	77.5	2.59	1.39	27.9	142	45.8	77.4	144	21.0	96.7	3.12	1.47	53.0
1956	5.33	1.43	1.59	.99	2.21	2.92	1.98	2.44	3.21	128	60.5	1.77	17.9
1957	1.10	1.79	2.73	1.99	2.86	2.68	92.6	111	7.43	5.23	2.22	1.68	19.5
1958	5.72	4.25	10.3	9.14	90.6	54.0	25.4	126	58.0	597	118	66.6	97.7
1959	113	182	20.8	21.0	359	475	422	218	84.9	54.6	661	180	232
1960	398	27.9	149	372	116	679	444	570	176	338	12.9	5.62	276

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	339	306	240	194	18,590	13,210	41,350	17,950	46,860	28,400	3,520	541	171,500
1952	4,260	4,020	1,320	3,220	2,550	34,070	22,430	5,750	12,770	944	727	387	92,450
1953	93	241	384	325	1,550	15,860	18,460	19,990	2,330	480	192	59	59,960
1954	56	82	138	63	119	165	1,080	3,680	16,250	81	942	59	22,720
1955	4,770	154	86	1,720	7,900	2,810	4,600	8,870	1,250	5,950	192	88	38,390
1956	328	85	98	81	127	179	118	150	191	7,840	3,720	105	13,000
1957	68	107	168	122	159	165	5,510	6,830	442	522	136	100	14,130
1958	352	253	635	562	5,030	3,320	1,510	7,730	3,450	36,690	7,260	3,960	70,750
1959	6,930	10,800	1,280	1,290	19,910	29,180	25,130	13,420	5,050	3,360	40,670	10,690	167,700
1960	24,470	1,660	9,180	22,870	6,670	41,760	26,420	35,030	10,460	20,790	794	334	200,400

## GRAND RIVER BASIN

Yearly discharge, in cubic feet per second, of Medicine Creek near Galt, Mo.

Year	WSP	Water year ending Sept. 30						Calendar year		
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff	Mean	Runoff	
		Discharge	Date						Inches	Acres-foot
1950	-	-	-	-	-	-	-	177	10.67	128,000
1951	1210	14,500	July 22, 1951	1.0	237	1.05	14.32	171,500	249	15,03
1952	1240	6,450	June 22, 1952	1.2	127	.564	7.69	92,450	115	6.96
1953	1280	4,840	Mar. 31, 1953	.4	82.8	.368	5.00	59,960	82.2	4.97
1954	1340	5,510	June 2, 1954	0	31.4	.140	1.89	22,720	37.9	2.28
1955	1390	4,360	May 12, 1955	.6	53.0	.256	3.19	38,390	46.8	2.82
1956	1440	3,490	July 3, 1956	0	17.9	.080	1.08	13,000	17.7	1.06
1957	1510	1,590	May 22, 1957	.4	19.5	.087	1.17	14,130	20.7	1.25
1958	1560	12,400	July 15, 1958	.4	97.7	.434	5.90	70,750	122	7.39
1959	1630	14,900	Aug. 7, 1959	6.4	232	1.03	13.98	167,700	254	15.34
1960	1710	9,010	Mar. 29, 1960	4.4	276	1.23	16.72	200,400	-	-

† Corrected.

9015. Locust Creek near Linneus, Mo.

Location.--Lat 39°53'45", long 93°14'10", in NW<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub> sec.34, T.59 N., R.21 W., on right bank 25 ft downstream from county highway bridge, 3 miles northwest of Linneus, and 5 miles downstream from West Locust Creek.

Drainage area.--550 sq mi, approximately.

Records available.--October 1928 to September 1960. Prior to April 1929 monthly discharge only, published in WSP 1310.

Gage.--Water-stage recorder, and wire-weight gage for stages below 3.6 ft. Datum of gage is 692.61 ft above mean sea level, datum of 1929. Prior to Feb. 18, 1935, chain gage at same site and datum. Feb. 19, 1935, to July 26, 1956, wire-weight gage at same site and datum.

Average discharge.--32 years (1928-60), 326 cfs (236,000 acre-ft per year).

Extremes.--1928-60: Maximum discharge, 38,000 cfs June 6, 1947 (gage height, 26.93 ft, from floodmarks), from rating curve extended above 15,000 cfs on basis of slope-area measurement of peak flow; no flow July 17 to Aug. 11, 1934.

Flood in July 1909 reached a discharge of about 18,000 cfs, determined by Corps of Engineers.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	11.5	9.8	9.9	9.0	680	347	1,267	593	1,716	910	147	20.7	472
1952	167	154	50.9	147	105	1,206	630	305	378	42.8	32.4	26.4	271
1953	5.65	7.67	11.5	13.1	75.4	791	893	405	67.7	15.7	4.67	2.18	191
1954	2.34	2.53	4.56	3.5	5.75	11.6	59.7	317	708	3.35	14.3	7.25	94.6
1955	135	4.48	4.32	111	320	107	239	249	276	86.6	11.4	1.97	127
1956	92.6	5.04	3.31	2.3	7.29	9.67	5.92	31.9	73.6	395	198	4.45	69.9
1957	.92	2.38	2.73	2.96	3.61	6.47	266	123	25.0	69.8	17.9	4.89	43.8
1958	162	64.3	158	57.7	3.37	188	97.6	548	170	2,903	472	180	449
1959	246	644	52.5	51.7	853	1,106	806	419	231	178	421	433	449
1960	794	51.2	315	705	258	1,508	880	1,255	704	814	53.8	12.3	600

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	708	583	607	551	37,740	21,320	75,400	36,490	102,100	55,960	9,060	1,230	341,700
1952	10,300	9,130	3,130	9,050	6,020	74,130	37,510	18,750	22,470	2,630	1,990	1,570	196,700
1953	347	456	705	805	4,190	48,630	53,130	24,880	4,030	965	287	130	138,600
1954	144	151	280	214	319	712	3,550	19,460	42,130	206	882	432	68,480
1955	8,330	267	302	6,840	17,760	6,570	14,220	15,290	16,440	5,330	704	117	92,170
1956	5,700	300	203	135	420	595	352	1,960	4,380	24,280	12,160	265	50,750
1957	56	142	168	182	201	588	15,800	7,570	1,490	4,290	1,100	291	31,690
1958	9,930	3,830	9,720	3,550	18,720	11,570	5,810	33,710	10,120	78,500	29,010	10,730	325,200
1959	15,110	38,300	3,230	3,180	47,380	68,030	47,970	25,790	13,760	10,950	25,900	25,740	325,500
1960	48,800	3,040	19,380	43,350	14,860	80,400	52,380	77,160	41,860	50,070	3,310	732	435,300

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30						Calendar year		
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff	Mean	Runoff	
		Discharge	Date						Inches	Acres-foot
1950	-	-	-	-	-	-	-	322	7.94	232,800
1951	1210	12,300	July 24, 1951	3	472	0.858	11.65	341,700	501	12.36
1952	1240	8,200	June 22, 1952	6	271	.493	6.72	196,700	242	6.00
1953	1280	14,000	Mar. 31, 1953	1.4	191	.347	4.72	138,600	190	4.69
1954	1340	7,280	June 2, 1954	1	94.6	.172	2.32	68,480	106	2.60
1955	1390	8,000	June 25, 1955	1.6	127	.231	3.12	92,170	124	3.03
1956	1440	5,640	July 3, 1956	7	69.9	.127	1.72	50,750	61.9	1.527
1957	1510	1,910	(a)	.6	43.8	.080	1.086	31,690	75.7	1.87
1958	1560	24,000	July 15, 1958	1.5	449	.816	11.10	325,200	495	12.24
1959	1630	10,300	Nov. 17, 1959	12	449	.816	11.11	325,500	470	11.59
1960	1710	13,800	June 30, 1960	10	800	1.09	14.84	435,300	-	-

a Apr. 4, May 21, 1957.

9020. Grand River near Sumner, Mo.

Location.--Lat 39°38'25", long 93°16'25", in NE $\frac{1}{4}$  sec. 29, T. 56 N., R. 21 W., on downstream side of right pier of main truss of bridge on County Highway E, 120 ft downstream from Chicago, Burlington & Quincy Railroad bridge, 2 miles southwest of Sumner, and  $2\frac{1}{2}$  miles downstream from Locust Creek.

Drainage area.--6,880 sq mi, approximately.

Records available.--October 1923 to September 1960. Prior to April 1924 monthly discharge only, published in WSP 1310.

Gage.--Water-stage recorder, and wire-weight gage used for stages below 8.3 ft. Datum of gage is 630.87 ft above mean sea level, datum of 1929. Prior to July 11, 1926, chain gage at site 80 ft upstream at same datum. July 11, 1926, to Feb. 19, 1935, chain gage and Feb. 20, 1935, to July 9, 1939, wire-weight gage, at same site and datum. July 10, 1939, to Aug. 8, 1952, water-stage recorder at site 80 ft upstream at same datum. Aug. 9, 1952, to Nov. 12, 1953, wire-weight gage at present site and datum. Auxiliary water-stage recorder at site  $8\frac{1}{2}$  miles downstream from base gage at datum 631.00 ft above mean sea level, datum of 1929. Mar. 15, 1939, to Aug. 4, 1942, auxiliary staff gage at various sites. Aug. 5, 1942, to Dec. 4, 1956, auxiliary staff gage at present site.

Average discharge.--37 years (1923-60), 3,626 cfs (2,625,000 acre-ft per year).

Extremes.--1923-60: Maximum discharge, 180,000 cfs June 7, 8, 1947 (gage height, 39.5 ft, from floodmark); minimum observed, 10 cfs Aug. 12, 1934; minimum gage height, 2.19 ft Aug. 22, 23, 31, Sept. 1, 1936.  
Flood of July 9, 1909, reached a stage of 36.7 ft, from floodmark.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	265	178	142	127	3,215	4,098	8,423	11,030	16,850	14,440	2,392	2,339	5,230
1952	2,459	3,425	952	1,773	1,524	14,650	6,554	3,774	5,119	1,057	850	850	5,587
1953	114	498	479	282	1,497	3,735	8,230	6,619	1,793	548	133	66.0	1,997
1954	54.5	61.0	82.1	45.9	100	187	1,339	2,191	4,181	94.4	642	166	760
1955	2,949	165	119	903	6,903	3,315	1,846	2,167	2,155	1,996	213	62.5	1,868
1956	684	59.4	53.0	38.1	105	112	67.3	130	361	3,237	4,180	142	774
1957	37.1	40.3	59.3	45.4	74.0	79.5	5,246	2,506	1,577	728	274	231	741
1958	1,175	561	1,474	345	3,132	3,913	1,329	4,861	2,371	23,000	8,107	2,008	4,397
1959	4,436	6,462	828	406	7,597	11,370	9,344	7,893	5,321	1,857	5,727	5,286	5,516
1960	8,836	980	3,176	9,104	4,210	18,980	16,730	10,420	7,593	10,000	3,073	1,776	7,092

Monthly and yearly mean discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	16,170	10,600	8,740	7,790	17,600	252,000	501,200	578,200	1,002,000	887,900	147,100	139,200	3,850,000
1952	151,200	203,800	58,540	109,000	87,690	900,300	390,000	232,000	304,500	65,000	51,040	50,560	2,604,000
1953	7,030	29,650	29,480	17,340	83,120	229,700	489,700	407,000	106,700	33,720	8,160	3,930	1,446,000
1954	3,350	3,630	5,050	2,820	5,560	11,520	79,690	134,700	248,800	5,810	39,460	9,900	550,300
1955	181,300	9,810	7,340	55,550	385,400	203,800	109,900	133,200	128,200	122,800	13,090	3,720	1,352,000
1956	42,080	3,530	3,260	2,340	6,050	6,910	4,010	8,010	21,470	199,000	257,000	8,440	562,100
1957	2,280	2,400	3,650	2,790	4,110	4,890	193,100	154,100	93,840	44,760	16,860	13,720	536,500
1958	72,250	35,400	90,600	21,210	174,000	240,600	79,080	298,900	141,100	1,414,000	498,500	19,500	3,183,000
1959	272,800	384,500	50,930	24,900	21,900	699,100	556,000	485,300	316,600	114,200	353,200	314,500	3,993,000
1960	543,300	58,330	195,300	559,800	242,100	552,200	995,300	540,600	451,800	816,140	188,900	105,700	5,148,000

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30							Calendar year		
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff	
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet
1950	-	-	-	-	-	-	-	2,498	4.93	1,809,000	
1951	1210	60,000	July 9, 1951	55	5,290	0.769	10.44	3,830,000	5,812	11.48	4,208,000
1952	1240	57,100	Mar. 12, 1952	137	3,587	.521	7.10	2,604,000	3,109	6.15	2,257,000
1953	1280	59,100	Apr. 2, 1953	48	1,997	.290	3.94	1,446,000	1,922	3.79	1,391,000
1954	1340	23,800	June 3, 1954	30	760	.110	1.52	550,300	1,018	2.03	736,700
1955	1390	45,800	Feb. 21, 1955	39	1,868	.272	3.68	1,352,000	1,661	3.27	1,203,000
1956	1440	32,200	Aug. 4, 1956	27	774	.112	1.52	562,100	719	1.42	521,600
1957	1510	22,500	Apr. 4, 1957	28	741	.108	1.47	536,500	1,001	1.99	724,400
1958	1560	89,500	July 17, 1958	50	4,397	.639	8.68	3,183,000	5,104	10.07	3,695,000
1959	1630	52,300	Nov. 20, 1958	266	5,516	.802	10.89	3,993,000	5,638	11.13	4,082,000
1960	1710	104,000	Apr. 1, 1960	550	7,092	1.03	14.03	5,148,000	-	-	-

## 9022. West Yellow Creek near Brookfield, Mo.

Location--Lat 39°50'40", long 93°01'36", in SE $\frac{1}{4}$ NE $\frac{1}{4}$  sec.16, T.58 N., R.19 W., at right down-stream pier of county highway bridge,  $\frac{1}{2}$  miles downstream from Bear Creek and  $\frac{3}{4}$  miles northeast of Brookfield.

Drainage area--135 sq mi.

Records available--July 1959 to September 1960.

Gage--Water-stage recorder and wire-weight gage. Altitude of gage is 738 ft (from topo-graphic map).

Extremes--1959-60: Maximum discharge, 3,900 cfs July 1, 1960 (gage height, 13.80 ft); no flow Aug. 28-30, Sept. 14-22, 1959, Sept. 4-7, 12-23, 29, 30, 1960.

## Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1959	-	-	-	-	-	-	-	-	-	-	6.09	28.7	-
1960	72.9	2.5	52.0	227	63.4	401	150	471	220	289	1.54	.12	164

## Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1959	-	-	-	-	-	-	-	-	-	-	375	1,700	-
1960	4,490	147	3,200	13,930	3,650	24,640	8,960	28,960	13,100	17,760	94	7.3	118,900

## Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30							Calendar year			
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff		
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet	
1959	1710	-	-	-	-	-	-	-	-	-	-	-
1960	1710	3,900	July 1, 1960	0	164	1.21	16.51	118,900	-	-	-	-

## 9025. Hamilton Branch near New Boston, Mo.

Location--Lat 39°57'08", long 92°54'08", in SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec.3, T.59 N., R.18 W., on right bank at bridge on State Highway 11, 0.5 mile upstream from New Boston Branch and  $2\frac{1}{4}$  miles west of New Boston.

Drainage area--2.51 sq mi.

Records available--October 1955 to September 1959, water year 1960 (annual maximum).

Gage--Crest-stage gage. Altitude of gage is 820 ft (from topographic map). Prior to Oct. 1, 1959, water-stage recorder at same site and datum.

Extremes--1955-60: Maximum discharge, 693 cfs July 15, 1958 (gage height, 7.45 ft), from rating curve extended above 45 cfs on basis of slope-area measurements at gage heights 6.80 and 7.35 ft.

1955-59: No flow for many days in each year.

## Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1956	0.39	0	0	0	0.01	0	0.01	0.12	0.50	1.46	5.23	0	†0.65
1957	0	0	0	.013	.11	.003	2.09	7.12	.84	2.17	.28	.26	1.09
1958	8.25	3.78	4.99	.25	3.77	2.08	.17	4.67	.08	18.1	.27	.02	3.91
1959	.43	.04	.02	.42	8.89	5.31	3.60	.94	.11	.01	.003	.26	1.63

† Corrected.

## Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1956	24	0	0	0	0.6	0	0.6	7.3	30	90	322	0	474
1957	0	0	0	.8	6.0	.2	124	438	50	134	17	16	786
1958	508	225	307	15	209	128	9.9	287	5.4	1,120	17	1.0	2,830
1959	26	2.6	1.2	26	493	326	226	58	6.7	.8	.2	15	1,180

## Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30							Calendar year			
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff		
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet	
1956	1510	612	Aug. 2, 1956	0	†0.65	0.260	3.53	474	0.62	3.35	450	
1957	1510	520	July 29, 1957	0	1.09	.434	5.87	786	2.52	13.63	1,830	
1958	1560	693	July 15, 1957	0	3.91	1.56	21.12	2,830	2.51	13.59	1,820	
1959	1630	203	Feb. 9, 1959	0	1.63	.649	8.85	1,180	-	-	-	
1960	-	(a)	June 30, 1960	-	-	-	-	-	-	-	-	

† Corrected.

a Discharge not determined; probably less than 550 cfs.

9030. Yellow Creek near Rothville, Mo.

Location.--Lat 39°38', long 93°05', on line between NW $\frac{1}{4}$  sec.31, T.56 N., R.19 W., and NE $\frac{1}{4}$  sec.36, T.56 N., R.20 W., near center of span on downstream side of bridge on State Highway 11, 2 $\frac{1}{2}$  miles southwest of Rothville and 3 miles downstream from East Yellow Creek.

Drainage area.--405 sq mi.

Records available.--April 1929 to June 1932, October 1948 to December 1951.

Gage.--Wire-weight gage. Datum of gage is 664.37 ft above mean sea level, datum of 1929. Prior to Oct. 1, 1948, chain gage at same site and datum.

Average discharge.--5 years (1929-31, 1948-51), 220 cfs (159,300 acre-ft per year).

Extremes.--1929-32, 1948-51: Maximum discharge, 9,000 cfs June 17, 1950 (gage height, 21.40 ft); minimum daily, 0.2 cfs Oct. 1-4, 25-28, 30, 31, 1948, Oct. 22, 1950, Feb. 2, 3, 1951.

Maximum stage known, 23.1 ft in June 1947, from floodmark, from information by Corps of Engineers and local residents.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	0.987	0.860	0.768	1.55	480	224	770	225	1,221	308	100	31.1	276
1952	118	195	28.4	-	-	-	-	-	-	-	-	-	-

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	61	51	47	95	26,640	13,790	45,790	13,840	72,650	18,950	6,150	1,850	199,900
1952	7,270	11,590	1,750	-	-	-	-	-	-	-	-	-	-

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30						Calendar year			
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff	Mean	Runoff		
		Discharge	Date						Inches	Acre-feet	
1950	-	-	-	-	-	-	-	188	6.30	135,900	-
1951	1210	8,200	June 29, 1951	0.2	276	0.681	9.25	304	10.20	220,400	-
1952	1210	-	-	-	-	-	-	-	-	-	-

## CHARITON RIVER BASIN

9035. Honey Creek near Russell, Iowa

Location.--Lat 40°55'25", long 93°07'55", in SW $\frac{1}{4}$ NW $\frac{1}{4}$  sec.26, T.71 N., R.20 W., on left bank 15 ft downstream from highway bridge, 0.7 mile upstream from Chariton River, and 5.5 miles southeast of Russell.

Drainage area.--13.2 sq mi.

Records available.--June 1952 to September 1960.

Gage.--Water-stage recorder and concrete control. Datum of gage is 901.73 ft above mean sea level, datum of 1929 (levels by U. S. Soil Conservation Service).

Average discharge.--8 years (1952-60), 6.09 cfs (4,410 acre-ft per year).

Extremes.--1952-60: Maximum discharge, 4,100 cfs May 21, 1959 (gage height, 11.26 ft), from rating curve extended above 640 cfs on basis of contracted-opening and flow-over-road measurement of peak flow; no flow at times in each year.

Remarks.--Records of suspended sediment loads for the period June 1952 to September 1960 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	-	-	-	-	-	0.279	3.03	0.285	-
1952	-	-	-	-	-	-	-	-	-	0.17	0	0	-
1953	0	4.99	1.35	2.02	12.7	35.2	8.96	3.27	4.54	0	0	0	6.07
1954	0	0	0	0	0	0	2.43	.92	1.27	0	0.35	0	.41
1955	1.74	0	0	.19	6.71	2.09	1.83	1.66	.19	1.23	0	0	1.27
1956	0	0	0	0	0	0	0	0	0	1.03	11.2	0	1.04
1957	0	0	0	0	0	.395	14.2	6.51	3.94	1.05	.001	.480	2.20
1958	.294	.884	1.20	1.02	7.59	4.35	2.20	4.52	1.04	40.9	5.97	7.79	6.51
1959	1.16	5.94	.561	1.35	22.6	37.8	28.8	66.1	6.27	3.70	.802	6.44	15.1
1960	6.49	2.00	8.66	14.2	3.12	60.5	28.3	51.7	9.55	4.10	.504	.098	16.1

## CHARITON RIVER BASIN

Monthly and yearly discharge, in acre-feet, of Honey Creek near Russell, Iowa

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952	-	-	-	-	-	-	-	-	-	17	186	17	-
1953	0	297	83	124	708	2,170	533	201	270	11	0	0	4,400
1954	0	0	0	0	0	0	144	57	76	0	21	0	298
1955	107	0	0	12	372	129	109	102	11	76	0	0	918
1956	0	0	0	0	0	0	0	0	0	63	692	0	755
1957	0	0	0	0	0	24	844	400	235	64	1	29	1,800
1958	18	53	74	63	421	267	131	278	62	2,520	367	464	4,720
1959	71	353	35	83	1,260	2,320	1,710	4,060	373	227	49	383	10,920
1960	522	119	532	872	180	3,720	1,690	3,180	568	252	31	5.8	11,670

## Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30						Calendar year			
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff	
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet
1950											
1951											
1952	1240	a586	June 21, 1952	-	-	-	-	-	-	-	-
1953	1280	388	Mar. 30, 1953	0	6.07	0.460	6.25	4,400	5.54	5.71	4,020
1954	1340	245	Apr. 26, 1954	0	.41	.031	.43	298	.56	.58	405
1955	1390	170	Feb. 19, 1955	0	1.27	.096	1.31	918	1.12	1.16	811
1956	1440	265	July 31, 1956	0	1.04	.079	1.07	755	1.04	1.07	755
1957	1510	263	Apr. 22, 1957	0	2.20	.167	2.26	1,600	2.40	2.46	1,740
1958	1560	638	July 2, 1958	0	6.51	.493	6.69	4,720	6.94	7.14	5,030
1959	1630	4,100	May 21, 1959	0	15.1	1.14	15.51	10,920	16.1	16.53	11,640
1960	1710	1,280	May 6, 1960	0	16.1	1.22	16.58	11,670	-	-	-

a Maximum for period June to September.

## 9039. Chariton River near Rathbun, Iowa

Location.--Lat 40°48'40", long 92°53'00", in NW $\frac{1}{4}$  sec.1, T.69 N., R.18 W., on upstream side of highway bridge, 0.8 mile northeast of Rathbun, 1.0 mile upstream from Walnut Creek, and 1.3 miles downstream from Buck Branch.

Drainage area.--551 sq mi.

Records available.--October 1956 to September 1960.

Gage.--Wire-weight gage. Datum of gage is 843.27 ft above mean sea level, datum of 1929.

Extremes.--1956-60: Maximum discharge, 21,800 cfs Mar. 31, 1960 (gage height, 25.3 ft, from floodmark); minimum daily, 0.1 cfs Oct. 12-14, 17-24, 1957.

## Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1957	*0.32	*0.70	*1.83	*0.86	*2.65	1.72	343	198	215	49.9	9.36	16.7	*69.8
1958	6.87	18.3	25.9	19.3	231	224	74.5	159	26.1	459	475	295	168
1959	73.5	167	26.0	22.7	705	1242	1,020	2,047	608	126	213	181	535
1960	339	49.2	184	870	180	1,527	1,471	1,754	267	149	45.6	45.3	577

\* Not previously published; partly estimated on basis of records for nearby stations.

## Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1957	*20	*42	*112	*53	*159	106	20,420	12,200	12,800	3,070	575	995	*50,550
1958	423	1,090	1,590	1,180	12,820	13,800	4,430	9,810	1,550	28,240	29,230	17,570	121,700
1959	4,520	9,920	1,600	1,400	39,160	76,370	60,720	125,800	36,210	7,780	13,070	10,790	387,300
1960	20,840	2,930	11,300	53,500	10,360	93,890	87,540	107,800	15,880	9,160	2,700	2,700	418,700

\* Not previously published; partly estimated on basis of records for nearby stations.

## Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30						Calendar year			
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff	
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet
1957	1510	1,500	Apr. 5, 1957	0.2	*69.8	*0.127	*1.73	*50,550	*73.9	*1.82	*53,480
1958	1560	2,070	(a)	.1	168	.305	4.13	121,700	186	4.57	134,700
1959	1630	16,600	May 22, 1959	2.2	535	.971	13.17	387,300	561	13.82	406,400
1960	1710	21,800	Mar. 31, 1960	2.1	577	1.05	14.25	418,700	-	-	-

\* Not previously published.

a Aug. 4, Sept. 10, 1958.



## 4.53

Location.--Lat 40°44'20", long 92°48'05", in NE<sup>1</sup>/<sub>4</sub> NW<sup>1</sup>/<sub>4</sub> sec.34, T.69 N., R.17 W., on left bank 10 ft downstream from bridge on State Highway 2, 3 miles east of Centerville, and 3.5 miles downstream from Cooper Creek.

Gage.--Water-stage recorder and concrete control. Datum of gage is 825.68 ft above mean sea level, datum of 1929.

Extremes.--1938-59: Maximum discharge, 21,700 cfs June 20, 1946 (gage height, 24.20 ft, from floodmark); minimum daily, 0.1 cfs Oct. 11, 1938, Sept. 30, Oct. 1-3, 1940.

[illegible][illegible][illegible]

## 9045. Chariton River at Novinger, Mo.

Location.--Lat 40°14'05", long 92°41'14", on south line of SE¼NE¼ sec.28, T.63 N., R.16 W., attached to downstream side of left pier of bridge over new channel on State Highway 6, 1,000 ft downstream from Chicago, Burlington & Quincy Railroad bridge, 0.6 mile east of Novinger, 1 mile downstream from Rye Creek, and 2 miles upstream from Spring Creek.

Drainage area.--1,370 sq mi, approximately.

Records available.--October 1930 to September 1952, October 1954 to September 1960. Prior to February 1931 monthly discharge only, published in WSP 1310.

Gage.--Water-stage recorder and wire-weight gage. Datum of gage is 737.65 ft above mean sea level, datum of 1929. Prior to Dec. 19, 1939, chain gages or wire-weight gage at bridges over old channel, 500 ft east, at same datum. Dec. 20, 1939, to Sept. 30, 1952, and Oct. 1, 1954, to Aug. 1, 1956, water-stage recorder, supplemented by wire-weight gage, at same site and datum. Aug. 2, 1956, to May 16, 1957, wire-weight gage at present site and datum.

Average discharge.--28 years (1930-52, 1954-60), 723 cfs (523,400 acre-ft per year).

Extremes.--1930-52, 1954-60: Maximum discharge, 22,900 cfs June 7, 13, 1947 (gage height, 28.50 ft); minimum, 0.1 cfs Aug. 31, Sept. 1, 1936.  
Maximum stage known, 28.6 ft in June 1917.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	10.2	14.1	12.7	17.0	286	719	2,260	1,543	1,576	1,164	327	47.5	741
1952	433	391	121	347	416	3,232	1,277	756	1,678	1,185	251	24.6	760
1953													
1954													
1955	697	19.1	14.3	436	816	588	706	443	106	200	11.1	6.17	334
1956	86.4	3.73	5.84	3.43	51.6	17.4	6.06	7.91	39.2	229	509	9.66	81.6
1957	1.04	3.09	3.85	3.67	6.99	8.97	706	346	343	371	92.5	26.0	159
1958	29.0	80.3	224	104	447	538	220	427	219	1,417	459	920	509
1959	318	773	108	64.6	624	2,920	2,145	2,334	1,332	4561	595	717	1,195
1960	1,619	143	543	1,880	657	2,045	4,778	4,074	1,126	1,417	82.4	57.1	1,540

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	625	841	783	1,050	71,410	44,190	134,500	94,890	93,770	71,600	20,080	2,820	536,600
1952	26,610	23,280	7,470	21,320	23,960	198,700	75,960	46,510	99,820	11,370	15,440	1,460	551,900
1953													
1954													
1955	42,840	1,140	881	26,820	45,330	36,180	42,020	27,250	6,300	12,270	685	367	242,100
1956	5,310	222	359	211	2,970	1,070	361	486	2,330	14,060	31,310	575	59,260
1957	64	184	237	226	388	551	41,980	21,290	20,400	22,790	5,690	1,550	115,400
1958	1,780	4,780	13,760	6,400	24,800	33,080	13,100	26,240	13,010	87,130	89,720	54,730	368,500
1959	19,580	45,970	6,620	3,970	90,170	179,500	127,600	143,500	79,250	28,010	98,090	42,650	864,900
1960	99,580	6,520	33,390	115,600	37,800	125,700	244,300	250,500	66,990	87,120	5,060	3,400	1,118,000

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30							Calendar year		
		Momentary maximum		Minimum day	Mean	Runoff		Mean	Runoff		
		Discharge	Date			Per square mile	Inches		Acre-feet	Inches	Acre-feet
1950	-	-	-	-	-	-	-	815	8.43	615,700	
1951	1210	8,660	July 23, 1951	5	741	0.541	7.33	536,600	817	8.08	591,700
1952	1240	7,380	Mar. 13, 1952	11	760	.555	7.56	551,900	-	-	-
1953											
1954											
1955	1390	6,200	Jan. 6, 1955	1.2	334	.244	3.33	242,100	281	2.79	203,100
1956	1440	2,400	July 4, 1956	1.0	81.6	.060	.80	59,260	74.2	.73	53,860
1957	1510	4,940	July 29, 1957	.6	159	.116	1.57	115,400	187	1.85	135,200
1958	1560	7,900	Aug. 2, 1958	4.1	509	.372	5.05	368,500	581	5.76	420,400
1959	1650	9,710	June 1, 1959	31	1,185	.872	11.82	864,900	1,291	12.77	934,200
1960	1710	22,000	Apr. 2, 1960	22	1,540	1.12	15.31	1,118,000	-	-	-

9055. Chariton River near Prairie Hill, Mo.  
(Formerly published as Chariton River near Keytesville)

Location.--Lat 39°32'25", long 92°47'23", in NW $\frac{1}{4}$ SW $\frac{1}{4}$  sec.26, T.55 N., R.17 W., on right bank at downstream side of bridge on State Highway 129, 3.2 miles northwest of Prairie Hill and 13 $\frac{1}{2}$  miles upstream from Puzzle Creek.

Drainage area.--1,870 sq mi, approximately; area at former site, 1,950 sq mi, approximately.

Records available.--October 1928 to September 1960. Prior to Oct. 1, 1953, published as "near Keytesville." Prior to May 1929 monthly discharge only, published in WSP 1309.

Gage.--Water-stage recorder and wire-weight gage. Datum of gage is 632.05 ft above mean sea level, datum of 1929 (levels by Corps of Engineers). Prior to Aug. 25, 1929, staff gage, Aug. 25, 1929, to Feb. 19, 1935, chain gage, and Feb. 20, 1935, to Sept. 30, 1953, wire-weight gage, at site 8 $\frac{1}{2}$  miles downstream at datum 13.68 ft lower. Oct. 1, 1953, to July 2, 1958, wire-weight gage at present site and datum.

Average discharge.--32 years (1928-60), 1,075 cfs (778,300 acre-ft per year).

Extremes.--1928-60: Maximum discharge, 25,600 cfs June 8, 9, 1947 (gage height, 25.3 ft, from floodmark, site and datum then in use); minimum, 4.6 cfs Aug. 7, 9, 10, 1934.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	38.0	30.0	31.9	44.5	55.5	1,102	3,113	1,808	2,777	1,631	514	185	1,060
1952	500	657	197	700	560	4,270	2,187	1,034	1,809	380	365	168	1,070
1953	29.6	74.0	93.6	61.8	762	1,798	2,897	1,243	651	125	23.7	13.6	644
1954	10.7	12.4	18.5	18.3	28.8	100	702	665	1,166	26.7	178	58.2	248
1955	915	42.7	34.7	946	1,388	914	1,022	1,167	260	336	40.3	18.9	587
1956	245	20.2	21.9	15.1	62.0	40.2	45.8	84.1	142	705	702	30.1	178
1957	9.59	9.77	15.0	12.9	18.1	37.3	964	941	678	769	302	88.2	321
1958	720	567	961	321	767	1,062	467	1,012	486	501	2,450	975	1,114
1959	422	914	209	136	2,088	5,882	2,951	2,445	1,838	531	1,573	865	1,481
1960	1,918	192	726	2,241	1,010	2,692	6,105	6,366	1,807	2,690	164	73.5	2,173

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	2,330	1,790	1,960	2,730	3,560	67,780	185,300	111,200	165,200	100,300	31,580	11,000	767,500
1952	30,750	39,100	12,100	43,060	32,240	262,500	130,100	63,600	107,600	23,350	22,420	10,000	776,800
1953	1,820	4,410	5,750	3,800	42,310	110,600	172,400	78,450	38,760	7,690	1,460	811	466,300
1954	655	736	1,140	1,120	1,600	6,170	41,800	40,890	69,400	1,640	10,930	3,460	179,500
1955	56,270	2,540	2,130	58,170	77,100	56,180	60,840	71,760	15,470	20,670	2,480	1,120	424,700
1956	15,100	1,200	1,350	926	3,560	2,470	2,730	5,170	8,440	43,360	43,140	1,790	129,200
1957	589	581	799	793	1,010	2,290	57,370	57,860	40,350	47,270	18,570	5,250	232,700
1958	44,280	32,280	59,080	19,760	42,570	65,280	27,800	62,240	29,530	215,300	150,700	58,020	806,800
1959	25,940	54,400	12,860	8,340	116,000	238,700	175,600	150,400	109,300	32,660	96,710	51,480	1,072,000
1960	118,000	11,430	44,660	137,800	58,090	165,500	363,300	391,400	107,500	165,400	10,070	4,370	1,578,000

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30						Calendar year			
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff	
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet
1950	-	-	-	-	-	-	-	-	1,159	8.08	839,000
1951	1210	10,400	June 27, 1951	20	1,060	0.544	7.38	767,500	1,165	8.12	843,400
1952	1240	9,590	Mar. 19, 1952	30	1,070	.549	7.48	776,800	974	6.80	706,800
1953	1280	13,800	Apr. 2, 1953	9	644	.330	4.49	466,300	631	4.39	456,800
1954	1340	7,670	June 2, 1954	8	248	.133	1.80	179,500	329	2.39	238,000
1955	1390	13,500	Jan. 5, 1955	13	587	.314	4.25	424,700	527	3.81	381,400
1956	1440	7,620	July 3, 1956	8.8	178	.095	1.28	129,200	156	1.13	113,600
1957	1510	7,910	July 29, 1957	9.0	321	.172	2.33	232,700	508	3.66	366,400
1958	1560	15,600	Aug. 1, 1958	16	1,114	.596	8.08	806,800	1,056	7.67	764,400
1959	1830	10,900	June 2, 1959	52	1,481	.792	10.76	1,072,000	1,593	11.56	1,153,000
1960	1710	21,500	Apr. 4, 1960	37	2,173	1.16	15.80	1,578,000	-	-	-

## CHARITON RIVER BASIN

9060. Mussel Fork near Musselfork, Mo.

Location.--Lat 39°31', long 92°57', in SW<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub> sec.32, T.55 N., R.18 W., near center of span on downstream handrail of bridge on State Highway 5, 1½ miles upstream from Long Branch and 4½ miles southwest of Musselfork.

Drainage area.--267 sq mi.

Records available.--October 1948 to December 1951.

Gage.--Wire-weight gage. Datum of gage is 639.25 ft above mean sea level, datum of 1929 (levels by State Highway Department).

Extremes.--1948-51: Maximum discharge, 4,380 cfs June 29, 1951; minimum daily, 0.2 cfs Oct. 1-4, 25-29, 31, 1948.

Maximum stage known, 20.7 ft in June 1947, from information by local resident.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	5.01	3.76	3.55	3.85	3.32	2.26	5.11	1.15	7.44	25.4	85.8	40.3	194
1952	104	186	20.7	-	-	-	-	-	-	-	-	-	-

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	308	224	219	237	18,420	13,890	30,400	7,060	46,090	15,620	5,280	2,400	140,100
1952	6,370	11,080	1,280	-	-	-	-	-	-	-	-	-	-

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30						Calendar year					
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff	Mean	Runoff		Mean	Inches	Acre-feet
		Discharge	Date						Inches	Acre-feet			
1950	-	-	-	-	-	-	-	135	6.84	97,500	-	-	-
1951	1210	4,380	June 29, 1951	2.1	194	0.727	9.86	140,100	218	11.12	158,500	-	-
1952	1210	-	-	-	-	-	-	-	-	-	-	-	-

## MISSOURI RIVER MAIN STEM

9065. Missouri River at Glasgow, Mo.

Location.--Lat 39°13'20", long 92°50'55", in center of sec.17, T.51 N., R.17 W., on downstream side of second pier from left bank of bridge on State Highway 240 at Glasgow, 75 ft downstream from Chicago & Alton Railroad bridge and 1 mile downstream from Chariton River.

Drainage area.--502,875 sq mi.

Records available.--October 1949 to September 1953. Gage-height records collected in vicinity 1878-99 are contained in reports of Missouri River Commission; and since 1929, in files of Corps of Engineers, Kansas City District.

Gage.--Water-stage recorder. Datum of gage is 586.11 ft above mean sea level, datum of 1929. Prior to Aug. 30, 1950, wire-weight gage at same site and datum.

Extremes.--1949-53: Maximum discharge, about 550,000 cfs July 17, 1951 (gage height, 36.7 ft); minimum observed, 9,540 cfs Feb. 1, 1951; minimum gage height, 5.30 ft Dec. 23, 1951.

Flood of June 26, 1947, reached a stage of 35.0 ft, present datum.

Remarks.--Flow partly regulated by many reservoirs upstream.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	64,690	45,110	18,560	26,550	34,930	60,050	133,100	128,200	204,000	281,600	108,700	32,100	103,400
1952	76,500	72,220	34,800	34,780	58,790	101,700	224,100	123,600	88,360	71,500	49,140	45,040	81,550
1953	36,920	38,960	21,780	19,750	36,800	61,200	66,120	74,570	81,970	60,690	39,650	36,850	47,940

Monthly and yearly discharge, in thousands of acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	3,977	2,684	1,141	1,632	1,940	3,692	7,920	7,880	12,140	17,320	6,685	7,862	74,870
1952	4,704	4,297	2,140	2,138	3,382	6,251	13,330	7,599	5,258	4,396	3,022	2,680	59,200
1953	2,270	2,318	1,339	1,214	2,044	3,763	3,934	4,585	4,877	3,732	2,438	2,193	34,710

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30						Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet		Mean	Acre-feet
		Discharge	Date								
1950	-	-	-	-	-	-	66,790	-	-	48,350,000	-
1951	1210	4550,000	July 17, 1951	10,100	103,400	74,870,000	108,000	-	-	78,210,000	-
1952	1240	358,000	Apr. 26, 1952	10,600	81,550	59,200,000	74,370	-	-	53,980,000	-
1953	1280	153,000	May 8, 1953	14,900	47,940	34,710,000	-	-	-	-	-

a About.

9066. Burge Branch near Arrow Rock, Mo.

Location.--Lat 39°02'45", long 92°56'35", in SW $\frac{1}{4}$ NE $\frac{1}{4}$  sec.1, T.49 N., R.19 W., on right bank 30 ft upstream from culvert on county road and 1 $\frac{1}{2}$  miles south of Arrow Rock.

Drainage area.--0.33 sq mi.

Records available.--October 1959 to September 1960.

Gage.--Water-stage recorder, V-notch sharp-crested weir, and recording rain gage. Altitude of gage is 610 ft (from topographic map).

Extremes.--1959-60: Maximum discharge, 47.8 cfs July 1, 1960 (gage height, 3.38 ft); no flow for most of time.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1960	0.186	0.011	0	0.009	0.008	0.140	0.123	0.283	0.043	0.134	0	0	0.079

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1960	11	0.65	0	0.54	0.48	8.6	7.3	17	2.6	8.2	0	0	56

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30						Calendar year			
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff	
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet
1960	1710	47.8	July 1, 1960	0	0.079	0.239	3.27	56	-	-	-

## LAMINE RIVER BASIN

9067. Flat Creek near Sedalia, Mo.

Location.--Lat 38°39'35", long 93°15'10", in NW $\frac{1}{4}$ SE $\frac{1}{4}$  sec.20, T.45 N., R.21 W., on downstream side of left pier of bridge on U. S. Highway 65, 1 mile upstream from Spring Fork and 1 $\frac{1}{2}$  miles south of Sedalia.

Drainage area.--148 sq mi.

Records available.--October 1958 to September 1960.

Gage.--Water-stage recorder. Altitude of gage is 765 ft above mean sea level (from topographic map).

Extremes.--1958-60: Maximum discharge, 12,200 cfs Apr. 16, 1960 (gage height, 16.7 ft); no flow Sept. 7-30, 1960; minimum gage height, 1.30 ft Sept. 30, 1960.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1959	2.68	37.4	1.89	25.3	158	118	24.1	24.8	37.1	2.05	0.14	16.2	36.4
1960	63.7	1	2.28	31.6	43.0	287	459	249	16.0	6.63	.32	.02	96.7

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1959	165	2,220	116	1,560	8,760	7,240	1,430	1,530	2,210	126	8.7	965	26,330
1960	3,920	60	140	1,940	2,470	17,630	27,340	15,290	953	408	20	1.2	70,170

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30						Calendar year			
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff	
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet
1959	1630	6,180	Feb. 10, 1959	0	36.4	0.246	3.33	26,330	38.6	3.55	27,950
1960	1710	12,200	Apr. 16, 1960	0	96.7	0.653	8.89	70,170	-	-	-

## 9070. Lamine River at Clifton City, Mo.

Location.--Lat 38°45'20", long 93°01'10", in NW¼ sec.16, T.46 N., R.19 W., at left end of county highway bridge, 300 ft upstream from Missouri-Kansas-Texas Railroad Co. bridge, three-quarters of a mile east of Clifton City, and 8 miles downstream from Otter Creek.

Drainage area.--598 sq mi.

Records available.--June 1922 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 621.91 ft above mean sea level, datum of 1929. Prior to Dec. 21, 1934, chain gage and Dec. 21, 1934, to Sept. 2, 1958, wire-weight gage, at same site and datum.

Average discharge.--38 years (1922-60), 465 cfs (336,600 acre-ft per year).

Extremes.--1922-60: Maximum discharge, 65,500 cfs June 29, 1951 (gage height, 32.5 ft), from rating curve extended above 30,000 cfs; no flow at times in 1934, 1936, 1939, 1956-57.

Maximum stage known, 35.3 ft Sept. 18, 1905, from floodmark (discharge, about 90,000 cfs).

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	20.5	23.6	22.6	58.8	1,336	1,213	953	261	4,519	5,585	622	1,377	1,158
1952	407	847	199	451	787	917	859	99.7	56.3	24.1	317	9.07	412
1953	2.16	19.8	37.0	39.9	133	449	444	346	19.6	3.93	3.20	2.55	125
1954	5.87	3.71	7.70	8.6	15.0	15.9	135	263	105	11.0	182	2.58	61.5
1955	353	21.4	30.7	404	507	344	94.5	69.8	67.2	44.2	535	174	219
1956	936	15.8	13.3	10.3	21.6	13.2	13.2	70.7	22.1	660	32.1	4.20	153
1957	.02	.03	7.96	5.46	47.3	230	381	604	638	219	21.4	2.78	179
1958	28.0	33.0	440	110	686	1,266	275	398	793	1,758	532	153	541
1959	20.3	176	33.6	384	785	685	132	162	63.5	21.4	11.5	48.2	207
1960	308	18.3	15.5	68.7	191	850	1,500	1,396	90.5	119	31.6	1.90	383

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1,280	1,400	1,390	3,610	74,180	74,560	56,710	16,020	268,900	220,400	38,240	81,940	858,600
1952	25,030	50,400	12,210	27,720	45,290	56,380	51,090	6,130	3,350	1,480	19,500	540	299,100
1953	133	1,180	2,280	2,450	7,590	27,580	26,420	1,170	242	197	152	152	90,440
1954	361	221	473	532	724	978	8,030	16,170	6,270	679	9,930	154	44,520
1955	21,700	1,270	1,890	24,860	28,170	21,130	5,620	4,500	4,000	2,720	32,910	10,350	158,900
1956	57,520	942	817	635	1,240	809	788	4,340	1,310	40,560	1,970	250	111,200
1957	1.2	1.6	490	336	2,620	14,120	22,690	37,110	37,960	13,490	1,320	130	130,300
1958	1,720	1,960	27,070	6,780	38,110	77,830	16,340	24,460	47,180	108,100	32,730	9,090	391,400
1959	1,250	10,460	2,070	23,600	45,610	42,140	7,840	9,950	3,780	1,320	710	2,870	149,600
1960	18,920	1,090	952	4,220	10,100	52,240	89,230	85,830	5,390	7,310	1,940	113	277,500

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30							Calendar year			
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff		
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet	
1950	-	-	-	-	-	-	-	-	447	10.13	323,600	-
1951	1210	65,500	June 29, 1951	13	1,158	1.94	26.29	858,600	1,274	28.91	922,200	-
1952	1240	9,750	Nov. 13, 1951	3.9	412	.689	9.38	299,100	296	6.75	215,100	-
1953	1280	5,360	Mar. 4, 1953	.6	125	.209	2.84	90,440	121	2.76	87,910	-
1954	1340	3,830	May 2, 1954	.3	61.5	.103	1.39	44,520	94.4	2.14	65,320	-
1955	1390	8,260	Aug. 31, 1955	1.4	219	.366	4.98	158,900	267	6.06	193,300	-
1956	1440	14,000	Oct. 7, 1955	.1	153	.256	3.49	111,200	72.2	1.65	52,390	-
1957	1510	8,740	May 26, 1957	0	179	.299	4.07	130,300	222	5.01	160,500	-
1958	1560	25,500	July 21, 1958	.2	541	.905	12.27	391,400	517	11.74	374,400	-
1959	1630	9,980	Feb. 11, 1959	1.0	207	.346	4.69	149,600	217	4.91	156,800	-
1960	1710	28,700	May 6, 1960	.4	383	.640	8.71	277,500	-	-	-	-

† Corrected.

9075. East Branch South Fork Blackwater River near Elm, Mo.

Location.--Lat 38°49'50", long 94°02'50", in SW $\frac{1}{4}$ SE $\frac{1}{4}$  sec.5, T.46 N., R.28 W., on left bank at downstream side of bridge on county highway, 2 $\frac{1}{2}$  miles southeast of Elm and 3 miles upstream from mouth.

Drainage area.--16.4 sq mi.

Records available.--June 1954 to September 1960.

Gage.--Water-stage recorder and concrete control. Datum of gage is about 795 ft above mean sea level, datum of 1929.

Average discharge.--6 years (1954-60), 6.41 cfs (4,640 acre-ft per year).

Extremes.--1954-60: Maximum discharge, 5,600 cfs Apr. 15, 1960 (gage height, 12.0 ft), from rating curve extended above 420 cfs on basis of contracted-opening measurement of peak flow; no flow for many days in each year.

Flood in July 1951 reached a stage of 14.8 ft, from information by local residents.

Remarks.--Runoff affected at times by many Soil Conservation ponds upstream.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952													
1953													
1954	-	-	-	-	-	-	-	-	5.48	0	4.62	0.11	-
1955	6.18	0	0	8.42	15.1	1.54	0.41	27.2	3.41	.02	.06	1.15	5.26
1956	5.31	0	0	0	.23	0	2.70	.85	.16	3.23	.15	0	1.06
1957	0	0	0	0	0	.69	.21	.44	1.92	.90	.01	6.55	.89
1958	12.8	3.29	11.9	3.37	26.1	30.2	12.7	3.45	15.2	35.1	1.14	.24	12.9
1959	0	0	0	.04	5.14	3.66	8.79	4.87	1.01	6.27	9.71	.96	3.36
1960	15.1	.19	.14	3.06	5.93	35.3	89.3	28.2	.92	.21	2.38	0	15.0

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952													
1953													
1954	-	-	-	-	-	-	-	-	326	0	284	6.7	-
1955	379	0	0	518	840	95	24	1,670	203	1.0	3.8	69	3,800
1956	326	0	0	0	13	0	161	52	9.5	199	9.1	0	770
1957	0	0	0	0	0	.43	.13	27	114	55	.8	390	643
1958	786	196	730	207	1,450	1,860	753	212	905	2,160	70	14	9,340
1959	0	0	0	2.2	285	225	523	299	60	388	597	57	2,430
1960	926	11	8.3	168	341	2,170	5,310	1,740	55	13	147	0	10,910

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30						Calendar year			
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff	Mean	Runoff		
		Discharge	Date						Inches	Acre-feet	
1950											
1951											
1952											
1953											
1954	1390	-			-	-	-	-	-	-	-
1955	1390	2,380	May 27, 1955	0	5.26	0.321	4.34	3,800	5.18	4.28	3,750
1956	1440	447	Apr. 28, 1956	0	1.06	.085	.87	770	.61	.50	444
1957	1510	1,420	Sept. 21, 1957	0	.89	.054	.73	643	3.25	2.68	2,350
1958	1560	2,140	July 31, 1958	0	12.9	.787	10.68	9,340	10.5	8.73	7,630
1959	1630	1,380	Aug. 31, 1959	0	3.36	.205	2.79	2,430	4.67	3.87	3,580
1960	1710	5,600	Apr. 15, 1960	0	15.0	.915	12.47	10,910	-	-	-

9077. Blackwater River at Valley City, Mo.

Location.--Lat 38°52'10", long 93°37'15", in SW $\frac{1}{4}$ NW $\frac{1}{4}$  sec.13, T.47 N., R.25 W., on right bank at downstream side of bridge on County Highway E, 0.5 mile upstream from Blackjack Creek, 0.5 mile northwest of Valley City, and 1 mile downstream from Clear Creek.

Drainage area.--547 sq mi.

Records available.--October 1958 to September 1960.

Gage.--Water-stage recorder and wire-weight gage. Datum of gage is 650.23 ft (revised) above mean sea level, datum of 1929.

Extremes.--1958-60: Maximum discharge, 66,500 cfs Apr. 16, 1960 (gage height, 30.4 ft), from rating curve extended above 18,000 cfs on basis of slope-area measurement of peak flow; minimum, 0.4 cfs Sept. 23-25, 28-30, 1960; minimum gage height observed, 2.01 ft Sept. 23, 29, 30, 1960.

## LAMINE RIVER BASIN

Monthly and yearly mean discharge, in cubic feet per second, of Blackwater River at Valley City, Mo.

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1959	4.19	16.8	5.25	28.2	188	166	249	219	144	43.2	2.80	8.33	88.6
1960	136	1.58	5.19	77.1	114	961	2,767	1,216	92.2	58.0	93.4	.65	459

## Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1959	258	999	323	1,740	10,420	10,220	14,820	13,490	8,590	2,660	172	496	64,190
1960	8,360	94	319	4,740	6,560	59,110	164,700	74,740	5,490	3,450	5,740	39	333,300

## Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30						Calendar year				
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff		
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet	
1959	1630	5,750	May 22, 1959	0.5	88.6	0.162	2.20	64,190	98.6	2.45	71,380	-
1960	1710	66,500	Apr. 16, 1960	.4	459	.839	11.42	333,300	-	-	-	-

## 9080. Blackwater River at Blue Lick, Mo.

Location.--Lat 38°59'30", long 93°12'15", on line between secs.27 and 34, T.49 N., R.21 W., on right bank 25 ft upstream from bridge on U. S. Highway 65, three-quarters of a mile downstream from Finney Creek, and 1 mile south of Blue Lick.

Drainage area.--1,120 sq mi, approximately.

Records available.--June 1922 to September 1933, May 1938 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 593.79 ft above mean sea level, datum of 1929. Prior to July 25, 1925, chain gage at site 75 ft downstream at datum 0.10 ft lower. July 25, 1925, to Sept. 30, 1933, and May 23 to Sept. 24, 1938, chain gage and Sept. 25, 1938, to Dec. 3, 1956, wire-weight gage, at site 25 ft downstream at present datum.

Average discharge.--33 years (1922-33, 1938-60), 657 cfs (475,600 acre-ft per year).

Extremes.--1922-33, 1938-60: Maximum discharge, 54,000 cfs Nov. 18, 1928 (gage height, 41.25 ft, from floodmarks), from rating curve extended above 32,000 cfs by logarithmic plotting; minimum daily, 0.1 cfs Sept. 4 to Oct. 20, Oct. 26, 29, Nov. 16-18, 1956; minimum gage height, 0.96 ft July 6, 1926.

## Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	11.7	13.0	10.7	32.7	421	1,349	1,907	484	2,768	8,855	1,668	2,049	1,640
1952	312	1,205	199	641	641	1,970	1,462	270	84.9	52.7	599	6.85	621
1953	.69	11.6	14.6	8.67	6.4	512	1,272	758	29.1	15.5	3.24	13.5	224
1954	1.45	1.54	3.01	3.05	5.5	108	37.2	416	530	40.4	229	1.70	115
1955	301	6.16	3.37	671	940	168	57.3	670	230	17.4	358	421	317
1956	764	9.18	8.05	4.48	31.7	9.50	90.9	146	18.4	320	19.4	.13	120
1957	.13	.32	1.66	1.58	6.82	61.9	66.3	154	271	334	57.1	193	95.8
1958	392	219	1,133	165	797	2,259	582	473	1,805	944	693	185	805
1959	35.9	87.5	11.6	134	459	478	771	403	209	88.6	26.9	97.1	231
1960	218	3.43	7.25	213	234	1,383	3,000	2,639	346	302	134	.62	708

## Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	720	772	659	2,010	23,380	82,920	113,400	29,750	164,700	544,500	102,600	121,900	1,187,000
1952	19,210	71,720	12,230	39,420	36,850	121,100	88,200	16,600	5,050	3,240	36,820	408	450,800
1953	55	691	896	545	2,260	31,470	75,700	46,580	1,730	954	199	806	161,900
1954	89	92	185	187	308	6,630	2,220	25,590	31,530	2,480	14,070	101	83,480
1955	18,530	366	207	41,250	52,210	10,340	3,410	41,210	13,690	1,070	22,050	25,050	229,400
1956	46,970	546	495	274	1,820	584	5,410	9,080	1,100	19,680	1,130	7.7	87,160
1957	79	19	102	95	379	3,810	3,950	9,410	16,100	20,510	3,510	11,460	69,350
1958	24,120	13,050	69,690	10,150	44,280	136,900	34,630	29,100	107,400	58,040	42,630	10,990	583,000
1959	2,080	5,210	714	8,230	25,490	29,400	45,890	24,780	12,410	5,450	1,650	5,730	167,100
1960	13,430	204	446	13,110	13,440	85,030	178,500	162,300	20,570	18,550	8,230	37	513,800

## Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30						Calendar year				
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff		
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet	
1950	-	-	-	-	-	-	-	-	585	7.09	423,700	-
1951	1210	23,900	July 14, 1951	4	1,640	1.46	19.88	1,187,000	1,780	21.57	1,288,000	-
1952	1240	7,100	Nov. 15, 1951	1.4	621	.554	7.55	450,800	481	5.85	349,300	-
1953	1280	5,880	Apr. 3, 1953	.2	224	.200	2.71	161,900	222	2.70	160,600	-
1954	1340	3,290	June 4, 1954	.2	115	.103	1.41	83,480	141	1.72	102,200	-
1955	1390	5,170	Feb. 22, 1955	2.1	317	.283	3.84	229,400	357	4.33	258,300	-
1956	1440	3,960	Oct. 10, 1955	.1	120	.107	1.46	87,160	54.1	.66	39,270	-
1957	1510	3,150	June 29, 1957	.1	95.8	.086	1.16	69,350	243	2.95	176,100	-
1958	1560	8,100	June 18, 1958	.4	805	.719	9.76	583,000	669	8.10	484,100	-
1959	1630	3,570	Mar. 5, 1959	.8	231	.208	2.82	167,100	239	2.90	173,200	-
1960	1710	16,200	Apr. 19, 1960	.3	708	.632	8.60	513,800	-	-	-	-



9085. Shiloh Branch near Marshall, Mo.

Location.--Lat 39°07'00", long 93°05'50", in NW¼ sec.15, T.50 N., R.20 W., on left bank 15 ft upstream from double culvert on State Highway 41, 0.8 mile upstream from unnamed tributary, 2.5 miles upstream from Salt branch, 3.6 miles upstream from mouth, and 5½ miles east of Marshall.

Drainage area.--2.87 sq mi.

Records available.--June 1952 to September 1960.

Gage.--Water-stage recorder and concrete control. Datum of gage is 677.39 ft above mean sea level, datum of 1929.

Average discharge.--8 years (1952-60), 1.20 cfs (869 acre-ft per year).

Extremes.--1952-60: Maximum discharge, 880 cfs July 15, 1958 (gage height, 7.04 ft), from rating curve extended above 150 cfs on basis of slope-area measurements at gage heights 5.64 and 6.92 ft; no flow for many days in each year.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	-	-	-	-	-	0	1.98	0.015	-
1952	-	-	-	-	-	-	-	-	-	0	0	0	-
1953	0	0.114	0.068	0.013	0.335	2.41	0.862	1.00	0.011	0	0	0	0.405
1954	0	0	0	0	.004	.23	.35	.98	1.05	.21	2.63	0	.458
1955	.17	0	0	.82	3.14	.28	.26	2.95	6.06	.88	2.72	2.72	1.65
1956	3.86	0	0	0	.02	0	.68	.32	.02	.35	0	0	.44
1957	0	0	0	.03	.03	.59	.18	.55	2.49	0	.12	1.54	.46
1958	2.34	.25	7.59	.61	6.95	8.34	.05	.21	4.04	10.9	.11	0	3.45
1959	.10	.49	0	.11	.71	2.78	2.04	.35	.02	.93	.05	2.91	.868
1960	2.20	0	0	.55	.87	5.19	4.01	5.63	1.33	2.79	0	0	1.89

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	-	-	-	-	-	-	-	-	-	0	122	9.91	-
1952	-	-	-	-	-	-	-	-	-	0	0	0	-
1953	0	6.8	5.4	0.8	19	148	51	62	0.7	0	0	0	294
1954	0	0	0	0	.2	14	21	59	62	13	162	0	331
1955	11	0	0	51	174	17	15	181	360	54	167	162	1,190
1956	238	0	0	0	1.2	0	41	19	1.0	22	0	0	322
1957	0	0	0	1.6	1.6	35	11	34	148	0	7.3	91	330
1958	144	15	467	38	386	513	2.8	15	240	673	6.7	0	2,500
1959	6.1	29	0	6.7	40	170	121	21	1.4	57	2.8	173	628
1960	135	0	0	34	50	319	239	346	79	172	0	0	1,370

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30							Calendar year			
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff		
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet	
1950												
1951												
1952	1240, 1390	-		-				-		-		-
1953	1280	145	Mar. 31, 1953	0	0.405	0.141	1.92	294	0.388	1.84		282
1954	1390	741	Aug. 1, 1954	0	.458	.160	2.16	331	.472	2.23		342
1955	1390	871	June 2, 1955	0	1.65	.575	7.78	1,190	1.96	9.26		1,420
1956	1440	336	Oct. 5, 1955	0	.44	.153	2.10	322	.12	.55		84
1957	1510	499	June 29, 1957	0	.46	.160	2.17	330	1.32	6.28		956
1958	1560	880	July 15, 1958	0	3.45	1.20	16.32	2,500	2.63	12.46		1,910
1959	1650	650	Sept. 23, 1959	0	.868	.502	4.10	628	1.01	4.76		728
1960	1710	653	May 6, 1960	0	1.89	.659	8.98	1,370	-	-		-

## MISSOURI RIVER MAIN STEM

9090. Missouri River at Boonville, Mo.

Location.--Lat 38°58'40", long 92°45'15", in sec.35, T.49 N., R.17 W., on downstream side of second pier from abutment of Missouri-Kansas-Texas Railroad Co. bridge at Boonville.

Drainage area.--505,700 sq mi, approximately.

Records available.--October 1925 to September 1960. Gage-height records collected at same site 1873-99 are contained in reports of Missouri River Commission; since 1900, in reports of U. S. Weather Bureau.

Gage.--Water-stage recorder. Datum of gage is 565.42 ft above mean sea level, datum of 1929. Prior to Oct. 1, 1928, chain gage at site 0.4 mile downstream at datum 3.14 ft lower. Oct. 1, 1928, to May 9, 1931, chain gage at site 50 ft upstream from present site at present datum. May 10, 1931, to Apr. 12, 1934, water-stage recorder at site 0.4 mile downstream at different datum.

Average discharge.--35 years (1925-60), 55,890 cfs (40,460,000 acre-ft per year).

Extremes.--1925-60: Maximum discharge, 550,000 cfs July 17, 1951; maximum gage height, 32.82 ft July 17, 1951; minimum discharge, about 1,800 cfs Jan. 10, 1940; minimum gage height, -0.85 ft Jan. 13, 1937.

Flood of June 12, 1844, reached a stage of 32.7 ft (discharge, about 710,000 cfs, computed by Corps of Engineers). Flood of June 6, 1903, reached a stage of 30.5 ft (discharge, about 612,000 cfs, computed by Corps of Engineers).

Remarks.--Flow partly regulated by many reservoirs above station. Records of water temperatures for the period May 1953 to February 1959 are published in reports of Geological Survey.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	64,490	45,130	18,840	27,460	37,340	62,390	135,900	128,800	208,600	299,700	114,400	41,800	107,200
1952	77,620	75,340	38,560	35,720	61,380	105,800	224,100	125,200	89,220	72,320	50,380	45,130	82,690
1953	36,320	38,770	22,540	20,190	35,500	59,900	68,180	75,290	82,090	60,530	39,410	36,680	47,960
1954	35,410	29,340	22,490	13,550	25,150	35,540	39,210	47,130	77,370	38,730	53,740	37,230	37,930
1955	46,300	24,000	18,200	19,640	34,390	44,510	39,670	43,350	49,810	45,840	32,530	36,550	36,080
1956	42,730	22,940	11,190	13,950	15,190	26,820	34,510	34,940	36,540	47,080	42,370	34,830	30,320
1957	32,010	19,480	13,000	12,230	14,910	16,550	29,800	53,000	73,290	61,850	40,750	42,800	34,220
1958	46,740	29,710	26,130	18,490	24,960	57,750	50,150	57,810	58,200	29,100	87,670	62,550	54,580
1959	47,300	36,780	18,080	17,010	38,190	54,640	62,350	84,420	69,480	54,410	51,710	50,150	48,730
1960	69,080	29,280	24,220	41,110	35,770	50,120	181,400	99,790	75,300	71,700	50,440	49,140	64,730

† Corrected.

Monthly and yearly discharge, in thousands of acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	3,965	2,685	1,146	1,689	2,074	3,636	8,086	7,920	12,290	18,430	7,036	6,436	77,590
1952	4,772	4,483	2,236	2,196	3,530	6,382	13,340	7,696	5,309	4,447	3,098	2,685	60,170
1953	2,233	2,307	1,386	1,241	1,972	3,683	4,057	4,630	4,885	3,722	2,423	2,183	34,720
1954	2,177	1,746	1,383	833.4	1,397	2,185	2,333	2,898	4,604	2,382	3,304	2,215	27,460
1955	2,847	1,428	1,119	1,207	1,910	2,737	2,361	2,666	2,964	2,696	2,000	2,175	26,110
1956	2,627	1,365	688.1	†857.9	873.5	1,649	2,053	2,148	2,174	2,895	2,605	2,072	22,010
1957	1,968	1,159	699.5	751.9	828.3	1,018	1,773	3,259	4,361	3,803	2,506	2,547	24,770
1958	2,874	1,768	1,606	1,137	1,384	3,551	2,964	3,554	3,463	7,937	5,391	3,722	39,370
1959	2,908	2,188	1,112	1,046	2,121	3,360	3,710	5,191	4,134	3,346	3,180	2,984	35,280
1960	4,247	1,742	1,489	2,528	2,057	3,082	10,800	6,136	4,481	4,409	3,101	2,924	47,000

† Corrected.

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	67,450	48,830,000
1951	1210	550,000	July 17, 1951	9,500	107,200	77,590,000	112,300	81,290,000
1952	1240	360,000	Apr. 27, 1952	12,700	82,890	60,170,000	69,040	50,130,000
1953	1280	150,000	May 8, 1953	14,800	47,960	34,720,000	47,100	34,100,000
1954	1340	132,000	June 5, 1954	6,720	37,930	27,460,000	38,050	27,550,000
1955	1390	128,000	(a)	10,800	36,060	26,110,000	35,080	25,400,000
1956	1440	89,200	July 8, 1956	6,950	30,320	22,010,000	29,280	21,250,000
1957	1510	145,000	June 20, 1957	6,500	34,220	24,770,000	37,420	27,100,000
1958	1560	252,000	July 22, 1958	11,100	54,380	39,370,000	54,330	39,330,000
1959	1630	175,000	June 2, 1959	8,200	48,730	35,280,000	50,480	36,550,000
1960	1710	332,000	Apr. 5, 1960	15,300	64,730	47,000,000	-	-

(a) Feb. 21, June 27, 1955.

## 9095. Moniteau Creek near Fayette, Mo.

Location.--Lat 39°07'15", long 92°33'40", in SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec.14, T.50 N., R.15 W., on right bank at upstream side of county highway bridge, 1 mile downstream from Hungry Mother Creek, 7 $\frac{1}{2}$  miles east of Fayette, and 15 miles upstream from mouth.

Drainage area.--81 sq mi, approximately.

Records available.--March 1948 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 607.93 ft above mean sea level, datum of 1929. Prior to Aug. 14, 1957, wire-weight gage at same site and datum.

Average discharge.--12 years (1948-60), 34.3 cfs (24,830 acre-ft per year).

Extremes.--1948-60: Maximum discharge, 4,180 cfs Oct. 5, 1955 (gage height, 19.47 ft); no flow at times in most years.

Maximum stage known, 22.9 ft, probably in April 1944, from information by local resident.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	0.07	0.12	0.27	0.83	131	166	90.9	13.7	90.9	67.1	57.3	50.8	55.1
1952	21.6	85.2	11.6	49.8	73.9	162	112	18.7	9.11	.89	23.3	.46	47.2
1953	0	.99	3.80	3.42	24.6	52.8	37.3	39.0	4.28	3.96	.84	0	14.2
1954	0	0	0	.003	.01	.06	9.73	57.2	33.9	0	5.66	.04	8.94
1955	6.77	0	.11	25.8	60.0	15.2	19.8	6.95	89.6	41.2	62.7	12.0	28.1
1956	91.6	.95	.95	.59	4.52	1.58	44.2	39.9	1.56	36.9	.28	0	18.7
1957	0	0	0	3.29	5.09	17.3	41.7	87.6	62.4	49.4	.34	.09	22.2
1958	18.3	4.04	37.4	4.59	57.1	56.9	18.8	36.3	65.3	280	12.9	.90	49.8
1959	3.24	14.5	1.05	10.6	130	129	65.3	13.0	.76	.29	.03	.16	30.0
1960	10.2	.09	3.65	14.3	17.3	109	149	104	24.9	68.1	.16	0	41.8

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	4.4	6.9	17	51	7,250	10,220	5,410	841	5,410	4,130	5,520	3,030	39,890
1952	1,330	5,070	714	5,060	4,250	9,980	6,680	1,150	542	551	4,300	28	34,290
1953	0	59	234	210	1,370	3,240	2,220	2,400	255	244	52	0	10,280
1954	0	0	0	.2	.8	3.8	579	3,520	2,020	0	348	2.2	6,470
1955	416	0	6.7	1,590	5,330	936	1,180	427	5,330	2,540	5,850	714	20,320
1956	5,630	56	57	36	249	97	2,630	2,450	93	2,270	17	0	13,580
1957	0	0	0	203	172	1,070	2,480	5,390	3,710	3,040	21	5.6	16,090
1958	1,130	240	2,300	282	3,170	3,620	1,120	2,230	3,890	17,210	794	53	36,040
1959	199	862	64	653	7,210	7,960	3,890	800	45	18	1.6	9.3	21,710
1960	625	5.6	224	876	994	6,700	8,880	6,380	1,480	4,190	10	0	30,360

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30							Calendar year			
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff		
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet	
1950	-	-	-	-	-	-	-	-	25.3	4.26	18,330	
1951	1210	2,510	Mar. 29, 1951	0	55.1	0.680	9.24	39,890	64.9	10.88	46,980	
1952	1240	2,400	Nov. 12, 1951	0	47.2	.583	7.95	34,290	37.8	6.36	27,470	
1953	1280	593	May 5, 1953	0	14.2	.175	2.38	10,280	13.8	2.32	9,990	
1954	1340	1,350	May 21, 1954	0	8.94	.110	1.49	6,470	9.52	1.59	6,900	
1955	1390	3,760	June 25, 1955	0	28.1	.347	4.71	20,320	35.4	5.93	25,640	
1956	1440	4,180	Oct. 5, 1955	0	18.7	.231	3.13	13,580	10.8	1.81	7,840	
1957	1510	2,520	July 27, 1957	0	22.2	.274	3.73	16,090	27.3	4.58	19,750	
1958	1560	3,370	July 15, 1958	0	49.8	.615	8.34	36,040	46.3	7.75	33,490	
1959	1630	2,920	Feb. 10, 1959	0	30.0	.370	5.03	21,710	29.6	4.96	21,440	
1960	1710	3,560	May 6, 1960	0	41.8	.516	7.02	30,360	-	-	-	

## PETITE SALINE CREEK BASIN

9100. Petite Saline Creek near Boonville, Mo.

Location.--Lat 38°55'00", long 92°39'20", in SW $\frac{1}{4}$ SE $\frac{1}{4}$  sec.15, T.48 N., R.16 W., on right bank 50 ft upstream from county highway bridge, half a mile downstream from Clarks Fork Creek, 7 miles southeast of Boonville, and 14 $\frac{1}{2}$  miles upstream from mouth.

Drainage area.--182 sq mi.

Records available.--March 1948 to September 1960.

Gage.--Water-stage recorder and wire-weight gage. Datum of gage is 573.40 ft above mean sea level, datum of 1929. Prior to July 26, 1952, wire-weight gage only at same site and datum.

Average discharge.--12 years (1948-60), 104 cfs (75,290 acre-ft per year).

Extremes.--1948-60: Maximum discharge, 6,120 cfs Oct. 21, 1949 (gage height, 23.50 ft); no flow for many days in 1953-54, 1956-57, 1960; minimum gage height, 2.24 ft July 30, 31, 1954.

Maximum stage known prior to 1949, 23.2 ft in June 1921, from information by local resident (discharge, 5,860 cfs).

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	2.80	2.94	2.02	4.51	349	497	297	154	528	524	272	277	241
1952	84.7	188	32.5	117	209	379	228	70.8	48.7	38.0	208	1.61	133
1953	.28	3.04	5.12	8.26	32.0	138	147	68.2	27.9	3.10	21.4	7.76	38.5
1954	.03	.04	.15	.10	.29	.25	12.6	60.0	109	4.34	41.5	3.79	19.4
1955	100	.38	.54	110	132	40.1	14.3	14.4	90.2	45.3	266	65.7	73.2
1956	294	1.97	1.62	1.41	3.43	2.29	28.2	54.8	31.9	171	36.8	.17	53.1
1957	.02	.27	.48	.10	1.61	15.9	87.5	149	37.0	39.7	8.69	.69	28.6
1958	10.7	5.19	52.1	6.90	143	205	35.1	149	320	424	106	101	130
1959	23.3	65.2	6.35	108	135	236	57.0	57.2	1.95	3.67	4.33	13.9	59.1
1960	62.3	1.61	2.37	14.5	22.5	236	323	312	9.62	27.9	.25	.003	84.6

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	172	175	124	277	19,400	30,570	17,680	9,480	31,400	32,240	16,740	16,470	174,700
1952	5,210	11,210	2,000	7,220	12,030	23,310	13,580	4,360	2,900	2,210	12,780	96	36,910
1953	17	181	515	508	1,770	6,480	8,750	4,190	1,860	190	1,520	462	27,840
1954	1.6	2.2	9.1	6.0	18	15	749	3,690	6,500	267	2,550	225	14,030
1955	6,160	22	33	6,770	7,350	2,460	851	888	5,370	2,780	16,370	3,910	52,960
1956	18,100	117	100	86	198	141	1,680	3,370	1,900	10,540	2,260	10	38,500
1957	1.2	16	30	6.0	89	981	5,210	9,140	2,200	2,440	534	41	20,690
1958	†659	309	3,210	424	7,970	12,840	2,090	9,150	19,050	26,100	6,510	6,050	94,140
1959	1,430	3,880	390	6,870	7,500	14,530	3,390	5,520	116	226	266	828	42,750
1960	3,830	96	146	891	1,290	14,530	19,200	19,150	572	1,720	15	.2	61,440

† Corrected.

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30						Calendar year			
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff	
		Discharge	Date				Inches	Acres-feet		Inches	Acres-feet
1950	-	-	-	-	-	-	-	128	9.57	92,770	-
1951	1210	5,520	June 29, 1951	1	241	1.32	18.01	174,700	266	19.87	192,700
1952	1240	2,740	Aug. 21, 22, 1952	.3	133	.731	10.00	86,910	109	8.14	79,000
1953	1280	1,610	Apr. 8, 1953	0	38.5	.212	2.86	27,840	37.8	2.81	27,340
1954	1340	1,480	June 2, 1954	0	19.4	.106	1.44	14,030	27.9	2.08	20,230
1955	1390	2,980	Aug. 31, 1955	.2	73.2	.402	5.46	52,960	69.9	6.70	65,070
1956	1440	3,980	Oct. 6, 1955	0	53.1	.292	3.95	38,500	27.9	2.08	20,230
1957	1510	1,560	May 26, 1957	0	28.6	.157	2.14	20,690	34.3	2.56	24,820
1958	1560	3,700	June 15, 1958	0	130	.714	9.68	94,140	132	9.84	95,660
1959	1630	3,360	Mar. 5, 1959	.2	59.1	.325	4.41	42,750	56.8	4.24	41,120
1960	1710	5,810	May 6, 1960	0	84.6	.465	6.33	61,440	-	-	-

9105. Moreau River near Jefferson City, Mo.

Location--Lat 38°30'25", long 92°15'20", in N $\frac{1}{4}$  sec. 4, T.43 N., R.12 W., on downstream side of right pier of bridge on U. S. Highway 54, 5 miles southwest of Jefferson City and 5 $\frac{1}{2}$  miles downstream from confluence of North and South Moreau Creeks.

Drainage area--531 sq mi.

Records available--December 1947 to September 1960 (discharge measurements only for October 1956 to September 1957).

Gage--Water-stage recorder. Datum of gage is 562.73 ft above mean sea level, datum of 1929. Prior to Aug. 17, 1958, wire-weight gage at same site and datum.

Average discharge--11 years (1948-56, 1957-60), 339 cfs (245,400 acre-ft per year).

Extremes--1947-56, 1957-60: Maximum discharge, 23,000 cfs June 23, 1948 (gage height, 27.0 ft, from floodmark), from rating curve extended above 16,000 cfs; minimum observed, 0.1 cfs Sept. 30, 1956 (gage height, 0.98 ft).

Flood in 1905 reached a stage of 38.20 ft; flood in 1943, 35.11 ft; and flood in 1929, 32.91 ft; from floodmarks and information by local resident.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	34.5	98.1	29.1	82.1	1,866	1,085	744	216	1,221	2,237	364	731	716
1952	743	745	234	386	688	567	483	96.4	13.2	15.5	417	13.0	365
1953	4.71	102	51.3	163	187	529	222	252	161	25.5	1.78	20.0	143
1954	.81	1.03	4.29	5.98	7.75	11.8	95.7	150	72.1	80.4	148	21.9	50.4
1955	229	16.7	58.3	266	599	410	119	163	142	116	13.3	45.6	179
1956	505	11.4	10.7	8.35	31.1	13.8	9.36	39.2	96.0	309	24.0	6.82	89.7
1957													
1958	14.9	20.9	74.3	48.0	537	1,099	351	342	1,215	1,346	455	80.0	465
1959	91.0	52.8	20.3	150	676	389	61.7	146	36.1	4.41	13.7	85.5	140
1960	975	38.3	100	146	267	800	910	909	82.8	89.7	6.03	1.35	362

Monthly and yearly mean discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	2,120	5,840	1,790	5,050	103,600	68,710	44,240	13,310	72,630	137,600	22,370	43,470	518,700
1952	45,660	44,320	14,370	23,710	39,570	34,850	28,750	5,930	787	954	25,630	772	265,300
1953	290	6,080	3,150	10,040	10,410	32,520	13,220	15,480	9,610	1,570	110	1,190	103,700
1954	50	61	264	368	431	731	5,690	9,250	4,290	4,940	9,110	1,300	36,480
1955	14,090	992	3,580	16,350	33,280	25,230	7,090	10,020	8,440	7,120	818	2,710	129,700
1956	31,080	676	660	513	1,790	851	557	2,410	5,710	18,990	1,470	406	65,110
1957													
1958	917	1,250	4,570	2,950	29,800	67,570	20,900	21,030	72,300	82,760	27,970	4,760	336,800
1959	5,600	3,140	1,250	9,210	37,570	23,900	3,670	8,950	2,150	271	842	5,080	101,600
1960	59,950	2,280	6,170	9,000	15,350	49,180	54,130	55,890	4,920	5,520	371	81	262,600

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30							Calendar year			
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff		
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet	
1950	-	-	July 7, 1951	-	716	-	-	-	476	12.19	344,800	
1951	1210	16,500	Oct. 7, 24, 1951	10	365	1.35	18.32	518,700	847	21.66	613,300	
1952	1240	8,200	Mar. 4, 1953	4.0	143	.687	9.37	265,300	235	6.02	170,500	
1953	1280	7,120	May 2, 1954	.3	50.4	.269	3.66	103,700	131	3.35	94,520	
1954	1340	2,790	Feb. 20, 1955	.2	179	.095	1.29	36,480	75.7	1.95	54,770	
1955	1390	11,800		.6		.337	4.60	129,700	198	5.07	143,500	
1956	1440	9,200	Oct. 6, 1955	.1	89.7	.169	2.29	65,110	-	-	-	
1957												
1958	1560	14,400	June 15, 1958	1.5	465	.876	11.88	336,800	470	12.00	340,000	
1959	1630	11,200	Feb. 10, 1959	1.7	140	.264	3.59	101,600	221	5.66	160,000	
1960	1710	15,600	May 7, 1960	.4	362	.682	9.27	262,800	-	-	-	

## 9110. Marais des Cygnes River at Melvern, Kans.

Location.--Lat 38°31'05", long 95°38'15", on west line of sec.3, T.18 S., R.16 E., on left bank near downstream side of highway bridge, half a mile north of Melvern, 2.1 miles upstream from Long Creek, and at mile 441.3.

Drainage area.--363 sq mi.

Records available.--September 1939 to September 1960. Prior to October 1948, published as Osage River at Melvern.

Gage.--Water-stage recorder. Datum of gage is 939.11 ft above mean sea level, unadjusted. Prior to Apr. 9, 1958, wire-weight gage at same site and datum.

Average discharge.--21 years (1939-60), 187 cfs (135,400 acre-ft per year).

Extremes.--1939-60: Maximum discharge, 68,500 cfs July 11, 1951 (gage height, 30.8 ft, from floodmarks), from rating curve extended above 19,000 cfs on basis of contracted-opening measurement of peak flow; no flow at times.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	105	9.12	12.0	12.4	35.4	41.7	89.9	459	719	4,206	220	1,934	658
1952	110	238	54.2	54.0	31.6	521	554	129	17.3	2.99	2.08	.40	143
1953	0	0	.60	.62	.86	3.36	3.25	11.2	2.04	.05	0	0	1.84
1954	0	0	0	0	0	.50	0	2.36	159	0	2.61	0	11.9
1955	.45	.32	0	0	.19	.66	4.58	52.6	15.7	9.18	44.1	0	10.8
1956	2.55	0	0	0	0	0	.05	11.8	3.77	1.57	0	0	1.66
1957	0	0	0	0	0	.18	306	699	581	65.6	1.37	75.8	144
1958	104	99.5	32.8	53.5	86.2	492	123	125	210	786	164	139	203
1959	91.8	159	58.0	56.9	126	105	250	156	14.4	75.1	16.1	3.53	90.5
1960	270	11.6	31.6	116	213	758	173	42.3	72.0	3.03	419	88.6	184

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	6,480	543	740	781	1,970	2,560	5,350	28,210	42,780	258,600	13,530	15,100	476,600
1952	6,750	14,140	3,330	3,320	1,810	32,050	32,940	7,940	1,030	184	128	24	103,600
1953	0	0	37	38	48	207	193	687	121	3.4	0	0	1,330
1954	0	0	0	0	0	31	.2	145	8,270	0	160	0	8,610
1955	27	19	0	0	11	41	272	3,240	936	565	2,710	0	7,820
1956	157	0	0	0	0	0	2.8	725	224	97	0	0	1,210
1957	0	0	0	0	0	11	18,220	43,010	34,580	4,030	84	4,510	104,400
1958	6,360	5,920	2,020	3,290	4,790	30,240	7,340	7,690	12,480	48,310	10,090	8,300	146,800
1959	5,640	9,480	2,340	3,500	6,980	6,430	14,860	9,600	859	4,620	993	210	65,510
1960	16,610	690	1,940	7,110	12,260	46,590	10,310	2,600	4,280	186	25,790	5,280	133,600

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	212	-	153,500
1951	1210	68,500	July 11, 1951	1.9	658	476,600	681	-	493,100
1952	1240	5,380	Mar. 10, 1952	0	143	103,600	109	-	79,460
1953	1280	142	May 19, 1953	0	1.84	1,330	1.79	-	1,300
1954	1340	1,630	June 2, 1954	0	11.9	8,610	12.0	-	8,650
1955	1390	1,210	Aug. 6, 1955	0	10.8	7,820	10.9	-	7,930
1956	1440	310	May 9, 1956	0	1.66	1,210	1.44	-	1,050
1957	1510	8,800	May 30, 1957	0	144	104,400	164	-	118,700
1958	1560	4,890	July 17, 1958	1.4	203	146,800	207	-	150,000
1959	1630	3,050	Nov. 17, 1958	0	90.5	65,510	93.0	-	67,290
1960	1710	7,330	Aug. 26, 1960	0	184	133,600	-	-	-

## 9115. Salt Creek near Lyndon, Kans.

Location.--Lat 38°36'40", long 95°38'20", in SW $\frac{1}{4}$  sec.34, T.16 S., R.16 E., at downstream side of highway bridge, 2 $\frac{1}{2}$  miles east of Lyndon and at mile 12.6.

Drainage area.--111 sq mi.

Records available.--September 1939 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 955.78 ft above mean sea level, datum of 1929. Prior to Nov. 25, 1957, wire-weight gage at same site and datum.

Average discharge.--21 years (1939-60), 58.7 cfs (42,500 acre-ft per year).

Extremes.--1939-60: Maximum discharge, 36,400 cfs July 11, 1951 (gage height, 17.0 ft, from floodmarks), from rating curve extended above 6,000 cfs on basis of slope-area measurement of peak flow; no flow at times.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	16.9	2.32	2.25	3.66	12.7	22.2	20.6	189	342	1,230	199	442	208
1952	98.2	37.2	15.1	18.6	11.1	135	172	38.1	4.32	.18	0	0	44.2
1953	0	0	0	0	.02	3.92	.17	6.94	.01	0	0	0	.94
1954	0	0	0	0	0	0	0	.39	57.1	0	8.01	0	5.41
1955	2.87	.13	0	0	8.89	.61	1.84	5.54	.52	.88	2.13	.19	1.91
1956	.15	0	0	0	0	0	0	0	1.86	2.05	.006	0	.34
1957	0	0	0	0	0	0	68.2	325	246	35.5	.10	22.2	58.2
1958	3.61	5.59	2.89	7.73	26.3	162	41.2	54.7	25.3	185	40.3	47.0	50.5
1959	8.13	70.8	11.4	18.5	38.0	28.3	71.1	9.99	1.44	41.2	15.9	3.40	26.3
1960	82.3	3.82	10.8	26.0	62.9	215	52.0	11.9	7.48	.29	50.1	.69	43.8

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1,040	138	138	225	705	1,360	1,220	11,620	20,330	75,610	12,210	26,300	150,900
1952	6,040	2,210	931	1,140	638	8,290	10,230	2,340	257	11	0	0	32,090
1953	0	0	0	0	1.2	241	10	426	.8	0	0	0	679
1954	0	0	0	0	0	0	0	24	3,400	0	492	0	3,920
1955	177	7.6	0	0	494	38	98	341	31	54	131	12	1,380
1956	9.5	0	0	0	0	0	0	0	111	128	.4	0	247
1957	0	0	0	0	0	0	4,060	19,990	14,610	2,180	6.1	1,320	42,170
1958	222	332	178	475	1,460	9,950	2,450	3,360	1,500	11,380	2,480	2,800	36,590
1959	500	4,210	703	1,140	2,110	1,740	4,230	614	86	2,540	976	202	19,050
1960	5,060	228	666	1,600	3,620	13,230	3,100	732	445	18	3,080	41	31,820

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean
		Discharge	Date				
1950	-	-	-	-	-	-	54.3
1951	1210	36,400	July 11, 1951	0.6	208	150,900	219
1952	1240	2,580	Mar. 10, 1952	0	44.2	32,090	31.6
1953	1280	370	Mar. 31, 1953	0	.94	679	.94
1954	1340	1,240	June 2, 1954	0	5.41	3,920	5.66
1955	1390	335	Feb. 18, 1955	0	1.91	1,380	1.67
1956	1440	108	June 18, 1956	0	.34	247	.33
1957	1510	8,100	May 29, 1957	0	58.2	42,170	59.3
1958	1560	2,180	Aug. 11, 1958	.1	50.5	36,590	57.0
1959	1630	2,690	Nov. 17, 1958	.3	26.3	19,050	27.1
1960	1710	3,190	Oct. 4, 1959	0	43.8	31,820	-

## 9119. Dragoon Creek near Burlingame, Kans.

Location.--Lat 38°42'30", long 95°50'20", in SE $\frac{1}{4}$  sec.27, T.15 S., R.14 E., 110 ft downstream from city of Burlingame pumping station and dam, 0.2 mile downstream from bridge on U. S. Highway 56, 2 miles downstream from Plum Creek, and 3 miles south of Burlingame.

Drainage area.--114 sq mi.

Records available.--March to September 1960.

Gage.--Water-stage recorder. Datum of gage is 1,016.06 ft above mean sea level, datum of 1929. Prior to June 8, 1960, wire-weight gage at bridge 180 ft upstream at same datum.

Extremes.--March to September 1960: Maximum discharge, 5,300 cfs Mar. 27, 1960 (gage height, 18.0 ft, from graph based on gage readings); no flow at times.  
Maximum stage known since at least 1900, 23.4 ft June 26, 1946, from floodmarks and information by local newspaper and residents.

Remarks.--Diversions above station for municipal supply of Burlingame.

## Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1960	-	-	-	-	-	276	65.1	17.4	45.6	5.48	55.2	24.0	-

## Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1960	-	-	-	-	-	16,960	3,870	1,070	2,710	337	3,400	1,430	-

## 9120. Switzler Creek at Burlingame, Kans.

Location.--Lat 38°45'13", long 95°49'43", on south line of sec.11, T.15 S., R.14 E., on right bank at upstream side of bridge on U. S. Highway 56 in Burlingame, 4.0 miles upstream from mouth.

Drainage area.--26.3 sq mi.

Records available.--August 1954 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 1,036.86 ft above mean sea level, datum of 1929.

Average discharge.--6 years (1954-60), 7.33 cfs (5,310 acre-ft per year).

Extremes.--1954-60: Maximum discharge, 4,800 cfs July 20, 1958 (gage height, 18.65 ft); no flow at times.

Flood of June 30, 1945, reached a stage of 22.3 ft, from floodmark, the highest stage known since at least 1903. Flood of June 19, 1946, was about 2 ft lower and those of July 10, 12, 1951, were about 3.5 ft lower, from information by local newspaper and residents.

Remarks.--Flow affected by detention reservoirs and watershed treatment practices calculated to minimize surface runoff.

## Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1954	-	-	-	-	-	-	-	-	-	-	-	0.007	-
1955	0.07	0	0.01	0	1.18	0.006	0	2.14	0.03	0.41	0.003	0	0.32
1956	.34	0	0	0	.003	0	0	0	0	.02	.10	0	.04
1957	.01	.02	.0003	0	.02	.07	10.9	11.7	31.3	14.6	0	1.44	5.83
1958	4.32	4.19	1.13	3.44	10.4	35.9	60.3	7.56	22.7	81.9	3.40	10.5	16.1
1959	20.2	17.7	2.62	5.07	8.61	12.9	16.4	10.3	3.43	12.5	.46	.03	9.19
1960	17.8	2.04	3.50	11.7	19.9	66.0	10.4	3.16	10.5	1.20	2.92	.08	12.5

## Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1954	-	-	-	-	-	-	-	-	-	-	-	0.4	-
1955	4.6	0	0.6	0	65	0.4	0	132	1.8	25	0.2	0	230
1956	21	0	0	0	.2	0	0	0	0	1.0	6.1	0	28
1957	.6	1.4	.2	0	1.4	4.6	647	719	1,860	898	0	86	4,220
1958	266	249	69	211	579	2,210	359	465	1,350	5,040	209	626	11,630
1959	1,240	1,050	161	312	478	794	976	631	204	771	28	1.6	6,650
1960	1,100	121	215	719	1,140	4,060	618	194	623	74	179	4.8	9,050

## Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year			
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet		
		Discharge	Date							
1954	1390	-	-	-	-	-	-	-	-	-
1955	1390	124	May 26, 1955	0	0.32	230	0.34	245	-	-
1956	1440	25	Oct. 6, 1955	0	.04	28	.01	9.5	-	-
1957	1510	966	July 10, 1957	0	5.83	4,220	6.63	4,800	-	-
1958	1560	4,800	July 20, 1958	0	16.1	11,630	18.7	13,500	-	-
1959	1630	1,460	Oct. 7, 1958	0	9.19	6,650	7.77	6,650	-	-
1960	1710	1,110	Mar. 26, 1960	0	12.5	9,050	-	-	-	-



9125. Hundred and Ten Mile Creek near Quenemo, Kans.

Location.--Lat 38°38'00", long 95°31'40". in NE $\frac{1}{4}$  sec.28, T.16 S., R.17 E., on left bank 50 ft upstream from highway bridge, 2.7 miles upstream from mouth, 3 $\frac{1}{2}$  miles north of Quenemo, and 4.8 miles downstream from Dragon Creek.

Drainage area.--321 sq mi.

Records available.--September 1939 to September 1960. Prior to October 1941, published as Dragon Creek near Quenemo.

Gage.--Water-stage recorder. Datum of gage is 908.77 ft above mean sea level, datum of 1929. Prior to Sept. 5, 1940, wire-weight gage and Sept. 5, 1940, to Aug. 3, 1959, water-stage recorder, at site 3.9 miles upstream at datum 14.00 ft higher. Auxiliary gages, generally wire-weight, have been operated to indicate slope since Oct. 1, 1951, on Marais des Cygnes River near Pomona or at present base gage site or since Aug. 17, 1959, at Lomax 2 miles downstream from present base gage.

Average discharge.--21 years (1939-60), 170 cfs (123,100 acre-ft per year).

Extremes.--1939-60: Maximum discharge, 38,600 cfs July 11, 1951 (gage height, 28.47 ft, site and datum then in use), from rating curve extended above 20,000 cfs on basis of slope-area measurement of peak flow; no flow at times in 1952-57, 1960.

Maximum stage known since at least 1919, that of July 11, 1951, from information by local resident.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	86.7	11.8	9.37	10.2	30.6	62.8	79.0	495	977	3,096	136	1,331	530
1952	189	114	50.7	51.3	38.5	444	533	102	11.7	2.14	3.36	.16	128
1953	.07	.33	.71	.68	.69	6.84	5.83	48.7	1.22	.07	0	0	5.51
1954	0	0	0	.02	0	.01	.03	5.04	244	.02	37.8	.33	23.7
1955	8.85	.21	0	.14	32.7	1.19	5.75	41.2	3.49	2.11	2.75	0	8.06
1956	.01	0	0	.05	.04	0	6.54	6.45	10.9	19.6	.06	0	3.65
1957	0	0	0	0	0	0	129	337	448	347	.96	14.8	107
1958	135	73.6	27.2	38.9	141	457	100	125	383	795	218	234	228
1959	172	223	40.4	60.7	147	146	242	124	17.8	160	7.67	3.95	112
1960	181	13.4	39.4	95.7	222	746	242	56.2	96.0	11.1	77.6	22.3	150

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	5,330	705	576	629	1,700	3,860	4,700	30,460	58,150	190,400	8,350	79,200	384,100
1952	11,630	6,810	3,120	3,160	2,220	27,280	31,710	6,270	693	132	207	9.3	93,240
1953	4.6	20	44	42	38	420	347	3,000	72	4.4	0	0	3,990
1954	0	0	0	1.0	0	.6	2.0	310	14,530	1,42,330	19	17,190	17,190
1955	544	13	0	8.8	1,810	73	342	2,530	208	130	169	0	5,830
1956	.8	0	0	2.8	2.2	0	389	397	647	1,210	3.8	0	2,650
1957	0	0	0	0	0	0	7,680	20,690	26,690	21,310	59	882	77,310
1958	8,280	4,380	1,670	2,390	7,830	28,120	5,970	7,670	22,810	48,950	13,400	13,920	165,400
1959	10,580	13,250	2,480	3,730	8,150	8,990	14,370	7,630	1,060	9,850	471	234	80,800
1960	11,110	799	2,420	5,880	12,780	45,850	14,400	3,460	5,710	681	4,770	1,330	109,200

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	156	112,700
1951	1210	38,600	July 11, 1951	3.0	530	384,100	551	399,000
1952	1240	4,650	Mar. 10, 1952	.1	128	93,240	98.8	71,750
1953	1280	1,060	May 17, 1953	0	5.51	3,990	5.42	3,920
1954	1340	6,140	June 2, 1954	0	23.7	17,190	24.5	17,750
1955	1390	642	May 26, 1955	0	8.06	5,830	7.29	5,270
1956	1440	495	June 18, 1956	0	3.65	2,650	3.65	2,650
1957	1510	10,300	July 10, 1957	0	107	77,310	127	91,640
1958	1560	7,870	Aug. 11, 1958	.1	228	165,400	245	177,400
1959	1630	5,330	Nov. 17, 1958	1.1	112	80,800	95.1	68,810
1960	1710	5,550	Mar. 27, 1960	0	150	109,200	-	-

9135. Marais des Cygnes River near Ottawa, Kans.

Location.--Lat 38°37', long 95°15', in NE $\frac{1}{4}$  sec. 6, T.17 S., R.20 E., on right bank 100 ft upstream from East Seventh Street Bridge, half a mile east of Ottawa city limits, three-quarters of a mile downstream from Skunk Creek, and at mile 398.0.

Drainage area.--1,250 sq mi, approximately.

Records available.--August 1902 to October 1905, October 1918 to September 1960. Published as Osage River at Ottawa 1902-5, and as Osage River near Ottawa 1918-47.

Gage.--Water-stage recorder. Datum of gage is 858.15 ft above mean sea level, datum of 1929. Aug. 26, 1902, to Oct. 31, 1905, wire-weight, staff, or chain gages at Main Street Bridge in Ottawa  $1\frac{1}{2}$  miles upstream at different datums.

Average discharge.--44 years (1902-5, 1919-60), 605 cfs (438,000 acre-ft per year).

Extremes.--1902-5, 1918-60: Maximum discharge, 142,000 cfs July 11, 1951 (gage height, 42.50 ft), from rating curve extended above 44,000 cfs on basis of slope-area measurement of peak flow; no flow at times in 1920, 1930-34, 1936-37, 1939-41.

Flood of June 13 or 14, 1844, reached a stage of about  $1\frac{1}{2}$  ft lower than that in 1951, according to information reported in "Climate of Kansas - 1948" relative to 1928 flood. From the same information the flood in 1951 is the highest known since Ottawa was settled (about 1864).

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	222	46.4	42.1	44.5	144	272	311	1,887	3,184	13,580	846	4,581	2,113
1952	842	552	219	226	173	2,119	1,752	465	73.5	12.8	47.1	1.89	542
1953	1.72	4.74	4.74	4.82	7.59	31.2	95.3	261	11.4	3.41	6.01	2.06	36.5
1954	1.41	1.35	1.13	1.09	2.85	4.76	13.6	93.6	596	2,261	148	21.2	73.6
1955	71.7	2.06	2.09	16.1	241	49.9	58.7	325	36.8	55.0	27.4	32.3	75.7
1956	91.8	1.11	1.29	1.13	2.76	1.88	9.52	69.4	69.0	58.5	2.78	1.13	26.0
1957	1.16	1.79	1.32	1.38	1.58	9.59	773	1,695	1,567	860	9.21	366	442
1958	269	214	101	184	357	1,713	520	552	987	2,745	939	662	775
1959	336	796	170	222	445	1,451	874	374	68.7	373	80.1	62.9	353
1960	1,266	55.6	102	272	684	2,544	747	218	194	34.3	614	127	574

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	13,650	2,760	2,590	2,730	8,010	16,720	18,500	115,400	189,500	835,200	52,050	272,600	1,530,000
1952	51,800	32,880	13,490	13,880	9,950	130,300	104,200	28,580	4,370	788	2,890	113	393,200
1953	106	282	291	296	421	1,920	5,670	16,040	679	209	370	123	26,410
1954	87	80	69	67	158	293	807	5,750	35,450	139	9,100	1,260	53,260
1955	4,410	122	129	989	13,360	3,070	3,490	20,010	2,190	3,380	1,680	1,920	54,770
1956	5,640	66	79	70	158	115	567	4,270	4,100	3,600	171	67	18,900
1957	71	107	81	85	75	590	45,980	104,200	93,260	52,900	568	21,780	319,700
1958	16,530	12,710	6,180	11,330	19,840	105,300	30,920	33,960	58,730	168,800	57,700	39,410	561,400
1959	20,840	47,380	10,460	13,630	24,730	27,740	51,990	23,020	4,090	22,960	4,930	3,750	255,300
1960	77,860	3,310	6,240	16,720	39,330	156,400	44,480	13,410	11,540	2,110	37,740	7,570	416,700

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	768	556,300
1951	1210	142,000	July 11, 1951	26	2,113	1,530,000	2,222	1,609,000
1952	1240	12,000	Mar. 10, 1952	.6	542	393,200	407	295,800
1953	1280	2,690	May 27, 1953	.2	36.5	26,410	35.9	25,960
1954	1340	5,660	June 3, 1954	.6	73.6	53,260	79.7	57,680
1955	1390	5,240	May 28, 1955	1.0	75.7	54,770	77.2	55,890
1956	1440	1,590	Oct. 8, 1955	.8	28.0	18,900	18.4	13,380
1957	1510	11,200	May 19, 1957	.8	442	319,700	490	354,900
1958	1560	9,130	July 18, 1958	6.7	775	561,400	835	604,500
1959	1630	9,170	Nov. 18, 1958	.8	353	255,300	365	264,200
1960	1710	12,200	Mar. 27, 1960	.5	574	416,700	-	-

## 9140. Pottawatomie Creek near Garnett, Kans.

Location.--Lat 38°20', long 95°15', SW  $\frac{1}{4}$  sec.6, T.20 S., R.20 E., at upstream side of bridge on U. S. Highway 59, 0.2 mile downstream from confluence of North Pottawatomie and Cedar Creeks, 0.4 mile upstream from The Atchison, Topeka and Santa Fe Railway Co. bridge, 4 miles north of Garnett, and at mile 40.7.

Drainage area.--334 sq mi.

Records available.--October 1939 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 873.23 ft above mean sea level, datum of 1929. Prior to Mar. 27, 1952, wire-weight gage and Mar. 27, 1952, to Jan. 17, 1958, water-stage recorder (high water only) and wire-weight gage, at site 50 ft upstream at present datum. Jan. 18, 1958, to May 14, 1958, wire-weight gage at present site and datum.

Average discharge.--21 years (1939-60), 209 cfs (151,300 acre-ft per year).

Extremes.--1939-60: Maximum discharge, 45,300 cfs July 11, 1951 (gage height, 32.30 ft, from floodmarks), from rating curve extended above 14,000 cfs on basis of contracted-opening measurement of peak flow; no flow at times in most years.

Flood of Nov. 17, 1928, reached a stage of approximately 32.2 ft, the highest then since at least 1887, from information by local residents.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	4.3	2.6	2.15	2.2	27.1	37.5	146	528	1,483	2,824	475	1,415	581
1952	147	206	40.1	62.3	62.4	776	400	33.4	1.95	.70	10.2	.27	145
1953	.10	.15	.14	.09	.10	87.9	167	57.8	1.06	.13	.04	.05	26.3
1954	.05	.11	.15	.09	.01	.08	66.7	169	206	1.09	7.74	0	37.4
1955	90.2	1.63	.66	44.8	188	79.4	50.9	272	55.2	11.0	.05	220	83.7
1956	185	2.51	1.00	.70	13.2	2.41	2.46	16.1	66.0	3.58	.04	0	24.5
1957	0	0	0	0	0	24.2	265	455	286	8.01	.05	.17	86.7
1958	138	25.2	14.8	29.9	56.0	649	232	508	517	785	28.0	145	263
1959	2.76	25.6	6.14	21.6	50.9	58.3	245	14.6	28.2	157	51.4	3.65	55.1
1960	583	12.6	11.7	44.1	198	671	289	192	15.0	1.33	206	9.16	187

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	262	155	132	135	1,510	2,310	8,670	32,440	88,250	173,600	29,230	84,210	420,900
1952	9,020	12,270	2,460	3,830	3,590	47,740	23,830	2,050	116	43	628	16	105,600
1953	6.3	8.9	8.7	5.8	5.6	5,400	9,940	3,560	63	7.9	2.2	3.0	19,010
1954	2.8	6.5	9.1	5.4	.8	4.8	3,970	10,370	12,260	5.8	476	0	27,110
1955	5,550	97	41	2,750	10,420	4,880	3,030	16,750	3,280	676	3.2	13,080	60,560
1956	11,360	149	61	43	761	148	147	990	3,930	220	2.2	0	17,810
1957	0	0	0	0	0	1,490	15,780	28,000	17,010	492	3.0	10	62,780
1958	8,470	1,500	910	1,840	3,110	39,880	13,780	31,220	30,780	48,260	1,720	8,600	190,100
1959	170	1,520	378	1,330	2,820	3,460	14,590	896	1,680	9,650	3,160	217	39,870
1960	35,870	750	720	2,710	11,370	41,230	17,170	11,830	892	82	12,650	545	135,800

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	217	157,200
1951	1210	45,300	July 11, 1951	0.8	581	420,900	613	444,100
1952	1240	5,780	Mar. 10, 1952	.1	145	105,600	113	81,870
1953	1280	3,060	Mar. 31, 1953	0	26.3	19,010	26.2	19,010
1954	1340	4,070	May 2, 1954	0	37.4	27,110	45.3	32,780
1955	1390	4,650	May 26, 1955	0	83.7	60,560	91.8	66,440
1956	1440	3,450	Oct. 5, 1955	0	24.5	17,810	8.59	6,240
1957	1510	9,150	May 17, 1957	0	86.7	62,780	102	73,660
1958	1560	12,900	May 24, 1958	0	263	190,100	250	181,300
1959	1630	4,110	Apr. 8, 1959	.1	55.1	39,870	104	75,140
1960	1710	9,760	Oct. 5, 1959	.5	187	135,800	-	-

9160. Marais des Cygnes River at Trading Post, Kans.

Location.--Lat 38°15', long 94°41', in NE $\frac{1}{4}$  sec. 5, T.21 S., R.25 E., near center of stream on downstream side of bridge on U. S. Highway 69 at Trading Post, 1 mile upstream from Big Sugar Creek and at mile 316.0.

Drainage area.--2,880 sq mi (revised), approximately.

Records available.--October 1928 to September 1958. Prior to October 1947, published as Osage River at Trading Post. Records for August 1921 to December 1923, published in WSP 526, 546, 566, 586, and 701, have been found to be unreliable and should not be used.

Gage.--Water-stage recorder. Datum of gage is 761.61 ft above mean sea level, datum of 1929. Prior to Feb. 4, 1935, chain gage and Feb. 5, 1935, to Aug. 21, 1951, water-stage recorder, at site 200 ft downstream at same datum. Aug. 22, 1951, to May 27, 1952, wire-weight gage at present site and datum. Oct. 1, 1951, to Sept. 30, 1958, auxiliary wire-weight gage 16.1 miles upstream.

Average discharge.--30 years (1928-58), 1,686 cfs (1,221,000 acre-ft per year).

Extremes.--1928-58: Maximum discharge, 148,000 cfs July 14, 1951 (gage height, 38.12 ft, from floodmark in gage house), from rating curve extended above 110,000 cfs on basis of velocity-area study; no flow at times in many years.

Remarks.--Stage-discharge relation affected by undetermined amounts of backwater from Big Sugar Creek for some days.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	325	67.6	72.6	79.8	238	647	1,510	4,204	4,441	31,490	2,352	15,060	5,489
1952	2,230	2,194	575	671	911	6,646	5,379	1,017	757	90.3	497	21.4	1,750
1953	2.11	10.2	17.1	12.0	17.6	226	1,336	1,421	61.8	7.30	6.13	2.39	261
1954	.35	2.67	2.97	2.40	6.90	13.3	180	1,485	1,801	4.88	492	7.96	334
1955	879	24.9	9.12	481	1,531	499	408	2,532	1,197	990	30.4	898	786
1956	1,136	11.5	12.5	11.5	96.2	28.1	37.7	177	433	411	47.8	.92	202
1957	0	0	2.48	2.61	4.70	113	1,662	2,612	2,797	2,505	33.6	685	871
1958	582	446	320	447	916	4,845	2,365	1,797	2,816	9,970	3,115	1,578	2,453
1959													
1960													

Monthly and yearly discharge, in thousands of acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	19.98	4.02	4.46	4.91	13.22	39.8	89.83	258.5	561.8	1,956	144.6	896.2	3,973
1952	137.1	130.5	35.38	41.28	52.38	408.7	320.1	62.55	45.02	5.55	30.57	1.27	1,270
1953	.130	.609	1.05	.740	.976	13.92	79.48	87.37	3.68	.449	.377	.142	188.9
1954	.021	.159	.182	.148	.383	.815	10.73	91.31	107.1	.300	30.26	.473	241.9
1955	54.07	1.48	.561	29.58	85.01	30.65	24.29	155.7	71.2	60.87	1.87	53.43	568.7
1956	69.82	.682	.766	.710	5.53	1.73	2.24	10.88	25.78	25.29	2.84	.055	146.4
1957	0	0	.151	.160	.261	6.82	98.89	160.8	185.4	154	2.06	40.78	630.2
1958	35.82	26.54	19.7	27.5	50.89	297.9	140.7	110.5	167.6	613	191.5	93.9	1,776
1959													
1960													

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	1,903	1,377,000
1951	1210	148,000	July 14, 1951	36	5,489	3,973,000	5,868	4,248,000
1952	1240	20,400	Mar. 14, 1952	3.0	1,750	1,270,000	1,335	969,200
1953	1280	7,590	May 28, 1953	0	261	188,900	259	187,500
1954	1340	12,500	May 3, 1954	0	334	241,900	411	297,600
1955	1390	16,100	May 29, 1955	.2	786	568,700	806	583,900
1956	1440	10,000	Oct. 7, 1955	0	202	146,400	104	75,310
1957	1510	14,700	July 13, 1957	0	871	630,200	984	712,100
1958	1560	20,400	July 22, 1958	12	2,453	1,776,000	-	-
1959								
1960								

## 9165. Big Sugar Creek at Farlinville, Kans.

Location.--Lat 38°14'07", long 94°51'13", in SE $\frac{1}{4}$  sec.11, T.21 S., R.23 E., on right bank at downstream side of bridge on State Highway 7 at Farlinville, 5.2 miles upstream from Richland Creek, 14.0 miles upstream from Little Sugar Creek, and 21.1 miles upstream from mouth.

Drainage area.--198 sq mi.

Records available.--February 1929 to June 1932, November 1948 to September 1958, July 1959 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 784.25 ft above mean sea level, datum of 1929. Feb. 21, 1929, to June 30, 1932, chain gage at site 100 ft downstream at datum 0.72 ft higher. Nov. 8, 1948, to June 2, 1952, wire-weight gage and June 3, 1952, to Sept. 30, 1958, water-stage recorder, at site 100 ft downstream at present datum.

Average discharge.--12 years (1929-31, 1949-58, 1959-60), 117 cfs (84,700 acre-ft per year).

Extremes.--1929-32, 1948-60: Maximum discharge, 24,000 cfs Sept. 13, 1951 (gage height, 29.2 ft, from floodmarks), from rating curve extended above 10,000 cfs on basis of contracted-opening measurement of peak flow; no flow at times in 1929-31, 1952-57, 1959. Maximum stage known since at least 1875, about 31 ft (present datum) in 1898, from information by local resident. Flood of Nov. 17, 1928, reached a stage of about 30 ft (present datum), from floodmarks.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	2.2	1.6	1.24	1.92	34.2	32.3	149	236	1,053	1,944	92.2	1,955	458
1952	254	355	48.6	114	94.7	581	258	30.6	2.45	6.75	.45	.18	145
1953	0	0	0.15	.20	.22	4.16	47.3	141	4.38	.64	.09	0	16.7
1954	0	0	0	.01	.04	26.4	379	57.2	7.61	.23	0	0	39.7
1955	46.1	1.20	.36	75.2	181	171	50.0	267	108	132	.45	358	115
1956	139	3.65	2.37	1.66	17.3	5.94	3.68	19.3	59.5	20.5	.45	0	22.9
1957	0	0	0	0	0	13.4	40.9	252	199	18.4	.35	10.6	44.7
1958	54.1	58.3	61.5	92.2	116	610	328	195	173	495	12.1	10.3	185
1959	-	-	-	-	-	-	-	-	-	2.94	1.26	1.65	-
1960	159	6.87	5.01	33.3	131	404	533	334	40.6	12.3	2.18	.75	139

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	137	97	76	118	1,900	1,980	8,860	14,510	62,650	119,500	5,670	116,300	331,800
1952	15,600	21,020	2,870	7,000	5,440	35,740	15,320	1,880	146	415	27	11	105,500
1953	0	0	9.5	12	12	258	2,810	8,680	260	39	5.4	0	12,080
1954	0	0	0	0	.6	2.6	1,570	23,310	3,400	14	468	0	28,760
1955	2,830	71	22	4,620	10,050	10,490	2,970	16,390	6,430	8,110	27	21,320	85,330
1956	8,550	217	146	1,020	993	365	219	1,190	3,540	1,260	27	0	16,610
1957	0	0	0	0	0	823	2,430	15,510	11,840	1,130	22	629	32,380
1958	3,330	3,470	3,780	5,670	6,460	37,510	19,550	11,990	10,310	30,420	744	611	133,800
1959	-	-	-	-	-	-	-	-	-	180	77	98	-
1960	9,780	409	308	2,050	7,540	24,820	31,730	20,560	2,420	758	134	45	100,600

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	150	108,700
1951	1210,1440	24,000	Sept. 13, 1951	0.7	458	331,800	512	371,000
1952	1240	5,250	Mar. 10, 1952	0	145	105,500	90.9	65,990
1953	1280	3,530	Mar. 23, 1953	0	16.7	12,080	16.7	12,070
1954	1340	14,800	May 2, 1954	0	39.7	28,760	43.8	31,890
1955	1390	6,020	Sept. 27, 1955	0	115	85,330	123	89,320
1956	1440	3,030	Oct. 5, 1955	0	22.9	16,610	10.6	7,700
1957	1510	4,990	May 17, 1957	0	44.7	32,380	59.3	42,960
1958	1560	6,080	July 17, 1958	.5	185	133,800	-	-
1959	1630	-	-	-	-	-	-	-
1960	1710	6,610	Apr. 30, 1960	.2	139	100,600	-	-

## 9166. Marais des Cygnes River near Kansas-Missouri State line, Kans.

Location.--Lat 38°13'21", long 94°40'04", in NE $\frac{1}{4}$  NW $\frac{1}{4}$  sec.16, T.21 S., R.25 E., on right bank 1.7 miles downstream from Big Sugar Creek, 6.8 miles upstream from Kansas-Missouri State line, and at mile 313.5.

Drainage area.--3,230 sq mi, approximately.

Records available.--October 1958 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 757.06 ft above mean sea level, datum of 1929. Prior to Jan. 15, 1959, wire-weight gage 6.8 miles downstream at datum 15.62 ft lower.

Extremes.--1958-60: Maximum discharge, 17,500 cfs Mar. 31, 1960 (gage height, 26.75 ft); minimum, 3.4 cfs Sept. 20, 21, 1959.

Flood of July 14, 1951, reached a stage of 41.2 ft, from floodmark (discharge, 148,000 cfs, from rating curve extended above 110,000 cfs on basis of velocity-area study). Flood of Nov. 18, 1928, reached a stage 3.7 ft lower (discharge, 106,000 cfs).

Remarks.--Natural flow of stream affected by retention of overbank flow in wildlife refuge ponds (capacity, 5,500 acre-ft) and by numerous small diversions for irrigation above station.

Monthly and yearly mean discharge, in cubic feet per second, of Marais des Cygnes River near Kansas-Missouri State line, Kans.

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1959	389	892	253	336	938	1,124	2,327	1,418	163	861	224	113	750
1960	3,011	136	163	506	1,749	5,086	3,950	3,075	433	158	692	375	1,615

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1959	23,930	53,090	15,550	20,670	52,080	69,130	138,400	87,200	9,710	52,910	13,750	6,730	543,200
1960	185,100	8,080	10,050	31,140	100,600	312,700	235,100	189,100	25,790	9,730	42,520	22,320	1,172,000

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1959	1630	10,900	May 20, 1959	3.6	750	543,200	903	653,800	
1960	1710	17,500	Mar. 31, 1960	7.5	1,615	1,172,000	-	-	

9170. Little Osage River at Fulton, Kans.

Location.--Lat 38°01'20", long 94°42'50", on east line of sec.25, T.23 S., R.24 E., on right bank at downstream side of bridge on U. S. Highway 69, three-quarters of a mile north of Fulton.

Drainage area.--295 sq mi.

Records available.--November 1948 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 776.37 ft above mean sea level, datum of 1929. Prior to May 28, 1952, wire-weight gage at same site and datum.

Average discharge.--11 years (1949-60), 185 cfs (133,900 acre-ft per year).

Extremes.--1948-60: Maximum discharge, 18,200 cfs May 2, 1954 (gage height, 28.93 ft); no flow at times in 1949, 1952-57, 1959.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	7.51	6.84	5.25	6.55	156	73.7	545	189	1,502	2,128	510	2,377	624
1952	209	363	120	216	1,185	572	384	216	7.67	2.99	1.85	.23	269
1953	.01	0	.04	.23	.51	6.83	20.1	11.8	3.80	0	0	0	9.21
1954	0	1.92	3.82	.45	10.1	3.05	178	804	25.7	.04	0	0	86.5
1955	201	10.4	13.8	204	267	579	77.5	538	173	17.6	.22	367	204
1956	344	5.92	4.55	2.80	24.3	4.41	14.8	49.0	117	42.5	4.44	0	51.5
1957	0	0	0	0	1.15	39.0	88.7	344	575	21.3	.53	0	89.1
1958	1.33	26.3	54.4	71.7	122	828	446	299	132	1,132	34.8	4.01	265
1959	.51	1.17	.95	1.72	4.98	7.20	57.0	94.6	5.27	7.38	2.54	.007	15.4
1960	456	20.5	9.08	44.4	167	579	594	500	32.6	4.35	4.91	2.93	202

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	462	407	323	403	8,650	4,530	32,440	11,640	89,380	130,800	31,350	141,400	451,800
1952	12,630	21,580	7,360	13,500	68,160	35,150	22,870	13,250	456	184	114	14	195,300
1953	.4	0	.2	.14	.28	420	1,200	4,070	701	234	0	0	8,670
1954	0	114	235	28	561	187	10,570	49,430	1,530	2.5	0	0	62,660
1955	12,340	619	846	12,520	14,800	35,580	4,610	33,080	10,280	1,090	13	21,850	147,600
1956	21,140	352	280	172	1,400	271	882	3,020	6,960	2,610	273	0	37,360
1957	0	0	0	0	64	2,400	5,280	21,180	34,230	1,310	33	0	64,500
1958	82	1,560	3,350	4,410	6,780	50,890	26,530	18,360	7,840	69,590	2,140	239	191,800
1959	32	70	59	106	276	443	3,390	5,820	313	454	156	.4	11,120
1960	28,070	1,220	558	2,730	9,590	35,590	35,360	30,750	1,940	267	302	174	146,600

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	216	156,100	
1951	1210	15,400	July 12, 1951	1.0	624	451,800	680	492,400	
1952	1240	11,000	Feb. 2, 1952	.1	269	195,300	211	153,500	
1953	1280	894	May 23, 1953	0	9.21	8,670	9.69	7,020	
1954	1340	18,200	May 2, 1954	0	86.5	62,660	105	76,110	
1955	1390	7,220	Mar. 15, 1955	0	204	147,600	215	155,600	
1956	1440	8,210	Oct. 5, 1955	0	51.5	37,360	21.5	15,590	
1957	1510	6,370	July 17, 1957	0	89.1	64,500	96.0	69,490	
1958	1560	15,300	May 17, 1958	0	265	191,800	258	186,900	
1959	1630	1,550	May 17, 1959	0	15.4	11,120	56.4	40,810	
1960	1710	5,680	May 6, 1960	.3	202	146,600	-	-	

## 9175. Marmaton River near Fort Scott, Kans.

Location.--Lat 37°52', long 94°40', in NW<sup>1</sup> sec.21, T.25 S., R.25 E., on left bank at old military highway bridge, 2 miles northeast of Fort Scott, 2<sup>1</sup>/<sub>2</sub> miles west of Kansas-Missouri State line, 4.4 miles (revised) downstream from Mill Creek, and at mile 30.2.

Drainage area.--411 sq mi.

Records available.--August 1921 to June 1925, April 1929 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 752.60 ft above mean sea level, datum of 1929. Prior to Dec. 4, 1934, chain gage at present site and datum. Since Oct. 1, 1956, auxiliary wire-weight gage at National Avenue Bridge in Fort Scott, 4.7 miles upstream from base gage at same datum.

Average discharge.--34 years (1921-24, 1929-60), 292 cfs (211,400 acre-ft per year).

Extremes.--1921-25, 1929-60: Maximum discharge, 37,400 cfs May 28, 1935 (gage height, 37.30 ft); no flow at times in 1934, 1936, 1939, 1942-45.  
Maximum stage known since at least 1904, 42.34 ft Sept. 7, 1915, from floodmarks and information by local residents. Floods of June 11, 1916, and Aug. 14, 1927, reached stages of 40.6 and 39.35 ft, respectively, from floodmarks and information by local residents.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	7.85	2.67	3.27	6.15	356	141	395	650	2,584	2,925	834	2,324	850
1952	181	853	247	296	1,189	724	488	103	9.84	6.47	5.95	1.01	336
1953	1.89	1.25	1.98	1.30	4.11	47.7	107	118	20.8	5.15	1.16	1.16	26.0
1954	1.24	1.14	12.7	1.55	11.5	5.06	185	956	24.4	1.88	1.07	76.4	108
1955	518	31.5	25.9	490	378	293	94.0	980	415	24.1	5.33	244	292
1956	304	2.06	1.71	1.65	19.7	2.84	20.4	23.0	49.3	2.71	1.52	.52	36.1
1957	.79	1.39	1.27	1.17	4.70	58.4	260	762	508	108	1.17	1.31	143
1958	2.09	27.2	68.5	79.6	128	1,251	540	367	244	2,195	44.0	2.76	417
1959	.97	7.31	1.84	11.6	110	88.2	254	78.6	11.9	76.3	24.0	18.3	56.3
1960	697	25.6	10.8	75.4	138	596	735	643	84.6	9.90	3.92	1.73	253

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	483	159	201	378	19,790	8,670	23,510	38,750	153,800	179,800	51,290	138,300	615,100
1952	11,150	49,570	15,180	18,210	68,410	44,520	29,020	6,360	588	398	363	60	243,800
1953	55	74	122	80	228	2,930	6,380	7,240	1,240	317	71	69	18,810
1954	76	68	780	95	640	372	11,020	58,810	1,450	54	66	4,540	77,770
1955	31,830	1,880	1,590	30,140	20,990	18,040	5,590	60,250	24,670	1,480	327	14,520	211,300
1956	18,690	122	105	104	1,130	175	1,220	1,420	2,940	167	93	31	26,200
1957	49	85	78	72	281	3,590	15,490	46,850	30,200	6,650	72	78	103,500
1958	128	1,620	4,210	4,890	7,090	76,920	32,130	22,540	14,520	34,900	2,700	164	301,900
1959	60	438	113	710	6,120	5,420	15,110	4,830	708	4,690	1,480	1,090	40,770
1960	42,870	1,520	662	4,630	7,960	36,660	43,730	39,520	5,030	609	241	103	183,500

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	355	256,700
1951	1210	28,400	Sept. 10, 1951	1.5	850	615,100	953	690,200
1952	1240	16,700	Feb. 2, 1952	.6	336	243,800	232	168,200
1953	1280	649	May 18, 1953	.6	26.0	18,810	26.9	19,480
1954	1340	18,300	May 2, 1954	.4	108	77,970	155	112,300
1955	1390	10,800	May 12, 1955	1.1	292	211,300	269	194,900
1956	1440	6,250	Oct. 5, 1955	.1	36.1	26,200	10.3	7,490
1957	1510	8,960	May 17, 1957	.3	143	103,500	151	109,200
1958	1560	27,200	July 16, 1958	.7	417	301,800	410	296,500
1959	1650	2,730	Apr. 8, 1959	.6	56.3	40,770	118	85,210
1960	1710	7,560	May 6, 1960	1.0	253	183,500	-	-

9187. Oak Grover Branch near Brighton, Mo.

Location.--Lat 37°24'11", long 93°21'21", in SE¼NW¼ sec.21, T.31 N., R.22 W., on left bank just upstream from culvert on Grenne County Highway BB, 0.6 mile west of U. S. Highway 13 and 4 miles south of Brighton.

Drainage area.--1.30 sq mi (revised).

Records available.--July 1956 to September 1959, water year 1960 (annual maximum).

Gage.--Water-stage recorder. Altitude of gage is 1,030 ft (from topographic map).

Extremes.--1956-60: Maximum discharge, 845 cfs May 22, 1957 (gage height, 7.60 ft); no flow for many days in each year.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1956	-	-	-	-	-	-	-	-	-	-	0	0	-
1957	0	0.32	0.13	0.01	1.24	3.15	4.74	5.45	0.96	0.27	0	0	1.36
1958	0	0	.69	.24	.11	6.62	3.20	.96	.01	9.00	.30	2.30	1.97
1959	.02	.06	.04	.38	2.27	1.70	.46	.23	.03	.65	0	0	.48

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1956	-	-	-	-	-	-	-	-	-	-	0	0	-
1957	0	19	7.7	0.6	69	194	282	335	57	17	0	0	981
1958	0	0	43	15	6.0	407	190	59	.6	554	18	137	1,430
1959	1.4	3.6	2.4	23	126	104	28	14	1.8	40	0	0	344

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30							Calendar year		
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff	
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet
1956	1510	-	-	-	-	-	-	-	-	-	-
1957	1510	845	May 22, 1957	0	1.36	1.05	14.15	981	1.38	14.38	998
1958	1560	492	Sept. 2, 1958	0	1.97	1.52	20.61	1,430	1.92	20.09	1,390
1959	1630	320	Feb. 9, 1959	0	.48	.366	4.97	344	-	-	-
1960	-	196	Oct. 4, 1959	-	-	-	-	-	-	-	-



9190. Sac River near Stockton, Mo.

Location.--Lat 37°42'03", long 93°45'20", in SW $\frac{1}{4}$  sec. 11, T.34 N., R.26 W., on right bank 20 ft upstream from bridge on State Highway 32, three-quarters of a mile upstream from Bear Creek, and 2 miles east of Stockton.

Drainage area.--1,160 sq mi, approximately.

Records available.--July 1921 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 764.12 ft above mean sea level, datum of 1929. Prior to Oct. 7, 1932, chain gage at site 57 ft downstream at same datum. Oct. 7, 1932, to Feb. 20, 1935, chain gage and Feb. 21, 1935, to May 3, 1960, wire-weight gage, at present site and datum.

Average discharge.--39 years (1921-60), 1,031 cfs (746,400 acre-ft per year).

Extremes.--1921-60: Maximum discharge, 120,000 cfs May 19, 1943 (gage height, 31.8 ft); no flow Sept. 9-23, 1954, Oct. 14, 17-20, 1956; minimum gage height, 1.34 ft Sept. 20, 1954.

Maximum stage known prior to 1943, 29.3 ft in July 1909.

Remarks.--Slight regulation during extremely low stages from gristmills upstream.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	508	183	124	271	2,920	1,677	1,398	822	1,865	618	723	1,897	1,491
1952	973	5,727	1,171	1,069	2,535	1,512	1,667	423	173	123	189	60.2	1,125
1953	39.8	78.0	112	172	200	338	1,417	990	237	82.4	34.9	17.6	360
1954	28.1	35.3	54.1	41.2	53.6	54.8	76.0	515	174	11.3	6.62	51.7	92.3
1955	1,301	418	767	1,160	1,915	1,787	616	622	923	390	91.3	36.9	831
1956	149	56.1	50.2	40.5	82.5	48.6	40.0	184	295	218	22.2	2.19	99.1
1957	4.72	49.0	176	89.6	578	1,262	3,809	4,571	3,157	1,203	163	100	1,264
1958	69.4	88.3	271	172	196	3,169	1,627	998	3,635	744	1,255	1,549	1,305
1959	246	174	132	277	1,146	1,308	526	319	450	485	93.8	58.4	430
1960	2,765	850	1,183	769	735	1,311	743	1,553	293	125	89.2	30.2	876

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	31,260	10,870	7,650	16,670	162,200	103,100	83,170	50,560	111,000	345,400	44,450	112,900	1,079,000
1952	59,850	221,800	71,970	65,720	145,800	93,000	99,220	26,380	10,310	7,570	11,650	3,580	816,800
1953	2,450	4,520	6,870	10,560	11,100	57,670	84,300	60,870	14,100	5,070	2,150	1,050	280,700
1954	1,730	2,100	3,330	2,530	2,980	3,360	4,520	31,680	10,580	710	407	3,080	66,810
1955	79,990	24,880	47,170	71,300	106,300	109,900	36,660	38,460	54,930	24,000	5,610	2,190	601,400
1956	9,180	3,340	3,090	2,500	4,740	3,000	2,380	11,290	17,550	13,410	1,360	131	71,970
1957	290	2,910	10,850	5,510	32,080	77,600	226,700	281,100	187,900	73,980	10,040	5,960	914,900
1958	4,270	5,260	16,680	10,570	10,890	194,800	96,790	61,360	21,600	353,200	77,160	92,190	944,800
1959	15,120	10,330	8,150	17,060	63,630	80,450	31,300	19,630	26,800	29,830	5,770	3,540	311,600
1960	170,000	50,550	72,730	47,290	42,280	80,600	44,190	95,880	17,790	7,660	5,480	1,800	636,200

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year				
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff	
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet
1950											
1951	1210	50,100	July 4, 1951	91	1,491	1.29	17.44	1,079,000	1,091	12.77	780,100
1952	1240	11,900	Nov. 12, 1951	38	1,125	.970	13.20	816,800	1,910	22.34	1,385,000
1953	1260	4,860	Apr. 24, 1953	12	360	.310	4.20	260,700	657	7.71	477,100
1954	1340	3,610	May 2, 1954	0	92.3	.080	1.07	66,810	292	3.41	211,700
1955	1390	14,400	Oct. 27, 1954	18	831	.716	9.72	601,400	642	7.52	465,000
1956	1440	4,040	July 14, 1956	.7	99.1	.085	1.16	71,970	97.0	1.15	70,410
1957	1510	23,000	May 24, 1957	0	1,264	1.09	14.80	914,900	1,280	14.98	927,100
1958	1560	45,000	July 17, 1958	56	1,305	1.12	15.27	944,800	1,315	15.39	862,200
1959	1630	8,660	Feb. 10, 1959	19	430	.371	5.04	311,600	789	9.25	571,300
1960	1710	16,800	Oct. 5, 1959	23	876	.755	10.23	636,200	-	-	-

9195. Cedar Creek near Pleasant View, Mo.

Location.--Lat 37°50'03", long 93°52'31", in NE $\frac{1}{4}$  sec.2, T.35 N., R.27 W., on downstream side of right pier of bridge on State Highway 39, 1 $\frac{1}{2}$  miles north of Pleasant View, 1 $\frac{1}{2}$  miles downstream from Alder Creek, and 5 $\frac{1}{2}$  miles upstream from mouth.

Drainage area.--420 sq mi, approximately.

Records available.--April 1923 to September 1926, October 1948 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 739.5 ft above mean sea level, datum of 1929. Apr. 22, 1923, to Sept. 30, 1926, chain gage and Oct. 1, 1948, to May 10, 1950, wire-weight gage, at site 50 ft downstream at same datum. May 11, 1950, to Dec. 17, 1952, wire-weight gage at same site and datum.

Average discharge.--15 years (1923-26, 1948-60), 285 cfs (206,300 acre-ft per year).

Extremes.--1923-26, 1948-60: Maximum discharge, 33,900 cfs July 17, 1958 (gage height, 27.35 ft); no flow at times in 1953-54, 1956, 1959-60. Maximum stage known, 27.7 ft July 20, 1909, from floodmark.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	73.4	8.7	8.0	29.2	1,278	354	500	268	866	1,971	507	1,663	620
1952	425	1,609	351	295	710	406	390	70.3	10.1	12.3	80.7	1.49	360
1953	.13	.99	2.50	3.99	5.45	175	278	139	4.95	.32	0	0	51.1
1954	0	0	.06	.12	.14	.23	19.5	117	26.8	.03	0	27.1	16.0
1955	669	74.3	128	280	671	838	133	102	361	67.6	19.3	46.6	281
1956	174	4.33	4.03	3.24	9.66	6.16	4.09	184	76.8	57.8	1.14	.01	44.2
1957	0	.04	12.5	6.06	181	329	1,225	1,689	737	356	1.73	1.08	377
1958	.38	1.32	12.2	13.5	26.2	1,058	549	178	64.1	2,229	242	266	391
1959	16.6	58.1	19.4	94.4	462	540	164	92.7	65.9	56.6	2.25	.87	130
1960	619	136	274	162	192	529	329	779	166	7.34	1.53	.52	268

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	4,510	518	494	1,800	71,000	21,780	29,760	16,330	51,510	121,200	51,180	99,940	449,000
1952	26,130	85,740	21,570	18,140	40,860	24,980	23,210	4,320	600	757	4,960	89	261,400
1953	8.1	59	154	245	302	10,770	16,550	8,570	295	20	3.4	0	36,980
1954	0	0	3.6	7.3	7.5	14	1,160	7,210	1,590	1.8	0	1,610	11,800
1955	41,110	4,420	7,850	17,190	57,280	51,550	7,890	6,240	21,510	4,160	1,190	2,770	203,200
1956	10,710	258	248	199	556	379	243	11,310	4,570	3,560	70	.6	32,100
1957	0	2.2	766	373	10,070	20,240	72,800	103,900	43,880	20,640	106	64	†263,800
1958	23	79	751	819	1,460	85,080	32,680	10,930	3,820	37,100	14,870	15,850	283,500
1959	1,020	3,460	1,190	5,810	25,660	33,200	9,730	5,700	4,990	3,480	139	52	94,430
1960	88,060	9,070	16,780	9,970	11,030	32,500	19,570	47,900	9,880	451	94	19	194,400

† Corrected.

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30										Calendar year		
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff		Mean	Runoff	
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet		Inches	Acre-feet
1950	-	-	-	-	-	-	-	-	-	-	-	326	10.54	235,900
1951	1210	24,300	July 4, 1951	7	620	1.48	20.04	449,000	811	26.20	586,900	811	26.20	586,900
1952	1240	8,160	Nov. 12, 1951	.2	360	.857	11.66	261,400	163	5.27	118,100	163	5.27	118,100
1953	1280	2,190	Apr. 24, 1953	0	51.1	.122	1.84	36,980	50.8	1.63	36,760	50.8	1.63	36,760
1954	1340	1,570	May 2, 1954	0	16.0	.038	.51	11,600	89.8	2.90	64,980	89.8	2.90	64,980
1955	1390	6,900	Mar. 15, 1955	1.1	261	.670	9.07	203,200	222	7.18	161,000	222	7.18	161,000
1956	1440	6,070	May 31, 1956	0	44.2	.105	1.43	32,100	29.8	.96	21,660	29.8	.96	21,660
1957	1510	9,900	May 26, 1957	0	377	.898	12.18	†263,800	377	12.18	272,900	377	12.18	272,900
1958	1560	33,900	July 17, 1958	.2	391	.931	12.66	283,500	598	12.88	288,300	598	12.88	288,300
1959	1630	5,930	Mar. 6, 1959	0	130	.310	4.21	94,430	210	6.77	151,800	210	6.77	151,800
1960	1710	7,300	May 7, 1960	0	268	.638	8.67	194,400	-	-	-	-	-	-

† Corrected.

## 9205. Osage River at Osceola, Mo.

Location.--Lat 38°03'44", long 93°41'37", in NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec.17, T.38 N., R.25 W., on left bank at downstream side of bridge on State Highway 13, half a mile downstream from Gallinipper Creek, 1 mile downstream from hydroelectric plant of Missouri Public Service Co., and 1 mile northeast of Osceola.

Drainage area.--8,220 sq mi, approximately.

Records available.--October 1917 to September 1928, October 1930 to September 1960.

Monthly discharge only for some periods, published in WSP 1310. Gage-height records collected at site  $1\frac{1}{4}$  miles upstream April 1910 to November 1930, at present site November 1930 to April 1933, and since February 1938 are contained in reports of U. S. Weather Bureau.

Gage.--Water-stage recorder. Datum of gage is 679.23 ft above mean sea level, datum of 1929. Prior to Oct. 1, 1928, chain gage at site  $1\frac{1}{4}$  miles upstream at datum 3.67 ft higher.

Average discharge.--41 years (1917-28, 1930-60), 5,108 cfs (3,698,000 acre-ft per year).

Extremes.--1917-28, 1930-60: Maximum discharge, 146,000 cfs May 21, 1943 (gage height, 41.48 ft in gage well, 41.7 ft from outside gage); minimum, 3.6 cfs Nov. 16-19, 1956; minimum gage height, 0.22 ft Aug. 11, 1941.

Maximum stage known, about 45 ft in June 1844 (discharge, about 150,000 cfs).

Remarks.--Low and medium flow regulated by powerplant 1 mile upstream.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1,187	345	287	557	9,933	5,077	8,290	8,565	15,840	65,430	7,095	36,320	13,080
1952	5,800	14,350	4,485	4,853	11,030	13,040	10,880	2,445	1,026	577	1,109	106	5,754
1953	42.1	107	180	241	329	2,047	4,924	4,450	499	127	36.8	97.6	1,094
1954	44.1	33.7	81.2	48.6	87.1	99.9	897	6,116	2,292	28.6	482	20.6	858
1955	5,956	818	1,131	4,817	7,026	9,186	2,264	4,935	6,201	2,660	596	2,975	4,033
1956	4,674	112	117	97.7	333	138	125	1,354	1,803	1,528	126	10.3	875
1957	6.08	43.5	199	126	989	2,649	9,742	15,330	12,580	5,914	229	785	4,055
1958	732	692	1,217	1,107	2,246	19,370	10,040	5,741	4,647	50,840	8,820	4,149	7,453
1959	718	2,258	558	1,510	5,373	5,187	4,388	3,014	916	2,117	392	351	2,209
1960	10,260	1,437	1,914	2,034	4,068	9,849	10,940	13,360	1,729	366	634	545	4,777

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	75,010	20,520	17,660	34,260	551,700	512,200	493,300	526,800	942,800	3,900,000	436,200	2,161,000	9,469,000
1952	356,500	854,000	275,800	298,400	634,000	802,000	647,200	150,200	61,040	23,170	68,220	6,320	4,177,000
1953	2,590	6,370	11,090	14,810	18,250	25,800	293,000	274,200	29,710	7,790	2,270	5,810	791,700
1954	2,710	2,010	3,760	2,990	4,840	6,140	53,370	37,100	36,400	1,760	29,640	1,220	620,900
1955	366,200	48,660	69,520	296,200	390,200	564,800	134,700	303,400	369,000	163,500	36,670	77,000	2,920,000
1956	287,400	6,670	7,200	6,010	19,150	8,480	7,450	83,240	107,300	93,980	7,730	616	635,200
1957	374	2,590	12,270	7,750	54,950	162,900	579,700	942,300	748,300	363,600	14,060	46,700	2,935,000
1958	44,980	41,170	74,610	68,070	124,700	129,000	597,700	353,000	276,500	896,000	54,300	246,900	5,395,000
1959	44,120	34,400	34,340	92,850	298,400	318,900	261,000	185,300	54,520	130,200	24,100	20,860	1,599,000
1960	630,800	85,510	117,700	125,100	234,000	605,600	651,200	821,500	102,900	22,490	39,010	32,450	3,468,000

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	6,404	4,636,000
1951	1210	98,300	July 6, 1951	148	13,080	9,469,000	14,980	10,840,000
1952	1240	35,900	Nov. 14, 1951	22	5,754	4,177,000	3,754	2,711,000
1953	1280	16,100	Apr. 25, 1953	14	1,094	791,700	1,078	780,100
1954	1340	21,500	May 2, 1954	6.3	858	620,900	1,515	1,097,000
1955	1390	30,800	Feb. 22, 1955	17	4,033	2,920,000	3,780	2,737,000
1956	1440	30,500	May 31, 1956	6.9	875	635,200	481	349,200
1957	1510	48,100	May 25, 1957	3.6	4,055	2,935,000	4,256	3,081,000
1958	1560	81,200	July 20, 1958	20	7,453	5,395,000	7,525	5,447,000
1959	1630	22,900	Feb. 11, 1959	16	2,209	1,599,000	3,067	2,220,000
1960	1710	39,200	May 6, 1960	14	4,777	3,468,000	-	-

## 9210. Pomme de Terre River near Bolivar, Mo.

Location.--Lat 37°36', long 93°19', in N $\frac{1}{2}$  sec. 11, T.33 N., R. 22 W., on downstream side of left main pier of bridge on State Highway 64 in Burns, 4 $\frac{1}{2}$  miles upstream from Hominy Creek and 5 $\frac{1}{2}$  miles east of Bolivar.

Drainage area.--225 sq mi.

Records available.--October 1950 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 913.97 ft above mean sea level, datum of 1929. Prior to June 23, 1952, wire-weight gage at same site and datum.

Average discharge.--10 years (1950-60), 165 cfs (119,500 acre-ft per year).

Extremes.--1950-60: Maximum discharge, 17,600 cfs July 16, 1958 (gage height, 17.30 ft); minimum, 0.1 cfs July 25, Aug. 19, 1954; minimum gage height, 1.00 ft Sept. 7-10, 14-22, 1955.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	86.4	25.8	19.6	74.8	571	383	348	141	549	583	200	491	286
1952	308	830	228	216	466	328	451	78.5	17.4	15.3	34.8	6.42	246
1953	4.88	14.0	22.0	46.7	44.0	184	355	184	17.8	13.8	12.1	1.67	75.0
1954	3.11	4.89	7.99	8.24	12.1	16.2	30.0	149	73.6	5.03	15.6	10.9	28.2
1955	257	42.6	213	186	465	471	75.8	148	118	59.0	7.04	12.3	170
1956	29.0	10.5	7.09	6.62	19.2	8.03	8.08	146	78.9	73.2	5.50	.90	32.9
1957	1.20	7.02	17.6	16.2	20.7	307	697	996	616	223	16.3	9.86	259
1958	11.3	26.4	230	53.7	40.7	992	346	201	113	1478	149	162	321
1959	27.2	32.5	21.4	85.0	219	226	87.2	98.9	86.5	77.5	11.4	23.7	82.2
1960	371	131	341	139	161	276	111	189	27.3	9.31	5.32	1.74	148

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	5,310	1,540	1,210	4,600	31,720	23,530	20,730	8,650	32,680	35,850	12,270	29,240	207,300
1952	18,920	49,410	14,020	13,270	26,810	20,160	26,810	4,920	1,040	938	2,140	582	178,700
1953	300	833	1,350	2,870	2,450	11,290	21,110	11,330	1,050	848	742	100	54,280
1954	191	291	491	507	671	999	1,780	9,170	4,380	309	962	647	20,400
1955	15,780	2,540	13,080	11,440	25,830	28,940	4,510	9,100	7,030	3,630	433	732	123,000
1956	1,780	625	436	407	1,100	494	481	8,970	4,700	4,500	338	54	23,880
1957	74	418	1,080	998	11,520	18,850	41,460	61,210	36,630	13,710	1,000	587	187,500
1958	696	1,570	14,130	3,300	2,280	60,970	20,600	12,340	6,730	90,890	9,170	9,670	232,300
1959	1,670	1,930	1,320	5,220	12,180	13,890	5,190	6,080	5,150	4,770	702	1,410	59,510
1960	22,850	7,810	20,980	8,540	9,270	16,960	6,800	11,640	1,630	572	327	104	107,500

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30							Calendar year		
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff	
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet
1950	-	-	-	-	-	-	-	-	-	-	-
1951	1210	9,580	June 30, 1951	14	286	1.27	17.27	207,300	389	23.47	281,600
1952	1240	4,880	Feb. 1, 1952	1.8	246	1.09	14.90	178,700	136	8.24	98,850
1953	1280	3,250	Apr. 24, 1953	.3	75.0	.333	4.52	54,280	72.9	4.59	52,770
1954	1340	2,920	May 2, 1954	.1	28.2	.125	1.69	20,400	70.2	4.23	50,820
1955	1390	7,580	Feb. 20, 1955	1.4	170	.756	10.26	123,000	131	7.88	94,490
1956	1440	5,640	May 31, 1956	.2	32.9	.146	1.99	23,880	31.2	1.88	22,620
1957	1510	12,900	May 23, 1957	.5	259	1.15	15.62	187,500	280	16.86	202,400
1958	1560	17,600	July 16, 1958	4.8	321	1.43	19.37	232,300	305	18.41	220,800
1959	1630	6,440	Feb. 10, 1959	2.8	82.2	.365	4.98	59,510	147	8.87	106,200
1960	1710	7,320	Oct. 4, 1959	.6	148	.658	8.94	107,500	-	-	-

## 9212. Lindley Creek near Polk, Mo.

Location.--Lat 37°45'02", long 93°15'58", in NE $\frac{1}{4}$ SE $\frac{1}{4}$  sec.29, T.35 N., R.21 W., 2 $\frac{1}{2}$  miles northeast of Polk and 11 miles upstream from Ingalls Creek.

Drainage area.--112 sq mi.

Records available.--April 1957 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 884.08 ft above mean sea level, datum of 1929. Prior to Sept. 25, 1957, wire-weight gage at site 30 ft downstream at same datum.

Extremes.--1957-60: Maximum discharge, 12,000 cfs July 16, 1958 (gage height, 19.16 ft); no flow for many days in 1957, 1960; minimum gage height, 3.53 ft Sept. 30, 1960.

Flood in September 1914 reached a stage of about 25.2 ft.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1957	-	-	-	-	-	-	-	307	126	40.4	4.57	4.73	-
1958	2.30	4.69	37.2	23.3	21.2	451	118	75.3	38.9	534	100	258	140
1959	10.4	9.02	6.08	40.7	166	111	33.8	49.2	107	79.8	3.18	44.6	54.1
1960	442	123	195	77.6	88.5	187	61.3	160	4.90	1.41	1.97	0	113

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1957	-	-	-	-	-	-	-	18,900	7,510	2,480	281	281	-
1958	142	279	2,290	1,430	1,180	27,720	7,040	4,630	2,320	32,850	6,170	15,350	101,400
1959	637	537	374	2,500	9,190	6,800	2,010	3,020	6,350	4,910	195	2,660	39,180
1960	27,200	7,290	11,880	4,770	5,090	11,520	3,650	9,850	291	87	121	0	81,750

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30						Calendar year					
		Momentary maximum			Minimum			Runoff			Runoff		
		Discharge	Date		day	Mean	Per square mile	Inches	Acre-feet	Mean	Inches	Acre-feet	
1957	1510	-	-	-	-	-	-	-	-	-	-	-	-
1958	1560	12,000	July 16, 1958		0	140	1.25	16.97	101,400	138	16.78	100,200	
1959	1630	4,780	Feb. 10, 1959		.9	54.1	4.83	6.56	39,180	116	14.06	84,000	
1960	1710	7,160	Oct. 2, 1959		0	113	1.01	13.68	81,750	-	-	-	-

## 9215. Pomme de Terre River at Hermitage, Mo.

Location.--Lat 37°56'45", long 93°18'35", in SE $\frac{1}{4}$ NE $\frac{1}{4}$  sec.23, T.37 N., R.22 W., on right bank at downstream side of bridge on U. S. Highway 54, a quarter of a mile east of Hermitage and  $\frac{1}{2}$  miles downstream from Mill (Crane) Creek.

Drainage area.--655 sq mi.

Records available.--July 1921 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 727.08 ft above mean sea level, datum of 1929. Prior to Oct. 1, 1925, chain gage at site 1.6 miles upstream at different datum.

Oct. 1, 1925, to Oct. 2, 1934, chain gage and Oct. 3, 1934, to July 28, 1937, wire-weight gage, at present site and datum.

Average discharge.--39 years (1921-60), 619 cfs (448,100 acre-ft per year).

Extremes.--1921-60: Maximum discharge, 70,000 cfs Aug. 8, 1927 (gage height, 36.45 ft, from floodmark), from rating curve extended above 41,000 cfs; no flow for many days in 1936, 1954-56.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	228	59.2	46.9	200	2,065	1,020	1,016	3511	459	2,531	612	2,019	956
1952	661	2161	700	662	1,398	818	1,122	165	50.6	66.4	269	18.0	668
1953	6.28	35.3	86.5	130	163	692	1,037	572	82.4	39.5	15.7	3.93	239
1954	3.63	7.77	15.2	14.5	27.0	29.5	168	454	111	6.24	9.04	1.53	71.0
1955	457	108	514	527	1,256	1,923	236	321	313	112	9.31	62.3	484
1956	162	13.3	13.8	12.2	50.4	24.5	25.8	543	272	145	16.9	.36	107
1957	.13	38.0	148	55.1	820	966	2,576	2,485	1,050	510	44.7	26.6	724
1958	20.5	52.7	309	133	135	2,404	859	445	220	3,103	719	1,048	794
1959	73.1	65.7	50.1	281	914	679	230	382	360	724	734.2	122	323
1960	2041	488	945	413	477	975	393	998	78.2	33.3	21.6	3.07	576

† Corrected.

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	14,040	3,520	2,880	12,270	14,700	62,720	60,480	21,570	86,840	55,600	37,630	120,100	692,400
1952	40,640	28,600	43,050	40,690	80,420	50,290	66,750	10,140	3,010	4,080	16,550	954	485,200
1953	386	2,100	5,320	8,020	9,080	42,560	61,710	35,150	4,900	2,430	967	234	172,900
1954	223	463	936	891	1,500	1,820	10,000	27,930	6,610	384	556	91	51,400
1955	28,090	6,430	31,580	32,400	69,770	118,200	14,040	19,730	18,650	6,870	572	3,710	350,000
1956	9,950	793	847	752	2,900	1,500	1,530	33,410	16,210	8,890	1,040	22	77,840
1957	81	2,260	9,110	3,390	45,520	59,400	53,300	52,800	62,460	31,380	2,750	1,580	524,000
1958	1,280	3,140	18,000	8,180	7,470	47,800	49,960	27,350	13,110	90,800	44,210	62,380	574,600
1959	4,490	3,970	3,080	17,300	50,790	41,770	13,700	23,520	21,450	44,500	2,110	7,290	234,000
1960	125,500	29,040	56,120	25,410	27,440	59,980	23,370	61,350	4,660	2,040	1,330	183	418,400

Yearly discharge, in cubic feet per second, of Pomme de Terre River at Hermitage, Mo.

Year	WSP	Water year ending Sept. 30							Calendar year		
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff	
		Discharge	Date				Inches	Acres-foot		Inches	Acres-foot
1950	-	-	-	-	-	-	-	-	739	15.33	535,300
1951	1210	29,000	July 1, 1951	39	956	1.46	19.83	692,400	1,221	25.32	864,200
1952	1240	12,100	Feb. 2, 1952	5	668	1.02	13.88	485,200	387	8.03	280,700
1953	1280	8,330	Apr. 24, 1953	6	239	.365	4.96	172,900	230	4.78	166,700
1954	1340	4,450	May 3, 1954	0	71.0	.108	1.48	51,400	160	3.31	115,900
1955	1390	17,600	Mar. 15, 1955	0	484	.739	10.01	350,000	408	8.45	295,500
1956	1440	19,800	May 31, 1956	0	107	.163	2.21	77,840	107	2.21	77,630
1957	1510	17,000	May 17, 1957	0	724	1.11	15.00	524,000	740	15.35	536,000
1958	1560	28,000	July 18, 1958	5.5	794	1.21	16.45	574,600	777	16.11	562,800
1959	1630	10,800	Feb. 10, 1959	6.7	323	.493	6.69	234,000	601	12.44	435,100
1960	1710	15,900	Oct. 5, 1959	.2	576	.879	11.98	418,400	-	-	-

† Corrected.

9220. South Grand River near Brownington, Mo.

Location.--Lat 38°15'45", long 93°42'50", in NW $\frac{1}{4}$  sec.17, T.40 N., R.25 W., near center of span on upstream side of county highway bridge, 150 ft downstream from St. Louis-San Francisco Railway Co. bridge, 200 ft downstream from Deepwater Creek, and 1 mile north of Brownington.

Drainage area.--1,660 sq mi, approximately.

Records available.--July 1921 to September 1960.

Gage.--Wire-weight gage. Datum of gage is 676.18 ft above mean sea level, datum of 1929. Prior to Oct. 4, 1934, chain gage at same site and datum.

Average discharge.--39 years (1921-60), 1,015 cfs (734,800 acre-ft per year).

Extremes.--1921-60: Maximum discharge, 63,900 cfs Nov. 19, 1928 (gage height, 39.9 ft, from floodmarks), from rating curve extended above 47,000 cfs by logarithmic plotting; no flow at times.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	25.5	8.2	8.0	33.8	817	1,099	2,059	703	5,927	13,540	940	6,000	2,601
1952	1,051	1,986	397	930	1,646	2,700	2,317	342	48.6	35.1	249	4.82	971
1953	.34	2.86	4.52	6.59	14.5	385	2,098	1,845	33.4	3.24	.44	10.4	368
1954	5.22	1.01	1.57	1.21	6.98	62.1	129	853	510	1.13	238	5.05	152
1955	1,556	50.7	42.0	1,540	1,437	508	320	1,252	1,034	136	151	374	695
1956	1,752	8.82	7.27	5.37	52.8	11.8	5.26	87.7	25.6	227	67.1	11.8	276
1957	.21	.49	3.29	1.58	26.1	113	298	992	837	2,106	19.7	73.4	376
1958	186	224	1,014	326	1,100	4,096	2,292	899	2,064	2,982	4,237	520	1,670
1959	25.9	259	56.2	313	809	583	713	2,382	143	144	19.4	132	464
1960	435	9.32	3.66	143	466	2,142	4,974	3,657	190	299	51.7	.64	1,031

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1,570	488	490	2,080	45,380	67,590	122,500	43,240	352,700	832,300	57,810	57,000	1,883,000
1952	64,650	118,200	24,440	57,190	94,660	66,000	137,900	21,020	2,890	2,160	15,320	287	704,700
1953	21	140	278	405	807	23,670	124,900	13,400	1,990	199	27	621	266,500
1954	198	60	97	75	499	3,820	7,670	52,440	30,370	69	14,620	300	110,200
1955	95,630	1,820	2,580	94,680	79,800	31,260	19,070	76,970	61,550	8,340	9,310	22,270	503,300
1956	107,700	525	447	330	3,030	723	313	5,390	1,520	75,460	4,120	701	200,300
1957	13	29	202	97	1,450	6,940	17,730	60,990	49,790	29,500	1,210	4,370	272,300
1958	11,450	13,330	62,330	20,020	61,100	251,900	136,400	55,270	22,800	163,400	260,500	30,920	1,209,000
1959	1,590	15,390	3,450	19,280	44,920	35,860	42,430	46,500	8,530	8,980	1,200	7,830	335,900
1960	26,730	555	227	8,800	26,810	31,700	236,000	224,900	11,290	18,370	3,180	.38	748,600

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30							Calendar year		
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff	
		Discharge	Date				Inches	Acres-foot		Inches	Acres-foot
1950	-	-	-	-	-	-	-	-	1,257	10.26	910,100
1951	1210	42,400	July 15, 1951	6	2,601	1.57	21.25	1,883,000	2,884	23.56	2,088,000
1952	1240	9,920	Mar. 13, 1952	.5	971	.585	7.96	704,700	686	5.63	497,900
1953	1280	8,620	May 3, 1953	0	368	.222	3.07	266,500	368	3.07	266,400
1954	1340	5,440	May 5, 1954	.1	152	.092	1.24	110,200	290	2.37	209,900
1955	1390	9,420	Jan. 7, 1955	1.8	695	.419	5.69	503,300	707	5.79	511,900
1956	1440	11,400	Oct. 7, 1955	.4	276	.166	2.26	200,300	127	1.04	91,630
1957	1510	9,540	July 4, 1957	.1	378	.227	3.07	272,300	496	4.05	359,200
1958	1560	19,400	Aug. 4, 1958	.9	1,670	1.01	13.66	1,209,000	1,578	12.91	1,143,000
1959	1630	12,600	May 21, 1959	1.3	464	.280	3.80	335,900	474	3.88	342,900
1960	1710	24,700	Apr. 19, 1960	.3	1,031	.621	8.46	748,600	-	-	-

## 9230. Niangua Branch at Marshfield, Mo.

Location.--Lat 37°20'50", long 92°54'45", in SE $\frac{1}{4}$ NE $\frac{1}{4}$  sec.4, T.30 N., R.18 W., on right bank at upstream end of culvert on County Highway W, 400 ft northwest of Junction of County Highway W and U. S. Highway 66 (old) at north edge of Marshfield.

Drainage area.--0.82 sq mi.

Records available.--July 1950 to September 1957.

Gage.--Water-stage recorder and concrete control. Datum of gage is 1,357.83 ft above mean sea level, datum of 1929.

Average discharge.--7 years (1950-57), 0.57 cfs (413 acre-ft per year).

Extremes.--1950-57: Maximum discharge, 438 cfs May 21, 1957 (gage height, 7.32 ft), from rating curve extended above 34 cfs on basis of slope-area measurements at gage heights 4.32, 6.31, and 7.32 ft; no flow for many days.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1950	-	-	-	-	-	-	-	-	-	-	0.396	0.055	-
1951	0.274	0.089	0.047	0.067	1.58	1.33	1.25	0.399	1.94	1.70	.701	.381	0.806
1952	1.39	3.96	.972	.548	1.65	1.63	2.00	.354	.114	.115	.197	.065	1.08
1953	.088	.463	.318	.185	.182	.436	.731	.305	.104	.031	.024	.003	.239
1954	.02	.033	.01	.04	.04	.08	.06	.41	.05	0	.13	.05	.07
1955	1.14	.05	.65	.38	1.22	1.07	.25	.27	.11	.12	.003	.06	.44
1956	.07	.01	0	0	.10	0	.01	.67	.39	.16	0	0	.12
1957	.003	.29	.22	.06	.73	1.01	3.66	5.74	2.17	.55	.07	.27	1.23
1958													
1959													
1960													

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1950	-	-	-	-	-	-	-	-	-	-	24	3.3	-
1951	17	5.3	2.9	4.1	88	82	75	25	115	104	43	23	584
1952	85	236	60	34	95	101	119	22	6.8	7.0	12	3.8	782
1953	5.4	28	20	11	10	27	43	19	6.2	1.9	1.4	.2	173
1954	1.2	.2	.8	2.4	2.0	5.0	3.4	25	3.0	0	7.7	2.8	54
1955	70	3.2	40	24	68	66	15	16	6.3	7.1	.2	3.8	320
1956	4.6	.8	0	0	5.8	0	.8	41	23	9.7	0	0	86
1957	.2	17	13	4.0	40	62	218	353	129	34	4.2	16	890
1958													
1959													
1960													

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30							Calendar year			
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff		
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet	
1950	1210	-	-	-	-	-	-	-	-	-	-	-
1951	1210	332	Aug. 27, 1951	0	0.806	0.983	13.35	584	1.30	21.48	940	
1952	1240	159	Oct. 22, 1951	.05	1.08	1.32	17.85	782	.623	10.34	454	
1953	1280	20.1	June 1, 1953	0	.239	.291	3.93	173	.169	2.79	122	
1954	1340	87	May 2, 1954	0	.07	.085	1.24	54	.23	3.77	164	
1955	1390	139	Oct. 11, 1954	0	.44	.537	7.32	320	.29	4.84	212	
1956	1440	174	June 25, 1956	0	.12	.146	1.96	86	.15	2.56	110	
1957	1510	438	May 21, 1957	0	1.23	1.50	20.38	890	-	-	-	
1958												
1959												
1960												

## OSAGE RIVER BASIN

9240. Niangua River near Decaturville, Mo.

Location.--Lat 37°56'20", long 92°50'30", in NW 1/4 sec.19, T.37 N., R.17 W., on right bank 0.3 mile downstream from hydroelectric plant of Sho-Me Power Cooperative, Inc. and 8 miles northwest of Decaturville.

Drainage area.--627 sq mi.

Records available.--October 1929 to September 1960. Prior to April 1930 monthly discharge only, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is about 665.9 ft above mean sea level, datum of 1929. Prior to Aug. 28, 1930, staff gage at site 200 ft downstream at same datum.

Average discharge.--31 years (1929-60), 649 cfs (469,900 acre-ft per year).

Extremes.--1929-60: Maximum discharge, 33,400 cfs May 19, 1943 (gage height, 21.84 ft); minimum, 6 cfs Oct. 15, 1946; minimum daily, 18 cfs Oct. 4-6, 1930. Maximum stage known, about 28.0 ft in 1914.

Remarks.--Medium and low flow regulated by powerplant above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	410	281	256	377	1,367	1,176	1,117	807	1,142	2,206	975	1,646	976
1952	926	1,892	998	822	1,407	1,218	1,441	521	338	283	500	261	880
1953	225	256	270	328	306	638	821	731	230	209	161	153	361
1954	164	161	166	161	177	181	237	396	225	122	129	111	186
1955	309	207	382	440	921	1,654	368	311	280	220	121	133	444
1956	168	132	129	121	156	138	122	247	264	208	150	94.1	161
1957	104	115	176	134	547	826	1,949	2,584	1,282	458	166	169	709
1958	144	177	454	255	242	2,110	939	521	320	2,542	960	946	808
1959	244	240	210	301	851	746	416	643	433	223	167	212	368
1960	1,006	442	874	484	498	863	516	926	229	253	171	140	536

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	25,200	16,720	15,730	23,160	75,910	72,280	66,460	49,630	67,940	135,700	59,960	97,920	706,600
1952	56,940	112,600	61,390	50,520	80,940	74,920	85,740	32,040	20,150	17,390	50,760	15,530	638,900
1953	13,840	15,250	16,600	20,190	17,010	39,210	48,830	44,960	13,720	12,870	9,890	9,110	261,500
1954	10,080	9,600	10,200	9,880	9,820	11,110	14,090	24,370	13,400	7,530	7,920	6,600	134,600
1955	19,010	12,330	23,480	27,030	51,130	101,700	21,900	19,140	16,640	13,550	7,430	7,910	321,200
1956	10,310	7,880	7,960	7,450	8,990	8,500	7,290	15,210	15,700	12,770	9,210	5,600	116,900
1957	6,400	6,860	10,950	8,260	30,390	50,940	116,000	158,900	76,290	28,140	10,190	10,080	513,400
1958	8,830	10,560	27,940	15,680	13,470	129,700	55,860	32,060	19,020	156,300	59,060	56,280	584,800
1959	14,990	14,310	12,940	18,480	47,250	46,000	24,780	39,930	25,750	13,720	10,250	12,600	281,000
1960	61,850	26,280	53,760	29,750	28,450	53,050	30,720	56,950	13,610	15,580	10,520	8,300	388,800

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year		
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet	
		Discharge	Date						
1950	-	-	-	-	-	-	1,011	732,000	
1951	1210	16,700	July 2, 1951	174	976	706,600	1,215	879,900	
1952	1240	6,220	Feb. 3, 1952	28	880	638,900	625	453,700	
1953	1280	3,020	Apr. 25, 1953	100	361	261,500	339	245,700	
1954	1340	1,720	May 4, 1954	26	186	134,600	220	159,500	
1955	1390	9,380	Mar. 22, 1955	86	444	321,200	404	292,600	
1956	1440	1,450	June 1, 1956	78	161	116,900	158	114,900	
1957	1510	16,400	May 24, 1957	80	709	513,400	741	536,500	
1958	1560	19,000	(a)	30	808	584,800	801	579,700	
1959	1630	7,330	Feb. 11, 1959	28	388	281,000	526	380,600	
1960	1710	6,440	May 6, 1960	38	536	388,800	-	-	

a Mar. 24, July 18, 1958.



## 9252. Stark's Creek at Preston, Mo.

Location.--Lat 37°56'30", long 93°11'30", on line between NW $\frac{1}{4}$  and SW $\frac{1}{4}$  sec.24, T.37 N., R.21 W., on right bank at bridge on U. S. Highway 54, 0.6 mile east of Preston.

Drainage area.--4.19 sq mi.

Records available.--July 1956 to September 1959, water year 1960 (annual maximum).

Gage.--Crest-stage gage. Prior to Oct. 1, 1959, water-stage recorder at same site and datum.

Extremes.--1956-60: Maximum discharge, 1,400 cfs May 17, 1957 (gage height, 9.56 ft), from rating curve extended above 140 cfs on basis of slope-area measurements at gage heights 7.99 and 9.56 ft; no flow for many days.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1956	-	-	-	-	-	-	-	-	-	-	0	0	-
1957	-	0.54	0.53	0.39	9.14	10.3	12.8	19.4	6.03	1.01	0	0.04	4.98
1958	.01	.06	1.19	.29	.95	13.8	3.10	1.21	.77	8.52	3.66	7.71	3.47
1959	.12	.10	.05	1.22	8.06	3.98	.66	2.60	.68	1.33	.03	2.69	1.75

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1956	-	-	-	-	-	-	-	-	-	-	0	0	-
1957	0	32	33	24	507	631	760	1,190	359	62	0	2.2	3,600
1958	.6	3.4	73	18	53	849	185	74	46	524	225	459	2,510
1959	7.3	5.8	3.4	75	448	245	39	160	40	62	2.0	160	1,270

Yearly discharge, in cubic feet per second

Water year ending Sept. 30													Calendar year		
Year	WSP	Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff					
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet				
1956	1510	-	-	-	-	-	-	-	-	-	-	-			
1957	1510	1,400	May 17, 1957	0	4.98	1.19	16.17	3,600	5.00	16.23	3,610				
1958	1560	498	July 31, 1958	0	3.47	.830	11.27	2,510	3.38	11.94	2,450				
1959	1630	562	Feb. 9, 1959	0	1.75	.419	5.71	1,270	-	-	-				
1960	-	870	May 6, 1960	0	-	-	-	-	-	-	-				

## 9255. Lake of the Ozarks near Bagnell, Mo.

Location (revised).--Lat 38°12'19", long 92°37'21", in NE $\frac{1}{4}$ SE $\frac{1}{4}$  sec.19, T.40 N., R.16 W., at left end of powerhouse section near left end of Bagnell Dam on Osage River, 2 miles southwest of Bagnell.

Drainage area.--14,000 sq mi, approximately.

Records available.--April 1931 to September 1960. Gage-height records collected at same site since 1932 are contained in reports of U. S. Weather Bureau, published as Osage River at Bagnell Dam, Lakeside.

Gage.--Water-stage recorder. Datum of gage is at mean sea level, adjustment of 1912, or 1.18 ft below mean sea level, datum of 1929, determined by Union Electric Co. of Missouri.

Extremes.--1931-60: Maximum contents, 1,527,000 acre-ft May 22, 1943 (elevation, 665.45 ft); minimum, 322,100 acre-ft Feb. 13, 1948 (elevation, 639.95 ft).

Remarks.--Lake is formed by concrete gravity dam. Spillway is equipped with 12 taintor gates 34 ft wide by 22 ft high. Storage began in 1931. Usable capacity, 1,246,000 acre-ft between elevations 630.00 (maximum drawdown) and 660.00 ft (top of gates). Dead storage, 727,000 acre-ft. Water is used for generating electricity. Figures given herein represent usable contents. Elevations given herein are referred to mean sea level, adjustment of 1912.

Cooperation.--Records furnished by Union Electric Co. of Missouri.

Contents, in thousands of acre-feet, at 12 p.m. on last day of month

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951	859.6	559.2	419.5	466.8	1,065	671.5	807.2	1,016	1,381	1,233	1,243	1,204
1952	1,158	1,176	918.7	746.9	711.8	753.7	974.1	1,026	969.9	996.8	1,160	1,141
1953	1,111	1,109	1,044	976.7	832.9	887.9	1,013	917.7	795.8	720.5	646.6	587.3
1954	563.3	542.5	503.4	476.3	473.5	468.7	581.3	955.9	1,019	974.1	994.2	959.8
1955	1,131	1,091	989.6	1,054	1,049	971.5	710.9	925.1	1,114	1,095	1,105	1,121
1956	1,031	952.9	771.1	610	506.3	449.3	444.9	522.2	703.2	948.9	950.4	910.2
1957	879.5	858.6	777.1	634.5	699.5	864.8	654.9	1,120	1,230	1,185	1,145	1,150
1958	1,186	1,125	1,079	1,048	950.9	1,066	1,013	1,072	1,171	1,310	1,167	1,091
1959	1,038	1,021	825.8	716	576.3	534.2	675.9	933.1	1,025	1,099	984.4	998.8
1960	1,067	998.8	1,121	996.2	987	1,001	1,094	1,016	1,112	1,117	989	954.4

## 9260. Osage River near Bagnell, Mo.

Location.--Lat 38°12'26", long 92°35'23", in N $\frac{1}{2}$ SE $\frac{1}{4}$  sec.21, T.40 N., R.15 W., on left bank 1 $\frac{1}{2}$  miles upstream from Bagnell and 3 miles downstream from hydroelectric plant of Union Electric Co. of Missouri.

Drainage area.--14,000 sq mi, approximately.

Records available.--October 1880 to September 1960. Monthly discharge only for some periods, published in WSP 1310. Gage-height records collected in this vicinity 1880-1931 are contained in reports of Missouri River Commission or U. S. Weather Bureau.

Gage.--Water-stage recorder. Datum of gage is 548.57 ft above mean sea level, datum of 1929. Prior to Oct. 15, 1930, staff gage at present site and datum. Since Oct. 1, 1940, auxiliary water-stage recorder at powerplant 3 miles upstream from base gage.

Average discharge.--80 years (1880-1960), 9,594 cfs (6,946,000 acre-ft per year).

Extremes.--1880-1960: Maximum discharge, 220,000 cfs May 19, 1943 (gage height, 48.8 ft); minimum, about 200 cfs Sept. 13, 1960 (gage height about 1.5 ft), from information furnished by powerplant; minimum daily discharge, 220 cfs Dec. 12, 1917. Maximum stage known prior to 1943, 43.1 ft in June 1844 (discharge, 164,000 cfs).

Remarks.--Flow regulated by Lake of the Ozarks (see preceding page).

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	4,360	5,786	3,053	1,143	10,530	18,710	14,420	10,350	25,720	96,780	12,350	54,540	21,530
1952	12,060	24,600	13,070	11,980	20,410	20,310	17,080	3,628	2,603	623	920	708	10,610
1953	578	846	2,114	2,412	4,169	5,444	9,167	11,010	2,931	1,462	1,098	1,185	3,530
1954	706	558	986	844	589	683	542	3,334	2,526	627	629	486	1,046
1955	6,935	2,185	4,633	8,062	14,460	18,270	8,741	3,765	5,145	3,608	738	2,941	6,580
1956	10,240	1,401	3,191	2,740	2,562	1,212	491	516	722	527	510	506	2,062
1957	471	538	2,238	2,798	3,056	5,321	17,590	25,770	16,740	10,960	843	958	7,288
1958	506	2,331	4,837	2,962	7,062	30,010	17,150	8,565	7,412	41,160	22,360	8,917	12,860
1959	1,776	3,084	3,941	4,694	13,460	9,854	4,107	4,478	1,366	2,629	2,186	1,445	4,365
1960	17,400	4,001	3,008	6,100	6,899	15,510	19,630	26,760	942	1,477	2,622	1,149	8,827

Monthly and yearly discharge, in thousands of acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	268.1	344.3	187.7	70.28	584.8	1151	858.2	636.3	1,530	5,951	759.1	3,245	15,590
1952	741.7	1,464	803.3	736.8	1,174	1,249	1,016	223.1	154.9	39.33	56.58	42.13	7,700
1953	35.53	50.32	130	148.3	231.5	334.8	545.5	677.3	174.4	89.92	67.49	70.5	2,556
1954	43.39	33.23	60.65	51.9	32.72	41.98	32.28	205	150.3	38.54	38.68	28.9	757.6
1955	426.4	130	284.9	495.7	803	1,123	520.1	231.5	306.1	221.9	45.39	175	4,763
1956	629.5	83.38	196.2	168.5	147.4	74.5	29.21	31.72	42.94	32.43	31.33	30.14	1,497
1957	28.95	32.01	137.6	172	168.6	327.2	1,047	1,584	995.9	674	51.95	57	5,276
1958	31.1	138.7	297.4	182.1	392.2	1,845	1,021	526.7	441.1	2,531	1,375	530.6	9,312
1959	109.2	183.5	242.3	288.6	747.5	605.9	244.4	275.3	81.31	161.6	134.4	86	3,160
1960	1,070	238.1	184.9	375.1	396.8	953.8	1,168	1,645	56.04	90.8	161.2	68.37	6,408

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30				Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean
		Discharge	Date				
1950	-	-	-	-	-	-	9,615,000
1951	1210	126,000	July 8, 1951	425	21,530	15,590,000	13,280
1952	1240	56,000	Nov. 16, 1951	438	10,610	7,700,000	6,759
1953	1280	24,000	Apr. 29, 1953	428	3,530	2,556,000	3,421
1954	1340	24,600	May 17, 1954	374	1,046	757,600	2,019
1955	1390	48,100	Feb. 23, 1955	428	6,580	4,763,000	6,673
1956	1440	33,600	Oct. 6, 1955	366	2,062	1,497,000	1,084
1957	1510	69,900	May 26, 1957	370	7,288	5,276,000	7,659
1958	1560	85,000	July 23, 1958	400	12,860	9,312,000	12,960
1959	1630	26,400	May 23, 1959	335	4,365	3,160,000	5,688
1960	1710	74,500	May 7, 1960	330	8,827	6,408,000	-

## 9262. Van Cleve Branch near Meta, Mo.

Location.--Lat 38°13'35", long 92°09'40", in SE $\frac{1}{4}$ NE $\frac{1}{4}$  sec.8, T.40 N., R.11 W., 20 ft upstream from concrete culvert on State Highway 133 and 6.5 miles south of Meta.

Drainage area.--0.75 sq mi.

Records available.--August 1956 to September 1959, water year 1960 (annual maximum).

Gage.--Crest-stage gage. Altitude of gage is 650 ft (from topographic map). Prior to Oct. 1, 1959, water-stage recorder at same site and datum.

Extremes.--1956-60: Maximum discharge, 1,200 cfs May 22, 1957 (gage height, 6.35 ft in gage well, 7.45 ft from floodmark), from rating curve extended above 15 cfs on basis of culvert flow and flow-over-road measurements at gage heights 3.94 and 6.35 ft; no flow for many days.

Monthly and yearly mean discharge, in cubic feet per second, of Van Cleve Branch near Meta, Mo.

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1956	-	-	-	-	-	-	-	-	-	-	-	0	-
1957	0.006	0.03	0.16	0.01	1.01	0.48	2.65	2.96	1.75	0.80	0.01	0.06	0.82
1958	.003	.05	.10	.10	.30	1.28	.56	.13	1.46	.75	.20	.007	.41
1959	.006	.01	.006	.04	.28	.21	.12	.48	.11	.006	.06	.10	.12

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1956	-	-	-	-	-	-	-	-	-	-	-	0	-
1957	0.4	1.8	9.7	0.6	56	29	157	182	104	49	0.6	3.4	594
1958	.2	2.8	6.3	6.3	17	79	33	7.7	87	46	12	.4	298
1959	.4	.8	.4	2.2	15	13	7.1	30	6.5	.4	4.0	6.1	85.9

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30						Calendar year			
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff	
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet
1956	1510	-	-	-	0	-	-	-	-	-	-
1957	1510	-	-	-	0	0.82	1.09	14.84	594	0.82	14.78
1958	1560	1,200	May 22, 1957	0	.41	.547	7.42	298	.40	7.23	591
1959	1630	45	Aug. 31, 1959	0	.12	.160	2.14	85.9	-	-	290
1960	-	102	Oct. 10, 1959	-	-	-	-	-	-	-	-

9265. Osage River near St. Thomas, Mo.

Location.--Lat 38°20'25", long 92°13'25", in SE 1/4 SW 1/4 sec. 35, T. 42 N., R. 12 W., on left bank 0.5 mile downstream from Sugar Creek and 2 1/2 miles south of St. Thomas.

Drainage area.--14,500 sq mi, approximately.

Records available.--August 1931 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 528.06 ft above mean sea level, datum of 1929.

Average discharge.--29 years (1931-60), 9,990 cfs (7,232,000 acre-ft per year).

Extremes.--1931-60: Maximum discharge, 216,000 cfs May 20, 1943 (gage height, 43.8 ft); minimum, 346 cfs July 12, 1959, Sept. 18, 1960; minimum gage height, 1.28 ft Sept. 18, 1960; minimum daily discharge, 373 cfs July 12, 1959.  
Maximum stage known prior to 1943, about 39.4 ft in June 1844.

Remarks.--Flow regulated by Lake of the Ozarks (see p. 485).

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	4,121	5,958	3,229	1,275	11,570	19,540	15,350	10,780	26,020	103,400	12,580	57,610	22,670
1952	12,910	25,780	13,700	12,450	21,540	21,330	19,020	4,193	2,836	790	1,339	839	11,330
1953	659	923	2,515	2,656	4,251	6,195	9,845	11,780	2,912	1,505	1,073	1,312	3,782
1954	831	1,059	1,015	745	799	779	3,666	850	2,864	883	858	1,237	5,684
1955	7,131	2,444	4,714	8,409	15,280	19,170	9,009	3,523	5,439	4,252	833	2,969	6,884
1956	10,700	1,530	3,263	2,662	2,789	1,402	626	738	924	706	620	564	2,222
1957	568	628	2,536	2,850	3,799	6,110	19,300	28,450	18,530	12,210	993	1,104	8,106
1958	675	2,361	4,717	3,149	7,146	33,130	18,500	9,338	8,004	42,140	24,530	9,100	13,660
1959	2,052	3,205	3,983	4,846	14,310	10,450	4,615	4,764	1,676	2,541	2,477	1,296	4,628
1960	18,540	3,916	3,330	5,935	7,057	15,760	20,860	27,300	1,335	1,589	2,426	1,383	9,155

Monthly and yearly discharge, in thousands of acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	253.4	353.3	199.6	78.37	642.3	1,202	913.3	665.1	1,548	6,357	775.8	5,428	16,410
1952	793.7	1,530	842.6	765.4	1,239	1,311	1,132	257.8	168.8	48.57	82.33	49.94	8,225
1953	40.53	54.90	142.3	163.3	236.1	380.9	585.8	724.1	175.3	92.51	65.95	78.05	2,738
1954	51.11	38.37	65.13	62.26	41.36	49.05	46.34	225.4	170.4	52.29	54.31	39.16	895.2
1955	438.5	145.5	289.8	517.0	948.4	1,179	536.1	216.6	323.7	261.5	51.24	176.7	4,984
1956	658.1	91.05	200.6	163.7	160.4	86.19	37.28	45.35	55.00	43.43	38.10	33.54	1,613
1957	34.90	37.37	155.9	173.3	211	375.7	1,148	1,749	1,405	751	61.03	65.68	5,866
1958	41.48	140.5	290.1	193.6	336.9	2,037	1,201	574.2	476.3	2,591	1,508	541.5	9,892
1959	126.2	190.7	244.9	298.0	794.9	642.7	274.6	293	99.70	156.2	152.3	77.11	3,350
1960	1,140	233	204.7	384.9	405.9	968.7	1,241	1,679	79.46	97.68	149.2	82.27	6,646

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	13,760	9,959,000
1951	1210	130,000	July 13, 1951	761	22,670	16,410,000	25,930	18,780,000
1952	1240	57,300	Nov. 16, 1951	556	11,330	8,225,000	7,291	5,293,000
1953	1280	24,900	Apr. 24, 1953	498	3,782	2,738,000	3,667	2,655,000
1954	1340	15,800	May 17, 1954	505	1,237	895,200	2,230	1,614,000
1955	1390	48,900	Feb. 23, 1955	500	6,884	4,984,000	6,989	5,060,000
1956	1440	34,000	Oct. 6, 1955	435	2,222	1,613,000	1,228	891,200
1957	1510	70,100	May 27, 1957	435	8,106	5,868,000	8,442	6,112,000
1958	1560	87,900	Aug. 2, 1958	487	13,660	9,892,000	13,790	9,981,000
1959	1630	30,800	Feb. 10, 1959	373	4,628	3,350,000	6,031	4,366,000
1960	1710	75,400	May 8, 1960	395	9,155	6,646,000	-	-

## 9270. Maries River at Westphalia, Mo.

Location.--Lat 38°25'55", long 91°59'20", in NE $\frac{1}{4}$  sec.35, T.43 N., R.10 W., on right bank 200 ft upstream from bridge on U. S. Highway 63, three-quarters of a mile southeast of Westphalia, and  $\frac{1}{4}$  miles downstream from Little Maries Creek.

Drainage area.--257 sq mi.

Records available.--December 1947 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 542.74 ft above mean sea level, datum of 1929. Prior to June 8, 1951, wire-weight gage at site 200 ft downstream at same datum.

Average discharge.--12 years (1948-60), 203 cfs (147,000 acre-ft per year).

Extremes.--1947-60: Maximum discharge, 20,000 cfs May 17, 1957 (gage height, 18.21 ft); minimum, 0.1 cfs Sept. 22, Oct. 5-18, 1956.

Flood of June 8, 1937, reached a stage of 22.8 ft, from information by local residents.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	15.1	29.2	18.0	59.4	623	617	419	322	715	793	303	479	363
1952	440	430	186	214	418	465	569	36.8	8.16	23.2	113	6.99	241
1953	3.15	10.8	17.4	87.2	68.3	316	377	217	9.83	4.28	1.49	.43	32.9
1954	1.04	2.24	4.12	4.64	6.97	9.92	61.9	157	149	39.7	64.8	1.28	42.0
1955	65.8	44.5	142	139	378	366	97.7	91.1	216	158	3.38	40.0	144
1956	26.4	6.80	5.02	4.27	18.2	12.0	37.4	131	165	52.8	27.3	1.38	40.7
1957	.24	5.03	131	21.5	607	365	921	1,233	487	162	39.9	3.93	329
1958	2.85	16.3	74.2	48.2	265	728	244	67.9	681	296	181	6.95	215
1959	5.66	11.3	8.99	28.9	361	154	58.0	420	70.0	3.99	.85	5.71	92.5
1960	87.8	17.9	266	104	119	450	324	467	13.8	42.4	12.9	2.38	156

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	930	1,740	986	3,650	34,580	37,960	24,910	19,810	42,540	48,760	18,630	28,530	263,000
1952	27,050	25,610	11,410	13,180	24,060	28,580	33,850	2,260	485	1,430	6,920	416	175,300
1953	194	643	1,070	5,360	3,790	19,440	22,450	13,360	585	263	92	25	67,270
1954	64	133	253	285	387	610	3,690	9,650	8,860	2,440	3,980	76	30,430
1955	4,050	2,650	8,740	8,540	21,000	22,490	5,810	5,600	12,830	9,740	208	2,380	104,000
1956	1,630	405	309	263	1,050	740	2,230	8,040	9,840	3,250	1,680	82	29,520
1957	15	300	8,040	1,320	33,700	22,430	54,800	75,800	28,970	9,930	2,450	234	238,000
1958	175	970	4,560	2,960	14,720	44,780	14,540	4,180	39,330	18,200	11,140	414	156,000
1959	348	670	553	1,780	20,050	9,490	3,450	25,800	4,170	246	53	340	66,950
1960	5,400	1,060	13,910	6,400	6,840	27,650	19,270	28,720	820	2,610	792	142	113,600

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30						Calendar year			
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff	
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet
1950	-	-	-	-	-	-	-	-	307	16.25	222,500
1951	1210	10,300	June 30, 1951	8	363	1.41	19.20	263,000	447	23.60	323,400
1952	1240	7,930	Oct. 6, 1951	2.1	241	.938	12.79	175,300	156	8.26	113,100
1953	1280	6,100	Apr. 24, 1953	.2	92.9	.361	4.91	67,270	90.9	4.80	65,820
1954	1340	5,700	June 9, 1954	.2	42.0	.163	2.22	30,430	62.7	3.32	45,420
1955	1390	7,320	Feb. 20, 1955	.2	144	.560	7.59	104,000	126	6.63	90,940
1956	1440	5,600	June 25, 1956	.2	40.7	.158	2.16	29,520	48.9	2.60	35,530
1957	1510	20,000	May 17, 1957	.1	329	1.28	17.37	238,000	325	17.17	235,300
1958	1560	9,660	June 12, 1958	1.2	215	.837	11.37	156,000	210	11.08	151,800
1959	1630	10,300	Feb. 10, 1959	.4	92.5	.360	4.87	66,950	118	6.23	85,750
1960	1710	8,380	May 6, 1960	.7	156	.607	8.30	113,600	-	-	-

9272. Big Hollow near Fulton, Mo.

Location.--Lat 38°48'45", long 91°56'45", in NW¼NW¼ sec.33, T.47 N., R.9 W., at culvert on County Highway C, 2.0 miles south of Fulton and 3 miles upstream from mouth.

Drainage area.--4.05 sq mi.

Records available.--March 1957 to September 1959, water year 1960 (annual maximum).

Gage.--Crest-stage gage. Altitude of gage is 720 ft (from topographic map). Prior to Oct. 1, 1959, water-stage recorder at same site and datum.

Extremes.--1957-60: Maximum discharge, 936 cfs Aug. 1, Oct. 9, 1958 (gage height, 5.81 ft), from rating curve extended above 27 cfs on basis of culvert-flow measurements at gage heights 3.88, 4.26, and 5.80 ft. No flow for many days.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1957	-	-	-	-	-	2.77	12.1	2.20	1.92	0.06	0	0	-
1958	0.05	0.01	0.14	0.09	2.16	6.32	6.02	2.28	10.2	5.46	2.66	3.48	-
1959	4.42	4.77	.13	1.37	11.5	5.00	.81	4.54	.27	.07	.13	.75	2.76

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1957	-	-	-	-	-	170	721	135	114	3.6	0	0	-
1958	2.8	0.6	8.5	5.8	120	389	358	140	370	628	336	158	2,520
1959	272	284	8.1	84	640	308	48	279	16	4.2	7.7	44	2,000

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30						Calendar year			
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff	
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet
1957	1560	-	-	-	-	-	-	-	-	-	-
1958	1560	936	Aug. 1, 1958	0	3.48	0.859	11.65	2,520	4.24	14.21	3,070
1959	1630	936	Oct. 9, 1958	0	2.76	.681	9.24	2,000	-	-	-
1960	-	638	Oct. 10, 1959	-	-	-	-	-	-	-	-

## GASCONADE RIVER BASIN

9280. Gasconade River near Hazlegreen, Mo.

Location.--Lat 37°45'35", long 92°27'05", in SE¼SE¼ sec.15, T.35 N., R.14 W., on downstream end of center pier of bridge on east bound lane on U. S. Highway 66, 1 mile downstream from Osage Fork and 1½ miles west of Hazlegreen.

Drainage area.--1,250 sq mi, approximately.

Records available.--October 1928 to September 1960. Prior to April 1929 monthly discharge only, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 844.75 ft above mean sea level, datum of 1929. Prior to Oct. 11, 1934, chain gage and Oct. 11, 1934, to Mar. 5, 1956, wire-weight gage, at same site and datum. Mar. 6, 1956, to Dec. 17, 1957, staff gage at site 750 ft downstream at same datum and Dec. 18, 1957, to Aug. 20, 1958, wire-weight gage at same site and datum.

Average discharge.--32 years (1928-60), 1,013 cfs (733,400 acre-ft per year).

Extremes.--1928-60: Maximum discharge, 76,400 cfs Apr. 14, 1945 (gage height, 29.6 ft, from floodmark); minimum, 18 cfs Aug. 1, 1936; minimum gage height, -0.34 ft Oct. 22-25, 1956.

Maximum stage known, 30.6 ft in January 1916, from floodmark (discharge, about 90,000 cfs).

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	176	162	143	335	2,652	2,211	2,062	1,596	1,822	4,203	1,139	911	1,444
1952	1,246	4,273	1,092	781	1,956	2,275	2,878	448	193	134	295	99	1,296
1953	80.0	151	249	313	251	1,175	1,179	641	123	75.4	53.9	36.7	361
1954	64.7	65.8	79.4	81.8	120	169	194	475	96.3	57.9	45.2	25.6	123
1955	161	178	784	612	1,554	2,179	380	429	420	390	78.3	60.6	600
1956	106	66.6	72.6	68.0	311	141	130	1,875	353	272	203	35.3	304
1957	31.6	86.2	375	466	1,395	1,357	3,465	6,224	3,074	296	114	150	1,417
1958	82.3	250	2,314	409	304	4,006	1,389	1,231	404	5,322	1,049	1,391	1,530
1959	246	419	253	490	643	1,511	664	1,388	868	272	130	98.1	582
1960	1,041	927	1,713	799	727	1,414	698	1,231	232	364	149	75.9	784

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	10,840	9,650	8,780	20,610	147,300	136,000	122,700	98,120	108,400	258,400	70,040	54,230	1,045,000
1952	76,640	254,200	67,150	48,030	112,500	139,900	171,200	27,550	11,510	8,230	18,150	5,920	941,000
1953	4,920	9,000	15,290	19,230	13,950	72,220	70,180	39,440	7,290	4,640	3,310	2,180	261,600
1954	3,980	3,920	4,680	5,030	6,690	10,380	11,520	29,210	5,730	3,560	2,780	1,520	89,200
1955	11,140	10,570	48,190	37,620	86,290	134,000	22,640	26,390	25,000	23,980	4,820	3,610	434,200
1956	6,490	3,960	4,460	4,180	17,870	8,680	7,740	115,300	21,030	16,720	12,490	2,100	221,000
1957	1,950	5,130	23,070	28,680	77,500	83,440	206,200	382,700	182,900	18,200	7,020	8,900	1,026,000
1958	5,060	14,860	142,300	25,160	18,990	246,300	82,650	75,690	24,040	327,200	64,490	82,760	1,107,000
1959	15,100	24,940	15,570	30,140	35,730	92,890	39,510	85,350	11,620	16,700	7,970	5,840	421,400
1960	64,030	55,150	105,300	49,160	41,820	86,930	41,510	75,670	13,820	22,410	9,160	4,510	569,500

Yearly discharge, in cubic feet per second, of Gasconade River near Hazlegreen, Mo.

Year	WSP	Water year ending Sept. 30						Calendar year			
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff	
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet
1950	-	-	-	-	-	-	-	1,697	18.43	1,229,000	
1951	1210	36,000	July 1, 1951	126	1,444	1.16	15.67	1,045,000	1,953	21.21	1,414,000
1952	1240	17,000	Nov. 17, 1951	73	1,296	1.04	14.11	941,000	788	8.57	572,200
1953	1280	7,100	Apr. 24, 1953	31	361	.289	3.91	261,600	339	3.67	245,200
1954	1340	3,460	May 3, 1954	19	123	.098	1.34	89,200	202	2.20	146,300
1955	1390	16,000	Feb. 21, 1955	25	600	.460	6.51	434,200	524	5.69	379,300
1956	1440	35,900	May 16, 1956	20	304	.243	3.33	221,000	325	3.56	236,300
1957	1510	38,600	May 24, 1957	22	1,417	1.13	15.38	1,026,000	1,599	17.35	1,158,000
1958	1560	49,000	Dec. 18, 1957	53	1,530	1.22	16.62	1,107,000	1,382	15.02	1,001,000
1959	1630	10,200	May 29, 1959	86	582	.466	6.31	421,400	815	8.85	590,200
1960	1710	14,800	Dec. 19, 1959	58	784	.627	8.56	569,500	-	-	-

## 9285. Gasconade River near Waynesville, Mo.

Location.--Lat 37°52'20", long 92°13'40", in SE $\frac{1}{4}$  sec. 3, T 36 N., R 12 W., on downstream side of center pier of county highway bridge,  $2\frac{1}{2}$  miles downstream from Roubidoux Creek and 4 miles north of Waynesville.

Drainage area.--1,680 sq mi, approximately.

Records available.--August 1914 to September 1960. Prior to June 1921 monthly discharge only, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 738.60 ft above mean sea level, datum of 1929. Prior to July 19, 1921, reference point, July 19, 1921, to Nov. 9, 1934, chain gage, and Nov. 10, 1934, to Oct. 2, 1958, wire-weight gage, at same site and datum.

Average discharge.--46 years (1914-60), 1,446 cfs (1,046,000 acre-ft per year).

Extremes.--1914-60: Maximum discharge, 89,000 cfs Aug. 22, 1915 (gage height, about 24.3 ft, from floodmark); minimum, 44 cfs Oct. 23-25, 1956; minimum gage height observed, 1.70 ft Sept. 20, 30, Oct. 1, 1956.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	263	246	226	500	3,267	2,986	2,703	2,725	2,582	6,295	1,709	1,377	2,051
1952	1,798	5,323	1,640	1,163	2,616	3,028	3,828	696	306	243	477	182	1,763
1953	147	201	334	420	416	1,590	1,823	992	208	141	103	73.7	538
1954	112	118	134	139	169	212	280	573	194	94.4	80.4	56.3	180
1955	215	244	970	852	1,934	2,910	577	570	565	533	145	106	797
1956	155	109	108	102	401	236	187	2,443	867	377	314	78.6	450
1957	55.5	103	394	524	1,954	2,084	5,274	8,748	4,134	447	207	205	2,007
1958	112	309	2,344	497	355	5,245	1,845	1,716	517,6369	1,827	1,810	1,917	1,917
1959	353	602	343	615	1,046	2,131	1,035	2,351	1,204	395	186	144	867
1960	1,258	1,168	2,227	1,103	951	1,953	983	1,681	337	437	236	111	1,042

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	16,190	14,660	13,900	30,740	181,400	183,600	160,800	167,600	141,700	387,100	105,100	81,940	1,485,000
1952	110,500	16,700	100,800	71,500	150,500	186,200	227,800	42,790	18,180	14,950	29,330	10,820	1,280,000
1953	9,040	11,980	20,540	25,840	23,080	97,770	108,500	60,990	12,370	8,650	6,310	4,390	389,500
1954	6,870	7,000	8,230	8,560	9,410	13,010	16,640	35,220	11,530	5,810	4,940	3,350	130,600
1955	13,200	14,520	59,650	52,410	107,400	178,900	34,340	35,020	33,640	32,760	8,910	6,290	577,000
1956	9,550	6,470	6,650	6,270	23,040	14,500	11,130	150,200	51,560	23,170	19,320	4,680	326,500
1957	3,410	6,120	24,240	32,240	109,100	128,100	133,800	537,800	246,000	27,500	12,700	12,190	1,453,000
1958	6,880	18,390	44,100	30,580	19,720	322,500	109,800	105,500	30,740	391,600	100,000	107,700	1,388,000
1959	21,680	35,820	21,090	37,830	58,090	131,000	61,590	144,600	71,620	24,260	11,420	8,550	627,600
1960	77,350	69,470	136,900	67,800	54,720	120,100	58,470	103,400	20,040	26,890	14,520	6,620	756,300

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30						Calendar year			
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff	
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet
1950	-	-	-	-	-	-	-	2,252	18.20	1,630,000	
1951	1210	32,000	July 2, 1951	208	2,051	1.22	16.56	1,485,000	2,718	21.85	1,968,000
1952	1240	13,700	Nov. 13, 1951	139	1,763	1.05	14.29	1,280,000	1,093	8.86	783,600
1953	1280	9,060	Apr. 24, 1953	68	538	.320	4.35	389,500	511	4.14	370,000
1954	1340	3,200	May 4, 1954	51	180	.107	1.47	130,600	271	2.20	195,800
1955	1390	16,300	Mar. 21, 1955	56	797	.474	6.45	577,000	708	5.72	512,300
1956	1440	26,600	May 17, 1956	59	450	.268	3.65	326,500	465	3.78	337,600
1957	1510	44,500	May 23, 1957	44	2,007	1.19	16.23	1,453,000	2,195	17.75	1,589,000
1958	1560	45,100	July 19, 1958	83	1,917	1.14	15.60	1,398,000	1,791	14.48	1,297,000
1959	1630	12,900	May 28, 1959	112	867	.516	7.01	627,600	1,150	9.30	832,700
1960	1710	15,000	Dec. 19, 1959	93	1,042	.620	8.43	756,300	-	-	-

9290. Coyle Branch at Houston, Mo.

Location.--Lat 37°19'25", long 91°57'12", in NW¼NW¼ sec.8, T.30 N., R.9 W., on right bank at upstream end of double culvert on U. S. Highway 63 at east edge of Houston, a quarter of a mile upstream from mouth.

Drainage area.--1.10 sq mi.

Records available.--June 1949 to June 1955, water years 1959-60 (annual maximum).

Gage.--Crest-stage gage. Altitude of gage is 1,090 ft (from topographic map). June 16, 1949, to June 30, 1955, water-stage recorder at site 40 ft downstream at same datum.

Average discharge.--6 years (1949-55), 0.66 cfs (478 acre-ft per year).

Extremes.--1949-55, 1958-60: Maximum discharge, 1,030 cfs June 30, 1951 (gage height, 5.02 ft, in gage well), from rating curve extended above 50 cfs on basis of slope-area measurement at gage height 3.77 ft.  
1949-55: No flow at times in 1950, 1952-55.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	.008	0.050	0.014	0.465	1.81	1.40	1.72	0.634	2.68	0.835	0.452	0.345	0.857
1952	1.15	2.58	.719	.514	1.04	1.65	1.45	.131	.040	.162	.059	.003	.787
1953	.002	.132	.130	.308	.185	1.33	.550	.185	.007	.005	0	0	.237
1954	.01	0	0	.02	.01	.03	.01	.11	.03	.06	0	.01	.02
1955	.05	.01	.51	.07	.71	.75	.02	.35	.07	-	-	-	-

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	0.52	3.0	0.85	29	101	86	102	39	160	51	28	21	621
1952	71	153	44	32	60	101	86	8.0	2.4	10	3.6	.16	571
1953	.1	7.9	8.0	19	10	82	33	11	.4	.3	0	0	172
1954	.4	.2	0	1.2	.6	1.8	.4	6.9	1.8	3.6	0	.4	17
1955	3.4	.4	31	4.4	39	46	1.0	21	4.0	-	-	-	-

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30						Calendar year			
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff	
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet
1950	-	-	-	-	-	-	-	-	1.17	14.38	845
1951	1210	1,030	June 30, 1951	0	0.857	0.779	10.55	621	1.22	15.06	885
1952	1240	87	Mar. 10, 1952	0	.787	.715	9.75	571	.440	5.46	319
1953	1280	135	Mar. 3, 1953	0	.237	.215	2.92	172	.216	2.66	156
1954	1340	36	July 24, 1954	0	.02	.018	.29	17	.07	.88	52
1955	1390	137	Mar. 20, 1955	-	-	-	-	-	-	-	-
1956	-	-	-	-	-	-	-	-	-	-	-
1957	-	-	-	-	-	-	-	-	-	-	-
1958	-	(a)	May 27, 1959	-	-	-	-	-	-	-	-
1959	-	(a)	Nov. 4, 1959	-	-	-	-	-	-	-	-
1960	-	-	-	-	-	-	-	-	-	-	-

a Discharge not determined; probably less than 150 cfs.

## 9300. Big Piney River near Big Piney, Mo.

Location.--Lat 37°40'00", long 92°03'05", in NE $\frac{1}{4}$ SE $\frac{1}{4}$  sec.8, T.34 N., R.10 W., near center of span on downstream side of Ross Highway bridge, 3 miles east of Big Piney and 14 $\frac{1}{4}$  miles upstream from Spring Creek.

Drainage area.--560 sq mi, approximately.

Records available.--October 1921 to September 1960.

Gage.--Wire-weight gage. Datum of gage is 800.99 ft above mean sea level, datum of 1929. Prior to Nov. 8, 1934, chain gage at same site and datum.

Average discharge.--39 years (1921-60), 547 cfs (396,000 acre-ft per year).

Extremes.--1921-60: Maximum discharge, 32,700 cfs Dec. 27, 1942 (gage height, 20.7 ft, from floodmark), from rating curve extended above 19,000 cfs on basis of velocity-area studies; minimum, 69 cfs Sept. 17, 18, 1954; minimum gage height, 1.60 ft July 30, 31, 1926; Sept. 5, 6, 9-11, 17, 18, 1954.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	192	181	167	302	1,321	938	911	894	887	1,969	617	439	714
1952	879	2,127	745	508	937	1,395	1,376	388	241	250	198	149	763
1953	150	201	214	237	231	892	597	363	164	132	115	109	284
1954	120	127	128	†131	142	206	188	302	174	101	93.5	72.9	149
1955	143	118	453	300	641	1,089	261	224	225	241	115	92.6	324
1956	118	107	98.5	98.5	351	162	213	1,449	458	121	147	81.5	284
1957	82.3	115	218	268	837	457	2,114	2,776	1,206	193	129	123	707
1958	119	180	847	249	218	1,803	713	728	225	1,465	527	621	649
1959	186	435	239	369	598	668	428	592	381	186	131	122	344
1960	321	387	800	464	313	649	390	638	188	206	138	109	385

† Corrected.

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	11,800	10,790	10,300	18,560	73,390	57,690	54,190	42,690	52,760	121,100	37,910	26,110	517,300
1952	54,050	26,600	45,830	31,220	53,900	85,760	81,880	23,880	14,340	15,360	12,200	8,850	553,900
1953	9,200	11,980	13,140	14,540	12,840	54,870	35,550	22,320	9,790	8,100	7,100	6,470	205,900
1954	7,370	7,530	7,870	8,060	7,890	12,660	11,170	18,550	10,360	6,210	5,750	4,340	107,800
1955	8,780	7,000	27,850	18,460	35,590	86,930	15,550	13,780	13,420	14,790	7,080	5,510	234,700
1956	7,260	6,380	6,050	6,060	20,180	9,950	12,650	89,080	27,250	7,430	9,040	4,850	206,200
1957	5,060	6,850	13,410	16,490	46,500	28,120	125,800	70,700	71,750	11,880	7,920	7,310	511,800
1958	7,310	10,720	52,100	15,290	13,250	110,900	42,430	44,770	13,370	90,050	32,410	36,960	469,600
1959	11,420	25,900	14,680	22,690	22,130	41,050	25,360	36,430	22,670	11,450	8,070	7,270	249,100
1960	19,710	23,060	49,210	28,560	18,030	39,930	23,180	39,210	11,180	12,660	8,500	6,490	279,700

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30							Calendar year		
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff	
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet
1950	-	-	-	-	-	-	-	-	891	21.61	645,300
1951	1210	19,400	July 1, 1951	137	714	1.28	17.31	517,300	982	23.79	710,900
1952	1240	9,100	Apr. 13, 1952	140	763	1.36	18.54	553,900	498	12.11	361,700
1953	1280	6,990	Mar. 4, 1953	106	284	.507	6.91	205,900	268	6.52	194,400
1954	1340	2,680	May 29, 1954	69	149	.266	3.60	107,800	178	4.29	128,600
1955	1390	15,700	Mar. 21, 1955	75	324	.579	7.85	234,700	291	7.05	210,800
1956	1440	28,600	May 16, 1956	71	284	.507	6.88	206,200	292	7.06	211,800
1957	1510	17,900	May 23, 1957	75	707	1.26	17.13	511,800	769	18.62	556,600
1958	1560	19,700	July 18, 1958	105	649	1.16	15.72	469,600	624	15.12	451,400
1959	1630	4,910	May 28, 1959	114	344	.614	8.33	249,100	399	9.67	289,100
1960	1710	6,050	Dec. 28, 1959	100	365	.688	9.36	279,700	-	-	-



## 493

Location.--Lat 37°52'45", long 91°47'43", in SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec.34, T.37 N., R.8 W., on left bank 30 Ft downstream from bridge on U. S. Highway 63, 4 $\frac{1}{2}$  miles upstream from mouth, and 5 miles south of Rolla.

Records available.--August 1948 to September 1955, water year 1960 (annual maximum).

Average discharge.--7 years (1948-55), 13.4 cfs (9,700 acre-ft per year).

Extremes.--1948-55, 1959-60: Maximum discharge, 3,800 cfs June 9, 1950 (gage height, 5.61 ft), from rating curve extended above 2,100 cfs by logarithmic plotting.  
1948-55: Minimum discharge, 0.1 cfs Sept. 5, 6, 18, 19, 1954, but may have been less during periods of no gage-height record in 1954.

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	1.71	2.37	2.08	5.04	32.8	24.4	17.9	17.3	37.8	29.9	15.0	9.51	16.0
1952	15.3	37.7	12.6	9.68	23.6	29.3	34.6	3.02	1.19	.984	2.93	.852	14.0
1953	1.09	2.02	2.07	5.14	3.58	23.5	19.0	5.34	1.01	.543	.421	.369	5.36
1954	.74	1.04	1.08	1.06	1.04	1.49	1.85	5.82	11.7	.85	1.18	.20	2.33
1955	2.04	1.41	7.50	3.65	23.3	33.3	6.14	14.0	10.2	7.94	7.3	2.38	9.32

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	105	141	128	310	1,820	1,500	1,060	1,060	2,250	1,840	801	566	11,580
1952	818	2,240	777	594	1,360	1,800	2,060	186	71	61	180	51	10,200
1953	67	120	127	316	199	1,450	1,130	328	60	33	26	22	3,880
1954	46	62	66	65	58	92	110	358	696	53	73	12	1,690
1955	125	84	461	225	1,290	2,050	366	864	606	488	45	141	6,740

Year	WSP	Water year ending Sept. 30						Calendar year			
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff	
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet
1950	-	-	-	-	-	-	-	-	-	-	
1951	1210	2,280	June 30, 1951	1.3	16.0	1.14	15.53	11,580	22.9	16,580	
1952	1240	1,280	Mar. 10, 1952	.44	14.0	1.10	13.65	10,200	20.8	15,040	
1953	1280	1,870	Apr. 23, 1953	.29	5.36	1.383	5.19	3,880	9.19	6,680	
1954	1340	924	June 9, 1954	.1	2.33	1.66	2.27	1,690	5.16	3,740	
1955	1390	1,890	Mar. 20, 1955	.3	9.32	.666	9.03	6,740	3.02	2,190	
1956	-	-	-	-	-	-	-	-	-	-	
1957	-	-	-	-	-	-	-	-	-	-	
1958	-	-	-	-	-	-	-	-	-	-	
1959	-	-	-	-	-	-	-	-	-	-	
1960	-	2,500	Dec. 17, 1959	-	-	-	-	-	-	-	

9315. Little Beaver Creek near Rolla, Mo.

Location.--Lat 37°56'06", long 91°50'11", in NW 1/4 sec. 17, T. 37 N., R. 8 W., on right bank 1,700 ft downstream from new U. S. Highway 66 and 3 miles west of Rolla.

Drainage area.--6.41 sq mi.

Records available.--November 1947 to September 1960.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 790 ft (from topographic map).

Average discharge.--12 years (1948-60), 5.67 cfs (4,100 acre-ft per year).

Extremes.--1947-60: Maximum discharge, 7,420 cfs July 17, 1958 (gage height, 8.57 ft), from rating curve extended above 1,400 cfs on basis of slope-area and contracted-opening measurements at gage height 7.57 ft and logarithmic plotting; minimum, 0.01 cfs July 16, 17, 1954.

Maximum stage known since 1881 or 1882, that of July 17, 1958.

Corrections.--In WSP 1510, the daily discharges for May 21 and 22 are listed in error; they should be 377 and 128 cfs, respectively.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	0.639	1.10	0.697	1.54	15.3	12.8	9.41	7.20	25.5	15.7	6.23	5.91	8.44
1952	7.37	18.1	7.26	6.24	10.6	11.0	9.97	1.12	.297	.959	2.08	.268	6.24
1953	.495	.969	1.17	2.68	1.79	9.35	12.8	3.36	.370	.219	.160	.125	2.79
1954	.249	.296	.320	.326	.304	.337	1.60	2.62	4.17	.228	1.17	.076	.974
1955	1.07	.691	2.88	1.56	8.92	14.2	1.92	3.05	7.39	4.34	1.17	.526	3.95
1956	1.34	.313	.289	.292	2.71	.614	.709	7.52	1.23	1.55	1.82	.063	1.54
1957	.105	.328	2.30	1.11	18.3	7.43	20.6	37.7	5.23	1.99	1.01	.582	7.85
1958	.511	.674	7.58	1.98	6.04	20.6	5.00	5.61	15.2	26.2	6.66	.610	7.93
1959	.562	.906	.613	2.41	5.36	6.21	2.00	12.2	.961	.258	.580	.216	2.89
1960	2.64	3.28	10.2	4.76	3.90	10.4	6.32	7.46	.560	.814	.947	.187	4.30

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	52	65	43	95	848	788	560	442	1,520	965	383	352	6,110
1952	453	1,080	446	384	612	677	593	69	18	59	128	16	14,540
1953	30	58	72	165	99	575	764	206	22	13	10	7.5	2,020
1954	15	18	20	20	17	21	95	161	248	14	72	4.5	706
1955	66	41	177	96	495	874	114	188	440	267	72	31	2,860
1956	82	19	18	18	156	38	42	463	73	95	112	3.7	1,120
1957	6.5	19	141	68	904	457	1,220	2,320	311	122	62	35	5,670
1958	31	40	466	122	335	1,260	298	222	906	1,610	409	36	5,740
1959	35	54	38	148	298	382	119	749	57	16	36	13	1,940
1960	162	195	626	293	224	637	376	459	33	50	58	11	3,120

† Corrected.

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30							Calendar year		
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff	
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet
1950	-			-	-	-			10.0	21.24	7,260
1951	1210	2,110	June 30, 1951	-	-	1.32	17.97	6,110	11.0	23.18	7,930
1952	1240	456	Oct. 22, 1951	0.4	8.44	.973	13.25	14,540	5.74	7.94	2,720
1953	1280	2,110	Apr. 25, 1953	.07	2.79	.435	5.90	2,020	†2.65	5.58	1,910
1954	1340	740	June 9, 1954	.01	.974	.152	2.06	706	1.29	2.74	936
1955	1390	950	July 7, 1955	.07	3.95	.616	8.37	2,860	3.72	7.88	2,700
1956	1440	1,320	May 30, 1956	.02	1.54	.240	3.26	1,120	1.61	3.41	1,170
1957	1510	5,040	May 21, 1957	.06	7.83	1.22	16.58	5,670	8.34	17.66	6,040
1958	1560	7,420	July 17, 1958	.20	7.93	1.24	16.80	5,740	7.36	15.60	5,320
1959	1630	524	Feb. 9, 1959	.05	2.68	.418	5.69	1,940	3.87	8.19	2,800
1960	1710	1,060	Feb. 6, 1960	.14	4.30	.671	9.14	3,120	-	-	-

† Corrected.

9320. Little Piney Creek at Newburg, Mo.

Location--Lat 37°54'40", long 91°54'10", in SE $\frac{1}{4}$  sec.22, T.37 N., R.9 W., near center of span on upstream side of bridge on County Highway P and T at Newburg, 2 miles upstream from Mill Creek.

Drainage area--200 sq mi, approximately.

Records available--October 1928 to September 1960.

Gage--Wire-weight gage. Datum of gage is 693.40 ft above mean sea level, datum of 1929. Prior to Nov. 10, 1934, chain gage and Nov. 10, 1934, to Sept. 30, 1951, wire-weight gage, at same site at datum 3.00 ft higher.

Average discharge--32 years (1928-60), 158 cfs (114,400 acre-ft per year).

Extremes--1928-60: Maximum discharge, 32,500 cfs Aug. 14, 1946 (gage height, 16.2 ft, present datum, from floodmarks), from rating curve extended above 21,000 cfs on basis of slope-area measurements at gage heights 15.0 and 16.2 ft; maximum gage height, 16.26 ft June 26, 1935 (from floodmark, present datum); minimum discharge, 24 cfs Aug. 22-31, 1936, Sept. 19, 20, 1954, Oct. 10-16, 1956; minimum gage height, 1.97 ft Sept. 28-30, 1960.

Maximum stage known, 16.7 ft Aug. 20, 1915 (from floodmark, present datum); discharge, 30,000 cfs, from rating curve based on discharge measurements made in 1935 and extended above 25,000 cfs.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	83.6	89.8	71.6	94.3	577	291	195	218	403	525	182	159	238
1952	220	399	205	158	219	282	305	128	104	95.4	101	67.1	190
1953	75.4	66.2	72.8	79.6	74.5	183	183	116	66.9	57.7	51.5	46.4	89.6
1954	43.9	46.0	46.9	47.2	45.9	46.1	48.4	59.6	64.8	43.5	44.2	28.1	47.0
1955	37.4	41.1	79.0	61.8	154	278	91.9	107	148	88.8	48.3	37.8	97.4
1956	35.7	38.0	35.7	34.9	56.6	42.8	42.0	209	111	+58.5	+33.2	29.8	60.7
1957	26.9	33.1	42.7	42.8	237	137	419	871	197	112	61.7	58.8	186
1958	55.7	58.8	219	88.1	113	503	174	139	161	411	156	70.1	180
1959	60.3	67.8	58.8	70.1	95.3	184	120	295	86.2	53.2	46.5	44.3	98.7
1960	63.9	79.3	176	123	101	192	131	197	59.6	54.5	57.8	38.8	107

† Corrected.

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	5,140	5,350	4,400	5,800	32,050	17,900	11,610	13,420	24,000	32,250	11,190	9,450	172,600
1952	13,500	23,750	12,620	9,690	12,560	17,360	18,120	7,890	6,200	5,870	6,230	3,990	137,800
1953	4,640	3,940	4,480	4,900	4,140	11,270	10,910	7,120	3,980	3,550	3,170	2,760	64,860
1954	2,700	2,740	2,880	2,900	2,550	2,830	2,880	3,660	3,660	2,670	2,720	1,670	34,060
1955	2,300	2,440	4,860	3,800	8,580	17,080	5,470	6,560	8,780	5,460	2,970	2,250	70,550
1956	2,200	2,260	2,200	2,140	3,260	2,630	2,500	12,870	6,590	3,600	2,050	1,770	44,070
1957	1,680	1,970	2,620	2,630	13,160	8,430	24,940	53,550	11,710	6,910	3,790	3,500	134,900
1958	3,420	3,300	13,480	5,420	6,250	30,320	10,350	8,540	9,580	25,280	9,610	4,170	130,500
1959	3,710	4,050	3,610	4,310	5,290	11,300	7,180	18,120	5,130	3,270	2,860	2,640	71,430
1960	3,930	4,720	10,820	7,580	5,790	11,800	7,790	12,130	3,540	3,350	3,550	2,310	77,310

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30										Calendar year		
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff		Mean	Runoff	
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet		Inches	Acre-feet
1950	-	-	-	-	-	-	-	-	-	-	-	296	20.07	214,100
1951	1210	14,400	June 30, 1951	63	238	1.19	16.17	172,600	287	19.45	207,500	19.45	207,500	
1952	1240	2,680	Mar. 11, 1952	61	190	.950	12.91	137,800	139	9.46	101,000	9.46	101,000	
1953	1260	1,730	Apr. 23, 1953	42	89.6	.448	6.08	64,860	83.0	5.84	60,120	5.84	60,120	
1954	1340	2,260	June 9, 1954	24	47.0	.235	3.19	34,060	48.8	3.32	35,340	3.32	35,340	
1955	1390	4,420	Mar. 20, 1955	28	97.4	.467	6.62	70,550	93.4	6.34	67,610	6.34	67,610	
1956	1440	7,000	May 31, 1956	26	60.7	.304	4.15	44,070	60.1	4.11	43,680	4.11	43,680	
1957	1510	11,100	May 23, 1957	24	186	.930	12.66	134,900	206	13.98	149,000	13.98	149,000	
1958	1560	13,500	July 17, 1958	46	180	.900	12.24	130,500	168	11.40	121,500	11.40	121,500	
1959	1630	5,290	May 17, 1959	36	98.7	.494	6.71	71,430	110	7.46	79,550	7.46	79,550	
1960	1710	4,360	May 6, 1960	35	107	.535	7.24	77,310	-	-	-	-	-	-

9330. Wilkins Spring near Newburg, Mo.

Location.--Lat 37°50'13", long 91°56'14", in SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec.17, T.36 N., R.9 W., at DeWitt's Ranch, 1,000 ft up spring branch from Mill Creek and  $\frac{5}{8}$  miles southwest of Newburg.

Records available.--January 1953 to September 1959.

Gage.--Water-stage recorder and artificial control. Datum of gage is 810.50 ft above mean sea level, datum of 1929.

Average discharge.--6 years (1953-59), 6.42 cfs (4,650 acre-ft per year).

Extremes.--1953-59: Maximum daily discharge, 16 cfs May 22, 23, 1957; minimum daily, 4.5 cfs for many days October 1956 to January 1957.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952	-	-	-	6.42	6.42	8.10	8.62	7.22	6.17	6.00	6.20	6.21	-
1953	5.92	5.84	5.42	5.40	5.30	4.94	5.05	5.45	5.57	5.27	5.04	4.92	5.34
1954	5.11	4.94	5.96	5.84	6.66	8.73	7.63	6.95	8.14	7.08	5.97	5.55	6.54
1955													
1956	5.56	5.13	4.88	4.88	5.34	5.00	4.97	6.98	7.70	6.01	5.06	4.85	5.53
1957	4.63	4.55	4.88	4.84	7.13	7.89	10.8	11.5	8.58	7.55	6.77	6.32	7.11
1958	5.68	5.74	6.85	6.40	6.71	10.3	8.79	8.11	6.66	7.77	7.71	6.74	7.30
1959	6.13	6.05	5.72	5.94	6.55	7.87	7.44	9.27	7.48	6.31	5.88	5.56	6.69
1960													

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951													
1952	-	-	-	395	357	498	513	444	367	369	381	370	-
1953	364	348	333	332	294	303	299	335	331	324	310	293	3,870
1954	314	294	367	359	370	537	454	427	485	435	367	330	4,740
1955													
1956	342	305	300	300	307	307	296	429	458	370	311	289	4,010
1957	285	271	300	298	396	485	641	707	511	465	416	376	5,150
1958	349	341	421	393	373	633	523	499	396	478	474	401	5,280
1959	377	360	352	365	364	484	443	570	445	388	361	331	4,840
1960													

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950								
1951								
1952								
1953	1280	-	-	-	-	-	6.54	4,740
1954	1340	6.9	June 3, 1954	4.8	5.34	3,870	5.24	3,800
1955	1390	13	Mar. 21, 1955	4.7	6.54	4,740	6.51	4,710
1956	1440	14	May 31, 1956	4.7	5.53	4,010	5.40	3,920
1957	1510	16	May 22, 1957	4.5	7.11	5,150	7.47	5,410
1958	1560	14	Mar. 24, 1958	5.4	7.30	5,280	7.26	5,260
1959	1630	13	May 18, 22, 1959	5.3	6.69	4,840	-	-
1960								

## 9335. Gasconade River at Jerome, Mo.

Location.--Lat 37°55'135", long 91°58'40", in SE $\frac{1}{4}$  sec.13, T.37 N., R.10 W., on left bank at Jerome, 0.5 mile downstream from Little Piney Creek.

Drainage area.--2,840 sq mi, approximately.

Records available.--April 1903 to July 1906 (published as "at Arlington"), January 1923 to September 1960. October to December 1922 monthly discharge only, published in WSP 1310.  
Gage-height records collected intermittently in the vicinity 1885-1926 and at same site since 1938 are contained in reports of U. S. Weather Bureau.

Gage.--Water-stage recorder. Datum of gage is 657.64 ft above mean sea level, datum of 1929. Prior to July 26, 1904, vertical-rod gage at site three-quarters of a mile downstream at different datum. July 26, 1904, to July 21, 1906, chain gage at site 0.5 mile upstream from present site at datum about 0.85 ft higher than present datum. Jan. 3, 1923, to Sept. 29, 1928, staff gage at site 400 ft downstream from present site at datum 0.14 ft lower than present datum. Sept. 30, 1928, to Jan. 17, 1939, staff gage at present site and datum.

Average discharge.--40 years (1903-5, 1922-60), 2,595 cfs (1,879,000 acre-ft per year).

Extremes.--1903-6, 1923-60: Maximum discharge, 101,000 cfs Apr. 15, 1945 (gage height, 27.7 ft); minimum, 254 cfs Sept. 21, 22, 1956 (gage height, 1.24 ft).  
Maximum stage known, about 29.0 ft Jan. 6, 1897 (discharge, 120,000 cfs). A stage of 28.6 ft was reached Aug. 20, 22, 1915 (discharge, 114,000 cfs).

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	793	762	694	1,124	5,673	4,828	4,327	4,247	4,176	10,730	3,202	2,757	3,599
1952	3,270	8,557	3,258	2,363	4,571	5,735	6,628	1,781	1,029	893	1,134	633	3,304
1953	579	700	850	1,019	973	3,288	3,297	1,945	652	475	437	393	1,219
1954	429	451	476	463	524	604	684	1,198	653	381	359	302	544
1955	561	599	1,570	1,504	3,003	4,859	1,223	1,131	1,349	1,159	470	364	1,477
1956	493	420	392	368	920	597	504	3,843	2,395	651	607	293	949
1957	289	368	744	933	3,258	3,028	8,022	13,800	6,012	1,149	618	553	3,224
1958	446	707	3,563	1,244	1,085	8,424	3,195	2,907	1,207	8,549	2,798	2,682	3,095
1959	789	1,237	801	1,262	1,977	3,516	1,983	3,834	2,091	867	538	462	1,612
1960	1,806	1,787	3,500	2,094	1,700	3,126	2,063	3,217	878	936	639	399	1,852

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	48,730	45,360	42,640	69,110	315,100	296,900	257,500	261,100	248,500	659,800	196,900	164,100	2,606,000
1952	201,000	509,200	200,300	145,300	262,900	352,800	394,400	109,500	61,250	54,880	69,730	37,690	2,399,000
1953	35,600	41,670	52,250	62,660	54,040	202,200	196,200	119,600	38,790	29,220	26,890	23,360	882,500
1954	26,380	28,850	29,290	29,440	29,120	37,110	40,720	73,640	38,880	25,400	22,080	17,970	†993,900
1955	34,490	35,650	96,550	92,470	166,800	298,800	72,750	69,560	80,300	71,280	28,910	21,660	1,069,000
1956	30,310	24,990	24,120	22,610	52,920	36,710	29,980	236,300	142,500	40,050	37,330	17,410	695,200
1957	17,740	21,920	45,730	57,390	179,800	186,200	477,400	848,700	357,700	70,660	37,850	32,880	2,334,000
1958	27,430	42,090	219,100	76,520	60,270	137,900	190,000	178,800	71,800	25,600	171,900	59,600	2,241,000
1959	48,500	73,600	49,260	77,600	109,800	216,200	118,000	235,700	124,400	53,340	33,080	27,480	1,167,000
1960	111,100	106,300	215,200	128,700	97,800	192,200	122,800	197,800	52,270	57,570	39,310	23,720	1,345,000

† Corrected.

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30							Calendar year			
		Momentary		Minimum day	Mean	Per square mile	Inches	Runoff Acre-feet	Mean		Runoff	
		Discharge	Date						Inches	Acre-feet	Inches	Acre-feet
1950	-	-	-	-	-	-	-	-	4,117	19.68	2,981,000	
1951	1210	41,700	July 2, 1951	639	3,599	1.27	†17.20	2,606,000	4,668	22.31	3,380,000	
1952	1240	20,300	Nov. 14, 1951	558	3,304	1.16	15.83	2,399,000	2,228	10.68	1,618,000	
1953	1280	12,300	Apr. 24, 1953	373	1,219	.429	5.83	882,500	1,154	5.51	835,500	
1954	1340	4,320	May 5, 1954	281	544	.192	2.61	†993,900	860	3.18	478,000	
1955	1390	25,000	Mar. 22, 1955	292	1,477	.520	7.06	1,069,000	1,356	6.47	982,000	
1956	1440	30,400	June 1, 1956	259	949	.334	4.58	695,200	966	4.62	701,200	
1957	1510	57,400	May 24, 1957	276	3,224	1.14	15.41	2,334,000	3,505	16.76	2,537,000	
1958	1560	47,100	July 19, 1958	396	3,095	1.09	14.79	2,241,000	2,934	14.02	2,124,000	
1959	1630	15,400	May 29, 1959	408	1,612	.568	7.71	1,167,000	1,973	9.42	1,288,000	
1960	1710	14,600	Dec. 20, 1959	359	1,852	.652	8.89	1,345,000	-	-	-	

† Corrected.



## 9345. Missouri River at Hermann, Mo.

Location.--Lat 38°42'36", long 91°26'21", in SW¼ sec.25, T.46 N., R.5 W., on downstream side of third pier from right abutment of bridge on State Highway 19 at Hermann.

Drainage area.--528,200 sq mi, approximately.

Records available.--October 1897 to September 1960. Prior to August 1928 monthly discharge only, published in WSP 1310. Gage-height records 1873-99 collected at site 480 ft downstream are contained in reports of Missouri River Commission; since 1900, in reports of U. S. Weather Bureau.

Gage.--Water-stage recorder. Datum of gage is 481.56 ft above mean sea level, datum of 1929. Prior to Sept. 26, 1930, staff gage at site 480 ft downstream at datum 0.07 ft lower. Sept. 26, 1930, to Mar. 27, 1932, wire-weight gage, Mar. 28, 1932, to June 12, 1945, water-stage recorder, and June 13, 1945, to Apr. 2, 1946, wire-weight gage, at present site and datum.

Average discharge.--63 years (1897-1960), 79,490 cfs (57,550,000 acre-ft per year).

Extremes.--1897-1960: Maximum discharge, 676,000 cfs June 6, 7, 1903; maximum gage height, 33.33 ft July 19, 1951; minimum discharge, about 4,200 cfs Jan. 10-12, 1940; minimum gage height observed, -0.80 ft Jan. 5, 6, 1940.  
Maximum stage known, 35.5 ft in June 1844 (discharge, about 892,000 cfs, computed by Corps of Engineers).

Remarks.--Flow regulated by many reservoirs above station.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	72,130	54,370	24,140	30,460	58,230	98,240	165,800	150,100	230,800	445,200	130,300	208,900	139,400
1952	102,800	117,800	57,920	53,950	90,980	138,500	253,200	144,000	95,870	78,800	58,090	48,600	105,100
1953	38,240	40,200	26,740	24,670	42,370	71,920	89,180	94,750	84,020	67,160	43,850	40,250	55,300
1954	38,450	32,550	25,020	16,320	26,290	36,060	42,130	53,930	85,020	41,680	54,030	40,060	40,820
1955	54,780	28,940	28,580	33,740	56,680	75,070	54,330	50,400	60,680	52,740	34,450	39,730	47,200
1956	57,450	26,330	15,650	18,030	18,870	28,140	36,490	42,840	42,830	52,560	44,460	36,020	35,060
1957	32,990	20,900	16,960	16,070	21,910	28,720	61,000	98,400	99,290	79,930	43,060	43,370	46,990
1958	46,830	33,610	34,430	24,150	32,120	103,800	73,240	73,990	71,640	179,800	27,000	76,310	73,520
1959	52,770	43,620	24,530	25,120	58,680	71,550	72,320	95,020	77,380	59,770	55,200	49,690	57,100
1960	96,820	37,970	32,180	52,950	49,020	67,740	123,500	139,000	79,970	75,720	52,670	52,690	79,170

Monthly and yearly discharge, in thousands of acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	4,435	3,235	1,484	1,873	3,234	6,040	9,864	9,229	13,730	27,380	8,011	12,430	100,900
1952	6,320	7,008	3,562	3,317	5,233	8,513	15,060	8,852	5,693	4,845	3,572	2,892	74,870
1953	2,351	2,392	1,644	1,517	2,353	4,422	5,306	5,826	5,000	4,130	2,697	2,395	40,030
1954	2,364	1,937	1,538	1,003	1,460	2,218	2,507	3,316	4,940	2,563	3,322	2,384	29,550
1955	3,368	1,722	1,573	2,074	3,147	4,616	3,233	3,099	3,611	3,243	2,118	2,364	34,170
1956	3,532	1,567	962.4	1,108	1,085	1,730	2,172	2,634	2,548	3,232	2,734	2,143	25,450
1957	2,028	1,244	1,043	988	1,217	1,766	3,630	6,051	5,908	4,914	2,647	2,580	34,020
1958	2,880	2,000	2,117	1,465	1,784	6,380	4,358	4,549	4,263	11,050	7,820	4,541	53,230
1959	3,245	2,598	1,508	1,645	3,269	4,400	4,303	5,843	4,605	3,675	3,394	2,957	41,340
1960	5,953	2,259	1,979	3,256	2,820	4,165	12,710	8,549	4,759	4,656	3,236	3,135	57,480

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30					Calendar year	
		Momentary maximum		Minimum day	Mean	Acre-feet	Mean	Acre-feet
		Discharge	Date					
1950	-	-	-	-	-	-	90,950	65,850,000
1951	1210	618,000	July 19, 1951	11,000	139,400	100,900,000	150,100	108,700,000
1952	1240	369,000	Apr. 28, 1952	23,500	105,100	74,870,000	88,670	64,360,000
1953	1280	177,000	May 9, 1953	16,900	55,300	40,030,000	54,540	39,480,000
1954	1340	145,000	June 5, 1954	12,500	40,820	29,550,000	41,960	30,380,000
1955	1390	186,000	Feb. 21, 1955	17,000	47,200	34,170,000	46,360	33,570,000
1956	1440	144,000	Oct. 7, 1955	11,800	35,060	25,450,000	32,650	23,700,000
1957	1510	196,000	May 26, 1957	9,000	46,990	34,020,000	50,690	36,700,000
1958	1560	339,000	July 23, 1958	15,000	73,520	53,230,000	74,010	53,580,000
1959	1630	190,000	June 3, 1959	12,800	57,100	41,340,000	61,030	44,180,000
1960	1710	350,000	Apr. 7, 1960	21,400	79,170	57,480,000	-	-

## 9350. Rumbo Branch at Danville, Mo.

Location.--Lat 38°55'00", long 91°32'03", in SW $\frac{1}{4}$ NE $\frac{1}{4}$  sec.24, T.48 N., R.6 W., on left bank at upstream side of culvert on State Highway 29, half a mile north of Danville.

Drainage area.--1.40 sq mi.

Records available.--July 1953 to September 1958, water years 1959-60 (annual maximum).

Gage.--Crest-stage gage. Datum of gage is 747.27 ft above mean sea level, datum of 1929. July 17, 1953, to Sept. 30, 1958, water-stage recorder at same site and datum.

Average discharge.--5 years (1953-58), 0.61 cfs (442 acre-ft per year).

Extremes.--1953-60: Maximum discharge, 434 cfs July 6, 1955 (gage height, 6.34 ft), from rating curve extended above 35 cfs on basis of slope-area measurement at gage height 4.43 ft and calculated estimate at gage height 5.62 ft; no flow for many days.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1953	-	-	-	-	-	-	-	-	-	-	0.052	0	-
1954	0	0	0	0	0	0	0.003	0.074	0.32	0	0.074	0.25	0.06
1955	.24	.013	.003	.48	.64	.16	1.26	.10	1.18	1.18	.003	0	.43
1956	.22	0	.01	.02	.01	.003	.23	2.80	.03	2.99	.006	.003	.54
1957	0	0	.006	0	1.61	.81	4.41	1.71	2.10	.01	0	0	.87
1958	0	0	0	0	.54	2.12	1.31	.47	2.77	4.15	.42	1.63	1.12

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1953	-	-	-	-	-	-	-	-	-	-	3.2	0	-
1954	0	0	0	0	0	0	0.2	4.6	19	0	4.6	15	43
1955	15	.8	.2	30	35	10	75	6.3	70	72	.2	0	314
1956	13	0	.8	1.4	.6	.2	14	172	1.8	184	.4	.2	388
1957	0	0	.4	0	89	50	263	105	125	.8	0	0	633
1958	0	0	0	0	30	130	78	29	165	255	26	97	810

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30						Calendar year			
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff		Mean	Runoff	
		Discharge	Date				Inches	Acre-feet		Inches	Acre-feet
1953	1510	-	-	-	-	-	-	-	-	-	-
1954	1510	101	June 8, 1954	0	0.06	0.043	0.57	43	0.08	0.79	55
1955	1510	434	July 6, 1955	0	.43	.307	4.23	314	.43	4.20	312
1956	1510	350	July 16, 1956	0	.54	.386	5.21	388	.52	5.02	375
1957	1510	362	June 29, 1957	0	.87	.621	8.48	633	.87	8.48	633
1958	1560	398	Sept. 2, 1958	0	1.12	.800	10.86	810	-	-	-
1959	-	209	Feb. 9, 1959	-	-	-	-	-	-	-	-
1960	-	223	Mar. 27, 1960	-	-	-	-	-	-	-	-

## 9355. Loutre River at Mineola, Mo.

Location.--Lat 38°53'20", long 91°34'30", in SE $\frac{1}{4}$ NW $\frac{1}{4}$  sec.34, T.48 N., R.6 W., at downstream side of left pier of bridge in Mineola, 0.2 mile upstream from Saliee Branch and  $\frac{1}{4}$  miles downstream from U. S. Highway 40.

Drainage area.--202 sq mi.

Records available.--December 1947 to September 1960.

Gage.--Water-stage recorder. Datum of gage is 539.86 ft above mean sea level, datum of 1929. Prior to Aug. 29, 1951, wire-weight gage at same site and datum.

Average discharge.--12 years (1948-60), 116 cfs (83,980 acre-ft per year).

Extremes.--1947-60: Maximum discharge, 12,900 cfs June 30, 1957 (gage height, 20.88 ft); no flow at times in 1953-54, 1956-58; minimum gage height, 1.88 ft Sept. 19, 1954. Flood of June 20, 1928, reached a stage of about 28.9 ft, from information by local resident.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	0.558	1.91	1.55	4.97	408	532	214	32.1	406	87.2	76.2	142	157
1952	124	188	96.8	181	128	264	351	23.7	28.6	11.8	11.7	.907	117
1953	.24	7.42	3.26	16.2	12.4	150	155	186	49.8	26.8	1.56	.35	51.1
1954	.07	.22	.24	.29	.19	.29	5.13	36.7	52.5	.98	.19	2.88	8.28
1955	22.0	1.58	2.4	94.6	132	49.3	222	81.8	131	79.9	7.64	9.13	68.7
1956	220	11.0	3.71	19.4	10.2	11.8	54.6	229	30.8	465	5.14	5.82	88.5
1957	.21	.29	2.50	1.98	127	168	670	258	295	54.9	2.84	.23	131
1958	.22	.97	.77	2.32	33.5	265	257	140	300	698	170	430	191
1959	94.8	116	14.5	90.1	382	206	87.8	254	14.4	1.58	2.58	25.9	106
1960	335	5.48	28.7	24.7	72.8	357	279	216	9.99	84.5	3.02	.42	119



Monthly and yearly discharge, in acre-feet, of Loutre River at Mineola, Mo.

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1951	34	114	95	306	22,660	32,720	12,730	1,970	24,170	5,360	4,680	8,470	113,300
1952	7,650	11,210	5,950	11,120	7,350	16,210	20,880	1,460	1,700	726	719	54	85,030
1953	15	441	201	995	687	9,190	9,210	11,420	2,960	1,770	96	21	37,010
1954	4.2	13	15	18	10	18	305	2,260	3,120	60	12	158	5,990
1955	1,350	94	147	5,820	7,350	3,030	13,200	5,030	7,820	4,910	469	543	49,760
1956	13,530	653	228	119	585	724	3,250	14,080	1,830	28,600	316	347	64,260
1957	13	17	154	122	7,040	10,310	39,870	15,860	17,530	3,380	175	14	94,480
1958	13	58	48	143	1,860	16,320	15,310	8,630	17,840	42,950	10,450	24,380	138,000
1959	5,830	6,890	889	5,540	21,210	12,700	5,220	15,630	860	97	158	1,540	76,560
1960	20,590	326	1,640	1,520	4,190	21,940	16,630	13,290	595	5,200	185	25	86,130

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30						Calendar year			
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff	Mean	Runoff		
		Discharge	Date						Inches	Acre-feet	
1950	-	-	-	-	-	-	-	115	7.69	82,930	-
1951	1210	10,900	Mar. 17, 1951	0.4	157	0.777	10.51	113,300	190	12.79	137,900
1952	1240	5,100	Mar. 18, 1952	.3	117	.579	7.90	85,030	83.9	5.66	60,880
1953	1280	4,770	May 5, 1953	0	51.1	.253	3.42	37,010	50.3	3.36	36,380
1954	1340	1,750	June 8, 1954	0	8.28	.041	.55	5,990	10.4	.70	7,550
1955	1390	4,220	Apr. 5, 1955	.2	68.7	.340	4.63	49,760	86.4	5.82	62,580
1956	1440	8,420	July 16, 1956	.5	88.5	.438	5.96	64,260	68.9	4.83	50,040
1957	1510	12,900	June 30, 1957	0	131	.649	8.76	94,480	130	8.76	94,420
1958	1560	10,900	Sept. 2, 1958	0	191	.946	12.80	138,000	209	14.05	151,500
1959	1630	10,900	Feb. 10, 1959	.4	106	.525	7.09	76,560	118	7.92	85,510
1960	1710	10,000	Oct. 11, 1959	.2	119	.589	7.99	86,130	-	-	-

## COLDWATER CREEK BASIN

9365. Coldwater Creek near St. Louis, Mo.

Location.--Lat 38°48'50", long 90°13'50", in sec.16, T.47 N., R.7 E., on right wingwall on downstream side of bridge on U. S. Highway 67, 1.7 miles upstream from Missouri River, 3.5 miles south of West Alton, and 6.0 miles north of St. Louis city limits.

Drainage area.--43.6 sq mi.

Records available.--September 1959 to September 1960.

Gage.--Water-stage recorder. Altitude of gage is 450 ft (from topographic map).

Extremes.--1959-60: Maximum discharge, 6,170 cfs June 29, 1960 (gage height, 17.13 ft); minimum, 9.3 cfs Oct. 25, 1959 (gage height, 2.50 ft).

Remarks.--Natural flow of stream affected by sewage affluent.

Monthly and yearly mean discharge, in cubic feet per second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1959	-	-	-	-	-	-	-	-	-	-	-	-	-
1960	41.8	34.5	27.5	22.6	24.4	55.9	48.7	82.7	146	72.1	19.5	17.0	49.4

Monthly and yearly discharge, in acre-feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	The year
1959	-	-	-	-	-	-	-	-	-	-	-	-	-
1960	2,570	2,050	1,690	1,390	1,400	3,440	2,900	5,080	8,700	4,440	1,200	1,010	35,870

Yearly discharge, in cubic feet per second

Year	WSP	Water year ending Sept. 30						Calendar year			
		Momentary maximum		Minimum day	Mean	Per square mile	Runoff	Mean	Runoff		
		Discharge	Date						Inches	Acre-feet	
1959	1710	-	-	-	-	-	-	-	-	-	-
1960	1710	6,170	June 29, 1960	13	49.4	1.13	15.45	35,870	-	-	-

6115. Grizzly Creek near Walden, Colo.

Drainage area.--258 sq mi (revised).

6120. Little Grizzly Creek near Hebron, Colo.

Drainage area.--98.6 sq mi (revised).

6125. Roaring Fork near Walden, Colo.

Drainage area.--79.1 sq mi (revised).

6130. North Platte River near Walden, Colo.

Drainage area.--469 sq mi (revised).

6135. North Fork North Platte River at Higho, Colo.

Drainage area.--80.8 sq mi (revised).

6140. North Fork North Platte River near Walden, Colo.

Drainage area.--160 sq mi (revised).

6145. North Platte River near Cowdrey, Colo.

Drainage area.--696 sq mi (revised).

6155. Michigan River near Lindland, Colo.

Drainage area, --61.4 sq mi (revised).

6165. Michigan River at Haworth School, near Lindland, Colo.

Drainage area.--96.1 sq mi (revised).

6171. Michigan River at Walden, Colo.

Drainage area.--182 sq mi (revised).

6175. Illinois Creek near Rand, Colo.

Drainage area.--70.8 sq mi (revised).

6180. Willow Creek near Rand, Colo.

Drainage area.--55.9 sq mi (revised).

6190. Michigan River near Cowdrey, Colo.

Drainage area.--479 sq mi (revised).

6195. Canadian River at Cowdrey, Colo.

Drainage area.--180 sq mi (revised).

6580. McIntyre Creek at Gleneyre, Colo.

Drainage area.--47.0 sq mi (revised).

6935. Middle Fork South Platte River at Alma, Colo.

Drainage area.--23.2 sq mi (revised).

6940. Middle Fork South Platte River at Fairplay, Colo.

Drainage area.--80.0 sq mi (revised).

6945. South Fork South Platte River near Fairplay, Colo.

Drainage area.--84.5 sq mi (revised).

6962. South Platte River at Lake George, Colo.

Drainage area.--1,084 sq mi (revised).

6985. Tarryall Creek near Jefferson, Colo.

Drainage area.--184 sq mi (revised).

6990. Rock Creek near Jefferson, Colo.

Drainage area.--45.6 sq mi (revised).

7000. South Platte River above Cheesman Lake, Colo.

Drainage area.--1,628 sq mi (revised).

7020. South Platte River above North Fork, at South Platte, Colo.

Drainage area.--2,098 sq mi (revised).

7025. North Fork South Platte River at Grant, Colo.

Drainage area.--49.0 sq mi (revised).

7055. Geneva Creek at Grant, Colo.

Drainage area.--77.5 sq mi (revised).

7085. Deer Creek near Littleton, Colo.

Drainage area.--26.2 sq mi (revised).

7155. West Fork Clear Creek above Empire, Colo.

Drainage area.--40.5 sq mi (revised).

7160. West Fork Clear Creek near Empire, Colo.

Drainage area.--58.2 sq mi (revised).

7170. Fall River near Idaho Springs, Colo.

Drainage area.--23.5 sq mi (revised).

7175. Clear Creek at Idaho Springs, Colo.

Drainage area.--242 sq mi (revised).

7190. Clear Creek at Forks Creek, Colo.

Drainage area.--339 sq mi (revised).

7215. North St. Vrain Creek near Allens Park, Colo.

Drainage area.--32.6 sq mi (revised).

7265. North Boulder Creek near Nederland, Colo.

Drainage area.--30.4 sq mi (revised).

7290. South Boulder Creek near Rollinsville, Colo.

Drainage area.--42.7 sq mi (revised).

7450. Cache la Poudre River above Chambers Lake Outlet, Colo.

Drainage area.--89.2 sq mi (revised).

7480. Cache la Poudre River near Log Cabin, Colo.

Drainage area.--230 sq mi (revised).

7485. South Fork Cache la Poudre River near Eggers, Colo.

Drainage area.--69.8 sq mi (revised).

7495. Cache la Poudre River near Fort Collins, Colo.

Drainage area.--482 sq mi (revised).

7575. South Platte River at Orchard, Colo.

Drainage area.--12,196 sq mi (revised).

# INDEX

	Page		Page
Abilene, Kans., Turkey Creek near.....	404	Big Blue River, at Barneston, Nebr.....	413
Achilles, Kans., South Fork		at Randolph, Kans.....	420
Sappa Creek near.....	351	at Seward, Nebr.....	411
Ada, Kans., Salt Creek near.....	403	near Crete, Nebr.....	412
Agency, Mo., Platte River near.....	309	near Manhattan, Kans.....	422
Albany, Mo., Thompson Branch near.....	441	West Fork, near Dorchester, Nebr.....	411
Alcova, Wyo., Alcova Reservoir at.....	54	Big Bull Creek near Hillsdale, Kans.....	4
Bates Creek near.....	57	Big Creek (Grand River basin), East	
North Platte River at.....	55	Fork, near Bethany, Mo.....	441
Pathfinder Reservoir near.....	52	Big Creek (Kansas River basin), near	
Sweetwater River near.....	51	Hays, Kans.....	381
Alcova Reservoir at Alcova, Wyo.....	54	near Ogallah, Kans.....	380
Alda, Nebr., Wood River near.....	223	Big Hollow near Fulton, Mo.....	489
Alton, Iowa, Floyd River at.....	10	Big Piney River, near Big Piney, Mo.....	492
Alton, Kans., South Fork Solomon		Big Sugar Creek at Farlinville, Kans.....	473
River at.....	400	Big Thompson River, at Estes Park,	
Alva B. Adams tunnel at east portal,		Colo.....	168
near Estes Park, Colo.....	169	at mouth, near La Salle, Colo.....	182
Amboy, Nebr., Elm Creek at.....	363	at mouth of canyon, near Drake,	
Angus, Nebr., Little Blue River at.....	415	Colo.....	175
Antelope Creek at Lincoln, Nebr.....	278	below powerhouse, near Drake, Colo...	174
Arapahoe, Nebr., Muddy Creek at.....	349	near Estes Park, Colo.....	171
Aracadia, Nebr., Middle Loup River at...	233	near Loveland, Colo.....	178
Arkaree River at Haigler, Nebr.....	311	North Fork, at Drake, Colo.....	172
Arlington, Wyo., Rock Creek at.....	42	Bijou Creek near Wiggins, Colo.....	203
Arnold, Kans., Smoky Hill River		Birdwood Creek near Hershey, Nebr.....	125
near.....	377	Black Vermillion River near Frankfort,	
Arrow Rock, Mo., Burge Branch near.....	457	Kans.....	419
Arthur, Iowa, Odebolt Creek near.....	21	Blackhawk, Colo., North Clear Creek	
Ashland, Nebr., Platte River near.....	273	near.....	150
Salt Creek near.....	282	Blackwater River, at Blue Lick, Mo.....	460
Atlantic City, Wyo., Rock Creek at.....	50	at Valley City, Mo.....	459
Rock Creek near.....	49	East Branch South Fork, near Elm, Mo...	459
Slate Creek near.....	49	Blackwood Creek near Culbertson, Nebr...	334
Sweetwater River near.....	50	Bloomington, Nebr., Cottonwood Creek	
Willow Creek near.....	47	near.....	360
Auburn, Nebr., Little Nemaha River at...	294	Republican River near.....	361
Bagnell, Mo., Lake of the Ozarks near...	485	Blue Creek near Lewellen, Nebr.....	120
Osage River near.....	486	Blue Lick, Mo., Blackwater River at...	460
Balzac, Colo., South Platte River at...	205	Blue River near Kansas City, Mo.....	435
Barneston, Nebr., Big Blue River at...	413	Bluegrass Creek near Wheatland, Wyo....	92
Barnesville, Colo., Crow Creek near...	198	Bob Creek ditch near Glendevay, Colo...	186
Bartlett, Iowa, Waubonsie Creek near...	284	Boelus, Nebr., Boelus power canal	
Bartley, Nebr., Dry Creek near.....	338	near.....	236
Bates Creek near Alcova, Wyo.....	57	Middle Loup River at.....	237
near Freeland, Wyo.....	56	Boelus power canal near Boelus, Nebr...	236
Bayard, Nebr., Bayard Sugar Factory		Bollivar, Mo., Pome de Terre River	
drain near.....	114	near.....	480
Red Willow Creek near.....	115	Bonner Springs, Kans., Kansas River at...	433
Bayard Sugar Factory drain near		Bonny Reservoir near Hale, Colo.....	319
Bayard, Nebr.....	114	Boonville, Mo., Missouri River at.....	462
Bear Creek, at Morrison, Colo.....	140	Petite Saline Creek near.....	464
at mouth, at Sheridan, Colo.....	142	Boreas Pass ditch at Boreas Pass, Colo...	131
Beattie, Kans., Snipe Creek near.....	418	Boulder, Colo., Lefthand Creek near....	158
Beaver City, Nebr., Beaver Creek		Boulder Creek, at mouth, near Longmont,	
near.....	355	Colo.....	164
Sappa Creek near.....	352	near Orodell, Colo.....	161
Beaver Creek (tributary to Little		Bow Creek near Stockton, Kans.....	394
Piney Creek) near Rolla, Mo.....	493	Box Elder Creek, at Boxelder, Wyo.....	64
Beaver Creek (tributary to Loup		near Careyhurst, Wyo.....	65
River), at Genoa, Nebr.....	261	Boyer River, at Logan, Iowa.....	27
at Loretto, Nebr.....	260	Buckhorn Creek near Masonville, Colo...	176
Beaver Creek (tributary to Sappa		Brady, Nebr., Platte River at.....	212
Creek), at Cedar Bluffs, Kans...	354	Braymer, Mo., Shoal Creek near.....	447
at Ludell, Kans.....	353	Brewster, Nebr., North Loup River at...	245
near Beaver City, Nebr.....	355	Bridgeport, Nebr., North Platte River	
Bedford, Iowa, East Fork One Hundred		at.....	116
and Two River near.....	306	Pumpkin Creek near.....	117
Belgrade, Nebr., Cedar River near.....	256	Brighton, Mo., Oak Grove Branch near...	476
Beloit, Kans., Solomon River at.....	402	Broken Bow, Nebr., Mud Creek near.....	239
Benkelman, Nebr., Republican River at...	316	Brookfield, Mo., West Yellow Creeknear...	450
South Fork Republican River near.....	322	Brownington, Mo., South Grand River	
Bennett, Colo., Kiowa Creek at.....	201	near.....	482
Berthoud, Colo., Carter Lake near.....	180	Brushy Creek near Maywood, Nebr.....	340
Little Thompson River near.....	179	Buffalo Creek (Kansas River basin),	
Berthoud Pass ditch at Berthoud		near Haigler, Nebr.....	314
Pass, Colo.....	148	near Jamestown, Kans.....	369
Bethany, Mo., East Fork Big Creek		Buffalo Creek (Platte River basin),	
near.....	441	near Darr, Nebr.....	216
		near Overton, Nebr.....	217

	Page		Page
Burge Branch near Arrow Rock, Mo.....	457	Clay Center, Kans., Republican River	
Burlingame, Kans., Dragoon Creek		at.....	371
near.....	468	Clear Creek, at Forks Creek, Colo.....	504
Switzler Creek at.....	468	at Idaho Springs, Colo.....	503
Burlington Junction, Mo., Nodaway		at mouth, near Derby, Colo.....	152
River near.....	304	below Idaho Springs, Colo.....	150
Burr Oak, Kans., White Rock Creek		near Golden, Colo.....	151
near.....	367	near Lawson, Colo.....	149
Burwell, Nebr., Calamus River near....	248	West Fork, above Empire, Colo.....	503
North Loup River at.....	247	Clifton City, Mo., Lamine River at....	458
Bushnell, Nebr., Lodgepole Creek at...	207	Coal Creek near Plainview, Colo.....	164
		Coldwater Creek near St. Louis, Mo.....	501
Cache la Poudre River, above Chambers		Colorado Creek near Spicer, Colo.....	30
Lake Outlet, Colo.....	504	Columbine ditch at Deadman Hill, Colo..	189
at mouth of canyon, near Fort		Columbus, Nebr., Loup River at.....	262
Collins, Colo.....	191	Shell Creek near.....	264
below Elkhorn Creek, Colo.....	188	Concordia, Kans., Republican River	
near Fort Collins, Colo.....	504	at.....	370
near Greeley, Colo.....	192	Correctionville, Iowa, Little Sioux	
near Log Cabin, Colo.....	504	River at.....	19
near Rustic, Colo.....	186	Cotesfield, Nebr., Davis Creek near....	251
North Fork, near Livermore, Colo.....	190	North Loup River near.....	252
South Fork, near Eggers, Colo.....	504	Cottonwood Creek (tributary to Dry	
near Rustic, Colo.....	187	Creek) near Pinewood, Colo.....	177
Cairo, Nebr., Dry Creek at.....	224	Cottonwood Creek (tributary to North	
Calamus River near Burwell, Nebr.....	248	Platte River), at Wendover, Wyo..	77
Cambridge, Nebr., Harry Strunk Lake		near Fletcher Park, Wyo.....	76
near.....	345	Cottonwood Creek (tributary to Repub-	
Medicine Creek at.....	347	lican River) near Bloomington,	
Republican River at.....	348	Nebr.....	360
Cameron Pass, Colo., Cameron Pass		Council Bluffs, Iowa, Indian Creek at..	29
ditch at.....	184	Courtland Canal at Nebraska-Kansas	
Michigan ditch at.....	184	State line.....	364
Cameron Pass ditch at Cameron Pass,		Coyle Branch at Houston, Mo.....	491
Colo.....	184	Cozad, Nebr., Platte River near.....	213
Canadian River at Cowdrey, Colo.....	502	Crete, Nebr., Big Blue River near.....	412
Careyhurst, Wyo., Box Elder Creek		Crook, Colo., South Platte River near..	206
near.....	65	Crooked River near Richmond, Mo.....	438
Carrollton, Mo., Wakenda Creek at.....	440	Crow Creek, near Barnesville, Colo.....	198
Carter Lake, near Berthoud, Colo.....	180	near Cheyenne, Wyo.....	197
Dry Creek below.....	180	Culbertson, Nebr., Blackwood Creek	
Casper, Wyo., Casper Creek at.....	60	near.....	334
North Platte River below.....	61	Frenchman Creek at.....	333
Casper Creek at Casper, Wyo.....	60	Cumro, Nebr., South Loup River near....	237
Cassa, Wyo., North Platte River near..	75	Curtis, Nebr., Dry Creek near.....	342
Cedar Bluff Dam, Kans., Smoky Hill		Fox Creek at.....	341
River at.....	379	Cushing, Nebr., Spring Creek at.....	254
Cedar Bluff Reservoir near Ellis,			
Kans.....	378	Dannebrog, Nebr., Oak Creek near.....	243
Cedar Bluffs, Kans., Beaver Creek at..	354	Danville, Mo., Rumbo Branch at.....	500
Cedar Creek near Pleasant View, Mo.....	478	Darr, Nebr., Buffalo Creek near.....	216
Cedar River, at Belgrade, Nebr.....	256	Data, description of.....	1-4
at Primrose, Nebr.....	256	Davis Creek near Hamlin, Iowa.....	290
near Fullerton, Nebr.....	257	Davis City, Iowa, Thompson River at....	443
near Spalding, Nebr.....	255	Davis Creek near Cotesfield, Nebr.....	251
Center Creek at Franklin, Nebr.....	262	Deadman Hill, Colo., Columbine ditch at	189
Centerville, Iowa, Chariton River		Decaturville, Mo., Niangua River	
near.....	453	near.....	484
Chambers Lake, Colo., Laramie-Poudre		Deckers, Colo., Cheesman Lake near....	132
tunnel near.....	185	Dee Creek at Greenwood, Nebr.....	279
Skyline ditch at.....	185	Deer Creek, at Glenrock, Wyo.....	63
Champion, Nebr., Frenchman Creek		in canyon, near Glenrock, Wyo.....	62
below.....	326	near Littleton, Colo.....	503
Chapman Creek near Chapman, Kans.....	406	Delaware River at Valley Falls, Kans....	429
Chariton River, at Novinger, Mo.....	454	Della, Kans., Soldier Creek near.....	427
near Centerville, Iowa.....	453	Denver, Colo., Cherry Creek at.....	146
near Keytesville, Mo.....	455	South Platte River at.....	147
near Prairie Hill, Mo.....	455	Derby, Colo., Clear Creek near.....	152
near Rathbun, Iowa.....	452	Deweese, Nebr., Little Blue River	
Chariton River basin, gaging-station		near.....	414
records in.....	451-456	Dismal River at Dunning, Nebr.....	229
Cheesman Lake, near Deckers, Colo.....	132	near Gem, Nebr.....	228
Goose Creek above.....	132	Dorchester, Nebr., West Fork Big Blue	
South Platte River below.....	133	River near.....	411
Cherry Creek, at Denver, Colo.....	146	Douglas, Wyo., La Prele Creek near....	66
below Cherry Creek Reservoir, Colo.....	145	North Platte River near.....	68
near Franktown, Colo.....	143	Douglas Canal near Orpha, Wyo.....	4
near Melvin, Colo.....	144	Douglas Creek, above Keystone, Wyo....	34
Cherry Creek drain near Torrington,		near Foxpark, Wyo.....	35
Wyo.....	102	Downs, Kans., North Fork Solomon River	
Cherry Creek Reservoir, Colo., Cherry		near.....	397
Creek below.....	145	Dragoon Creek near Burlingame, Kans....	468
Cheyenne, Wyo., Crow Creek near.....	197	Drake, Colo., Big Thompson River	
Clarinda, Iowa, Nodaway River at.....	303	near.....	173, 175
Clark Creek near Junction City, Kans..	409	North Fork Big Thompson River at.....	172

	Page		Page
Driftwood Creek near McCook, Nebr.....	335	Fall River (tributary to Clear Creek) near Idaho Springs, Colo.....	503
Dry Creek (tributary to Big Thompson River), below Carter Lake, Colo.....	180	Falls City, Nebr., Nemaha River at....	300
Chimney Hollow, near Pinewood, Colo.....	176	Fancy Creek at Winkler, Kans.....	421
near Pinewood, Colo.....	176	Farlinville, Kans., Big Sugar Creek at.....	473
Dry Creek (tributary to Medicine Creek) near Curtis, Nebr.....	342	Fayette, Mo., Moniteau Creek near....	463
Dry Creek (tributary to Prairie Creek) at Cairo, Nebr.....	224	Filmore, Wyo., Little Laramie River near.....	87
Dry Creek (tributary to Republican River) near Bartley, Nebr.....	338	Fish Creek near Estes Park, Colo.....	170
Dry Spottedtail Creek at Mitchell Nebr.....	107	Fishing River, East Fork, at Excelsior Springs, Mo.....	437
Duncan, Nebr., Platte River near.....	225	Flat Creek near Sedalia, Mo.....	457
Dunning, Nebr., Dismal River at.....	229	Flatop Mountain, Colo., Eureka ditch near.....	166
Middle Loup River at.....	227	Fletcher Park, Wyo., Cottonwood Creek near.....	76
Dutton Creek near McPadden, Wyo.....	89	Floyd River, at Alton, Iowa.....	10
		at James, Iowa.....	12
East Nishnabotna River at Red Oak, Iowa.....	291	West Branch, near Struble, Iowa.....	11
East Portal, Colo., Moffat water tunnel at.....	162	Floyd River basin, gaging-station records in.....	10-12
Eastonville, Colo., Kiowa Creek near.....	199	Fort Collins, Colo., Cache la Poudre River near.....	191
Eaton Reservoir, Colo., Wilson supply ditch near.....	189	Horsetooth Reservoir near.....	174
Elbert, Colo., Kiowa Creek at.....	200	Fort Laramie, Wyo., Laramie River near.....	100
Eldorado Springs, Colo., South Boulder Creek near.....	163	Fort Lupton, Colo., South Platte River at.....	154
Elevenmile Canyon Reservoir near Lake George, Colo.....	129	Fort Morgan, Colo., South Platte River at.....	204
Elk Mountain, Wyo., Pass Creek near.....	39	Fort Scott, Kans., Marmaton River near.....	475
Elkader, Kans., Smoky Hill River at... Elkhorn Creek, Colo., Cache la Poudre River below.....	375 188	Fourmile Creek at Orodell, Colo.....	162
Elkhorn River, at Ewing, Nebr.....	266	Fox Creek at Curtis, Nebr.....	341
at Neligh, Nebr.....	268	Foxpark, Wyo., Douglas Creek near....	35
at Waterloo, Nebr.....	7, 272	Frankfort, Kans., Black Vermillion River near.....	419
near Norfolk, Nebr.....	269	Franklin, Nebr., Center Creek at.....	362
South Fork, at Ewing, Nebr.....	267	Franktown, Colo., Cherry Creek near.....	143
Ellis, Kans., Cedar Bluff Reservoir near.....	378	Freeland, Wyo., Bates Creek near.....	56
Smoky Hill River near.....	380	Frenchman Creek, at Culbertson, Nebr... at Palisade, Nebr.....	333 331
Ellsworth, Kans., Smoky Hill River at.....	383	below Champion, Nebr.....	326
Elm, Mo., East Branch South Fork Blackwater River near.....	459	near Enders, Nebr.....	329
Elm Creek (Kansas River basin) at Amboy, Nebr.....	363	near Hamlet, Nebr.....	330
Elm Creek (Platte River basin) near Overton, Nebr.....	218	near Imperial, Nebr.....	327
Encampment River, at mouth, near Encampment, Wyo.....	37	Fullerton, Nebr., Cedar River near....	257
near Encampment, Wyo.....	36	Fullerton power canal at.....	257
Enders, Nebr., Enders Reservoir near.....	328	Fullerton power canal at Fullerton, Nebr.....	257
Frenchman Creek near.....	329	Fulton, Kans., Little Osage River at... Fulton, Mo., Big Hollow near.....	474 489
Enders Reservoir near Enders, Nebr....	328	Gallatin, Mo., Grand River near.....	442
Enterprise, Kans., Smoky Hill River at.....	405	Galt, Mo., Medicine Creek near.....	447
Esterbrook, Wyo., Horseshoe Creek near.....	73	Garnett, Kans., Pottawatomie Creek near.....	471
Estes Park, Colo., Alva B. Adams tunnel near.....	169	Gasconade River, at Jerome, Mo.....	7, 497
Big Thompson River at.....	168	near Hazlegreen, Mo.....	489
Big Thompson River near.....	171	near Rich Fountain, Mo.....	498
Fall River at.....	167	near Waynesville, Mo.....	490
Fish Creek near.....	170	Gasconade River basin, gaging-station records in.....	489-498
Glacier Creek near.....	167	Gem, Nebr., Dismal River near.....	228
Lake Estes near.....	171	Geneva Creek at Grant, Colo.....	503
Marys Lake near.....	170	Genoa, Nebr., Beaver Creek at.....	261
Eureka ditch near Flattop Mountain, Colo.....	166	Loup River near.....	259
Ewing, Nebr., Elkhorn River at.....	266	Loup River power canal near.....	258
South Fork Elkhorn River at.....	267	Gering drain near Gering, Nebr.....	111
Excelsior Springs, Mo., East Fork Fishing River at.....	437	Gibbon, Nebr., Wood River near.....	222
		Gilead, Nebr., Little Blue River near..	415
Fairbury, Nebr., Little Blue River near.....	416	Gillett Grove, Iowa, Little Sioux River at.....	18
Fairfax, Mo., Tarkio River at.....	296	Glacier Creek near Estes Park, Colo....	167
Fall River (tributary to Big Thompson River) at Estes Park, Colo.....	167	Glade, Kans., North Fork Solomon River at.....	394
		Glasgow, Mo., Missouri River at.....	456
		Glendevy, Colo., Bob Creek ditch near..	186
		Laramie River near.....	81
		Glendo, Wyo., Glendo Reservoir near....	72
		Horseshoe Creek near.....	74
		Glendo Reservoir, near Glendo, Wyo....	72
		North Platte River below.....	73

	Page		Page
Glenrock, Wyo., Deer Creek at.....	63	Horsetooth Reservoir Canal below	
Deer Creek near.....	62	Big Thompson siphon, near	
North Platte River near.....	64	Drake, Colo.....	4
Golden, Colo., Clear Creek near.....	151	Horton, Kans., Little Delaware River	428
Goose Creek above Cheesman Lake,		Houston, Mo., Coyle Branch at.....	491
Colo.....	132	Humboldt, Nebr., North Fork Nemaha	
Goose Egg, Wyo., North Platte River		River at.....	299
near.....	58	Hundred and Ten Mile Creek near	
Poison Spider Creek near.....	59	Quenemo, Kans.....	469
Gould, Colo., North Fork Michigan		Hydrologic conditions.....	6
River near.....	32	graph of.....	7
South Fork Michigan River near.....	31		
Gove, Kans., Hackberry Creek near.....	376	Idaho Springs, Colo., Clear Creek	
Gower, Mo., Jenkins Branch at.....	310	below.....	150
Grand Island, Nebr., Platte River		Idalia, Colo., South Fork Republican	
near.....	220	River near.....	317
Grand River, near Gallatin, Mo.....	442	Illinois Creek near Rand, Colo.....	502
near Summer, Mo.....	449	Imperial, Nebr., Frenchman Creek near..	327
Grand River basin, gaging-station		Indian Creek at Council Bluffs,	
records in.....	441-451	Iowa.....	29
Grand River ditch at La Poudre Pass,		Ithaca, Nebr., Silver Creek at.....	281
Colo.....	183	Wahoo Creek at.....	280
Grant, Colo., North Fork South Platte			
River at.....	134	Jack Creek below Willow Creek, near	
Greeley, Colo., Cache la Poudre River		Saratoga, Wyo.....	39
near.....	192	Jackson County ditch 11 near Lakefield,	
Greenwood, Nebr., Dee Creek at.....	279	Minn.....	17
Grizzly Creek near Walden, Colo.....	502	James, Iowa, Floyd River at.....	12
Guernsey Reservoir, near Guernsey,		Jamestown, Kans., Buffalo Creek near..	369
Wyo.....	78	Jefferson City, Mo., Moreau River	
North Platte River below.....	79	near.....	465
Guide Rock, Nebr., Republican River		Jelm, Wyo., Laramie River near.....	82
near.....	365	Jenkins Branch at Gower, Mo.....	310
Gypsum Creek near Gypsum, Kans.....	393	Jerome, Mo., Gasconade River at.....	497
		Jones Pass tunnel at east portal, near	
Hackberry Creek near Gove, Kans.....	376	Jones Pass, Colo.....	148
Haigler, Nebr., Arikaree River at.....	311	Julesburg, Colo., South Platte River	
Buffalo Creek near.....	314	at.....	209
Hale, Colo., Bonny Reservoir near.....	319	Junction City, Kans., Clark Creek near..	409
Landsman Creek near.....	318	Smoky Hill River at.....	408
South Fork Republican River near....	320		
Hamburg, Iowa, Mishnabotna River		Kanopolis Reservoir near Kanopolis,	
above.....	292	Kans.....	384
Hamilton Branch near New Boston, Mo.....	450	Kansas City, Mo., Blue River near.....	435
Hamlet, Nebr., Frenchman Creek near....	330	Missouri River at.....	434
Hamlin, Iowa, Davids Creek near.....	290	Kansas River, at Bonner Springs, Kans..	433
Hancock, Iowa, West Mishnabotna		at Leocompton, Kans.....	430
River at.....	287	at Ogden, Kans.....	409
Hanna, Wyo., Medicine Bow River near....	44	at Topeka, Kans.....	426
Hardy, Nebr., Republican River near....	366	at Wamego, Kans.....	423
Harlan County Dam, Nebr., Republican		Kansas River basin, gaging-station	
River below.....	359	records in.....	311-433
Harlan County Reservoir near.....		Katzner drain near Henry, Nebr.....	103
Republican City, Nebr.....	358	Kennebec, Iowa, Little Sioux River	
Harry Strunk Lake, Nebr., Medicine		near.....	20
Creek above.....	343	Kersey, Colo., South Platte River near..	194
Medicine Creek below.....	346	Keystone, Nebr., Lake McConaughy near..	122
Mitchell Creek above.....	344	North Platte River near.....	123
Harry Strunk Lake near Cambridge, Nebr.		Keystone, Wyo., Douglas Creek above....	34
Hartzel, Colo., South Platte River near.	128	King Canyon Canal, diversion by.....	42
Hays, Kans., Big Creek near.....	381	Kiowa Creek, at Bennett, Colo.....	201
Hazlegreen, Mo., Gasconade River near....	489	at Elbert, Colo.....	200
Hecla, Wyo., Middle Crow Creek near....	195	at K-79 Reservoir, near Eastonville,	
South Crow Creek near.....	196	Colo.....	199
Henderson, Colo., South Platte River		at Kiowa, Colo.....	201
at.....	153	Kirwin, Kans., Kirwin Reservoir at.....	395
Henry, Nebr., Katzer drain near.....	103	North Fork Solomon River at.....	396
Herman, Nebr., New York Creek at.....	26	Kirwin Reservoir at Kirwin, Kans.....	395
Hermann, Mo., Missouri River at.....	499		
Hermitage, Mo., Pomme de Terre River		La Bonte, Wyo., La Bonte Creek near....	71
at.....	481	Wagonhound Creek near.....	69
Hershey, Nebr., Birdwood Creek near....	125	West Fork La Bonte Creek near.....	70
Holly Springs, Iowa, West Fork ditch		La Bonte Creek, near La Bonte, Wyo.....	71
at.....	14	West Fork, near La Bonte, Wyo.....	70
Homer, Nebr., Omaha Creek at.....	13	La Poudre Pass, Colo., Grand River	
Honey Creek near Russell, Iowa.....	451	ditch at.....	183
Hoosier Pass tunnel at Hoosier Pass,		La Prele Creek, near Douglas, Wyo.....	66
Colo.....	128	near Orpha, Wyo.....	67
Horse Creek near Lyman,		La Salle, Colo., Big Thompson River	
Nebr.....	105	near.....	182
Horseshoe Creek, near Esterbrook,		Ladder Creek below Chalk Creek, near	
Wyo.....	73	Scott City, Kans.....	374
near Glendo, Wyo.....	74	Lake City, Mo., Little Blue River near..	436
Horsetooth Reservoir near Fort		Lake Estes near Estes Park, Colo.....	171
Collins, Colo.....	174		



	Page		Page
Lake George, Colo., Elevenmile Canyon Reservoir near.....	129	Little Blue River (tributary to Big Blue River), at Angus, Nebr.....	415
South Platte River near.....	130	at Waterville, Kans.....	417
Tarryall Creek near.....	131	near Deweese, Nebr.....	414
Lake McConaughy near Keystone, Nebr....	122	near Fairbury, Nebr.....	416
Lake of the Ozarks near Bagnell, Mo....	485	near Gilead, Nebr.....	415
Lakefield, Minn., Jackson County ditch 11 near.....	17	Little Blue River (tributary to Missouri River) near Lake City, Mo.....	436
Little Sioux River near.....	16	Little Delaware River near Horton, Kans.....	428
Lakes and reservoirs:		Little Grizzly Creek near Hebron, Colo.....	502
Alcova Reservoir at Alcova, Wyo.....	54	Little Laramie River, at Two Rivers, Wyo.....	88
Bonny Reservoir near Hale, Colo.....	319	near Filmore, Wyo.....	87
Cedar Bluff Reservoir near Ellis, Kans.....	378	Little Nemaha River, at Auburn, Nebr....	294
Cheesman Lake near Deckers, Colo.....	132	near Syracuse, Nebr.....	293
Elevenmile Canyon Reservoir near Lake George, Colo.....	129	Little Nemaha River basin, gaging-station records in.....	293-294
Enders Reservoir near Enders, Nebr....	328	Little Osage River at Fulton, Kans.....	474
Estes, Lake, near Estes Park, Colo.....	171	Little Piney Creek at Newburg, Mo.....	495
Glendo Reservoir near Glendo, Wyo....	72	Little Sioux River, at Correctionville, Iowa.....	19
Guernsey Reservoir near Guernsey, Wyo.....	78	at Gillett Grove, Iowa.....	18
Harlan County Reservoir near Republican City, Nebr.....	358	near Keenebec, Iowa.....	20
Harry Strunk Lake near Cambridge, Nebr.....	345	near Lakefield, Minn.....	16
Horseshoe Reservoir near Fort Collins, Colo.....	174	near Turin, Iowa.....	23
Kanopolis Reservoir near Kanopolis, Kans.....	384	Little Sioux River basin, gaging-station records in.....	16-23
Kirwin Reservoir at Kirwin, Kans.....	395	Little Thompson River, at Milliken, Colo.....	181
Lake of the Ozarks near Bagnell, Mo.....	485	near Berthoud, Colo.....	179
Lovewell Reservoir near Lovewell, Kans.....	367	Littleton, Colo., South Platte River at.....	139
McConaughy, Lake, near Keystone, Nebr.....	122	Livermore, Colo., North Fork Cache la Poudre River near.....	190
Pathfinder Reservoir near Alcova, Wyo.....	52	Locust Creek near Linneus, Mo.....	448
Seminole Reservoir near Leo, Wyo.....	45	Lodgepole Creek, at Bushnell, Nebr....	207
Swanson Lake near Trenton, Nebr.....	324	at Ralton, Nebr.....	208
Webster Reservoir near Stockton, Kans.....	399	Logan, Iowa, Boyer River at.....	27
Wheatland Reservoir No. 2, near Lookout, Wyo.....	90	Logan Creek near Uehling, Nebr.....	270
Lamine River at Clifton City, Mo.....	458	Lonetree Creek near Munn, Colo.....	193
Lamine River basin, gaging-station records in.....	457-461	Longmont, Colo., Boulder Creek near.....	164
Landsman Creek near Hale, Colo.....	318	Lefthand Creek at.....	159
Langley, Kans., Smoky Hill River near.....	385	Lookout, Wyo., Laramie River near.....	90
Laramie-Poudre tunnel near Chambers Lake, Colo.....	185	Wheatland Reservoir No. 2 near.....	90
Laramie River, at Laramie, Wyo.....	85	Loretto, Nebr., Beaver Creek at.....	260
at Two Rivers, Wyo.....	86	Louisville, Kans., Rock Creek near.....	425
below Wheatland Reservoir No. 2, Wyo.....	91	Louisville, Nebr., Platte River at.....	283
near Fort Laramie, Wyo.....	100	Loup City, Nebr., Middle Loup River at.....	234
near Glendevey, Colo.....	81	Oak Creek near.....	242
near Jelm, Wyo.....	82	Loup River, at Columbus, Nebr.....	262
near Lookout, Wyo.....	90	near Genoa, Nebr.....	259
near Uva, Wyo.....	99	Loup River power canal near Genoa, Nebr.....	258
Laramie River and Pioneer Canal near Woods, Wyo.....	83	Loutre River at Mineola, Mo.....	500
Lawrence, Kans., Wakarusa River near.....	431	Loutre River basin, gaging-station records in.....	500
Lawson, Colo., Clear Creek near.....	149	Louviers, Colo., Plum Creek near.....	138
Lecompton, Kans., Kansas River at.....	430	Loveland, Colo., Big Thompson River near.....	178
Lefthand Creek, at mouth, at Longmont, Colo.....	159	Lovewell, Kans., Lovewell Reservoir near.....	367
near Boulder, Colo.....	158	White Rock Creek at.....	368
Leo, Wyo., Seminole Reservoir near.....	45	Lovewell Reservoir near Lovewell, Kans.....	367
Leon, Iowa, Weldon River near.....	444	Lucas, Kans., Wolf Creek near.....	391
Lewellen, Nebr., Blue Creek near.....	120	Ludell, Kans., Beaver Creek at.....	353
North Platte River at.....	121	Lyman, Nebr., Horse Creek near.....	105
Lincoln, Nebr., Antelope Creek at.....	278	Lyndon, Kans., Salt Creek near.....	467
Salt Creek at.....	279	Lyon Creek near Woodbine, Kans.....	407
Lincoln County drain No. 1 near North Platte, Nebr.....	126	Lyons, Colo., North St. Vrain Creek near.....	155
Lincoln Creek near Seward, Nebr.....	410	St. Vrain Creek at.....	158
Lindley Creek near Polk, Mo.....	481	McAllaster, Kans., North Fork Smoky Hill River near.....	373
Lindsborg, Kans., Smoky Hill River at.....	386	McCook, Nebr., Driftwood Creek near.....	335
Lingle, Wyo., Rawhide Creek near.....	101	Republican River at.....	336
Linneus, Mo., Locust Creek near.....	448	McFadden, Wyo., Dutton Creek near.....	89
Lisco, Nebr., North Platte River at.....	118	McGrew, Nebr., Ninemile drain near.....	113
Little Beaver Creek near Rolla, Mo....	494	McIntyre Creek at Gleneyre, Colo.....	502
		Malvern, Iowa, Mule Creek near.....	287
		Manhattan, Kans., Big Blue River near.....	422

	Page		Page
Map of the United States.....	5	Mitchell, Nebr., Dry Spottedtail Creek at.....	107
Maple Creek near Nickerson, Nebr.....	271	North Platte River at.....	108
Maple River at Mapleton, Iowa.....	22	Mitchell Creek above Harry Strunk Lake, Nebr.....	344
Marais des Cygnes River, at Melvern, Kans.....	466	Moffat water tunnel at East Portal, Colo.....	162
at Trading Post, Kans.....	472	Moniteau Creek near Payette, Mo.....	463
near Kansas-Missouri State line, Kans.....	473	Monona-Harrison ditch near Turin, Iowa.....	15
near Ottawa, Kans.....	470	Monona-Harrison ditch basin, gaging-station records in.....	14-15
Marles River at Westphalia, Mo.....	488	Moreau River near Jefferson City, Mo.....	465
Marmaton River near Fort Scott, Kans.....	475	Morrill, Nebr., Sheep Creek near.....	106
Marshall, Mo., Shiloh Branch near.....	461	Morrison, Colo., Bear Creek at.....	140
Marshfield, Mo., Niangua Branch at.....	483	Turkey Creek near.....	141
Marys Lake near Estes Park, Colo.....	170	Mud Creek, near Broken Bow, Nebr.....	239
Maryville, Mo., One Hundred and Two River near.....	307	near Sweetwater, Nebr.....	240
White Cloud Creek near.....	308	Muddy Creek (Kansas River basin) at Arapahoe, Nebr.....	349
Masonville, Colo., Buckhorn Creek near.....	176	Muddy Creek (Nemaha River basin) at Verdon, Nebr.....	301
Maywood, Nebr., Brushy Creek near.....	340	Mule Creek near Malvern, Iowa.....	287
Medicine Creek at.....	339	Mussel Fork near Musselfork, Mo.....	456
Medicine Bow River, above Rock Creek, near Medicine Bow, Wyo.....	41		
above Seminole Reservoir, near Hanna, Wyo.....	44	Naponee, Nebr., Turkey Creek at.....	360
Medicine Creek (Grand River basin) near Galt, Mo.....	447	Nebraska City, Nebr., Missouri River at.....	286
Medicine Creek (Kansas River basin), above Harry Strunk Lake, Nebr.....	343	Nederland, Colo., Middle Boulder Creek at.....	160
at Cambridge, Nebr.....	347	Neligh, Nebr., Elkhorn River at.....	268
at Maywood, Nebr.....	339	Nemaha River, at Falls City, Nebr.....	300
below Harry Strunk Lake, Nebr.....	346	North Fork, at Humboldt, Nebr.....	299
Melvorn, Kans., Marais des Cygnes River at.....	466	Nemaha River basin, gaging-station records in.....	298-301
Melvin, Colo., Cherry Creek near.....	144	New Boston, Mo., Hamilton Branch near.....	450
Mentor, Kans., Smoky Hill River near.....	387	New Cambria, Kans., Smoky Hill River near.....	393
Mercer, Mo., Weldon River near.....	444	New York Creek at Herman, Nebr.....	26
Meta, Mo., Van Cleve Branch near.....	486	Newburg, Mo., Little Piney Creek at.....	495
Michigan ditch, at Cameron Pass, Colo.....	184	Wilkins Spring near.....	496
Michigan River, at Haworth School, near Lindland, Colo.....	502	Newman Grove, Nebr., Shell Creek at.....	263
at Walden, Colo.....	502	Niangua Branch at Marshfield, Mo.....	483
near Cowdrey, Colo.....	502	Niangua River near Decaturville, Mo.....	484
near Lindland, Colo.....	502	Nickerson, Nebr., Maple Creek near.....	271
North Fork, near Gould, Colo.....	32	Niles, Kans., Solomon River at.....	403
South Fork, near Gould, Colo.....	31	Ninemile drain near McGrew, Nebr.....	113
Middle Boulder Creek at Nederland, Colo.....	160	Nishnabotna River above Hamburg, Iowa.....	292
Middle Crow Creek near Hecla, Wyo.....	195	Nishnabotna River basin, gaging-station records in.....	287-292
Middle Loup River, at Arcadia, Nebr.....	233	Nodaway River, at Clarinda, Iowa.....	303
at Boelus, Nebr.....	237	near Burlington Junction, Mo.....	304
at Dunning, Nebr.....	227	Nodaway River basin, gaging-station records in.....	303-304
at Loup City, Nebr.....	234	Norfolk, Nebr., Elkhorn River near.....	269
at Rockville, Nebr.....	235	North Bend, Nebr., Platte River at.....	265
at St. Paul, Nebr.....	244	North Boulder Creek near Nederland, Colo.....	504
at Sargent, Nebr.....	232	North Brush Creek near Saratoga, Wyo.....	36
at Seneca, Nebr.....	226	North Clear Creek near Blackhawk, Colo.....	150
at Walworth, Nebr.....	231	North Laramie River near Wheatland, Wyo.....	98
near Milburn, Nebr.....	230	North Loup River, at Brewster, Nebr.....	245
Middle St. Vrain Creek near Raymond, Colo.....	157	at Burwell, Nebr.....	247
Milburn, Nebr., Middle Loup River near.....	230	at Ord, Nebr.....	249
Milford, Kans., Republican River at.....	372	at Scotia, Nebr.....	250
Mill Creek (tributary to Kansas River), at Washington, Kans.....	416	at Taylor, Nebr.....	246
near Paxico, Kans.....	425	near Cotesfield, Nebr.....	252
Mill Creek (tributary to Missouri River) at Oregon, Mo.....	302	near St. Paul, Nebr.....	253
Mill Grove, Mo., Weldon River at.....	445	North Platte, Nebr., Lincoln County drain No. 1 near.....	126
Milliken, Colo., Little Thompson River at.....	181	North Platte River at.....	127
Minatare, Nebr., North Platte River near.....	112	South Platte River at.....	211
Mineola, Mo., Loure River at.....	500	North Platte River, above Pathfinder Reservoir, Wyo.....	46
Missouri River, at Boonville, Mo.....	462	above Seminole Reservoir, near Sinclair, Wyo.....	40
at Glasgow, Mo.....	456	at Alcova, Wyo.....	55
at Hermann, Mo.....	499	at Bridgeport, Nebr.....	116
at Kansas City, Mo.....	434	at Lewellen, Nebr.....	121
at Nebraska City, Nebr.....	286	at Lisco, Nebr.....	118
at Omaha, Nebr.....	28	at Mitchell, Nebr.....	108
at Rulo, Nebr.....	297	at North Platte, Nebr.....	127
at St. Joseph, Mo.....	305	at Orin, Wyo.....	72
at Sioux City, Iowa.....	8	at Oshkosh, Nebr.....	119
at Waverly, Mo.....	439	at Recorder station, below Whalen, Wyo.....	80

	Page		Page
North Platte River, at Saratoga, Wyo.....	7, 38	Pioneer Canal and Laramie River near Woods, Wyo.....	83
at Wyoming-Nebraska State line.....	104	Pioneer Canal at Colorado-Nebraska State line.....	4
below Casper, Wyo.....	61	Pisgah, Iowa, Soldier River at.....	25
below Glendo Reservoir, Wyo.....	73	Plainview, Colo., Coal Creek near.....	164
below Guernsey Reservoir, Wyo.....	79	Platte River (Colo.-Nebr.-Wyo.), at Brady, Nebr.....	212
below Pathfinder Reservoir, Wyo.....	53	at Louisville, Nebr.....	283
near Cassa, Wyo.....	75	at North Bend, Nebr.....	265
near Cowdrey, Colo.....	502	near Ashland, Nebr.....	273
near Douglas, Wyo.....	68	near Cozad, Nebr.....	213
near Glenrock, Wyo.....	64	near Duncan, Nebr.....	225
near Goose Egg, Wyo.....	58	near Grand Island, Nebr.....	220
near Keystone, Nebr.....	123	near Odessa, Nebr.....	219
near Minatare, Nebr.....	112	near Overton, Nebr.....	215
near Northgate, Colo.....	33	Platte River (Iowa-Mo.), at Ravenwood, Mo.....	306
near Sutherland, Nebr.....	124	near Agency, Mo.....	309
near Walden, Colo.....	502	Platte River basin (Colo.-Nebr.-Wyo.), gaging-station records in.....	30-283
North Fork, at Higo, Colo.....	502	Platte River basin (Iowa-Mo.), gaging-station records in.....	306-310
near Walden, Colo.....	502	Platteville, Colo., St. Vrain Creek near.....	165
North St. Vrain Creek, at Longmont Dam, near Lyons, Colo.....	155	Pleasant View, Mo., Cedar Creek near.....	478
near Allens Park, Colo.....	504	Plum Creek (tributary to Platte River) near Smithfield, Nebr.....	214
Northgate, Colo., North Platte River near.....	33	Plum Creek (tributary to South Platte River) near Louviers, Colo.....	138
Norton, Kans., Prairie Dog Creek at.....	357	Poison Spider Creek near Goose Egg, Wyo.....	59
Novinger, Mo., Chariton River at.....	454	Polk, Mo., Lindley Creek near.....	481
Nunn, Colo., Lonetree Creek near.....	193	Pomme de Terre River, at Hermitage, Mo.....	481
Oak Creek, near Dannebrog, Nebr.....	243	near Bolivar, Mo.....	480
near Loup City, Nebr.....	242	Pottawatomie Creek near Garnett, Kans.....	471
Oak Grove Branch near Brighton, Mo.....	476	Prairie Creek near Silver Creek, Nebr.....	224
Oberlin, Kans., Sappa Creek near.....	351	Prairie Dog Creek, at Norton, Kans.....	357
Odebolt Creek near Arthur, Iowa.....	21	near Woodruff, Kans.....	358
Odessa, Nebr., Platte River near.....	219	Prairie Hill, Mo., Chariton River near.....	455
Ogallah, Kans., Big Creek near.....	380	Preston, Mo., Starks Creek at.....	485
Ogden, Kans., Kansas River at.....	409	Primrose, Nebr., Cedar River at.....	256
Omaha, Nebr., Missouri River at.....	28	Publications.....	4-6
Omaha Creek at Homer, Nebr.....	13	Pumpkin Creek near Bridgeport, Nebr.....	117
One Hundred and Two River, East Fork, near Bedford, Iowa.....	306	Purpose and scope.....	1
near Maryville, Mo.....	307	Quenemo, Kans., Hundred and Ten Mile Creek near.....	469
Ord, Nebr., North Loup River at.....	249	Ralton, Nebr., Lodgepole Creek at.....	208
Oregon, Mo., Mill Creek at.....	302	Randolph, Iowa, West Nishnabotna River at.....	289
Orin, Wyo., North Platte River at.....	72	Randolph, Kans., Big Blue River at.....	422
Orleans, Nebr., Republican River near.....	350	Rathbun, Iowa, Chariton River near.....	452
Orodell, Colo., Boulder Creek near.....	161	Rattlesnake Creek near Pinewood, Colo.....	177
Pourmile Creek at.....	162	Ravenna, Nebr., South Loup River at.....	238
Orpha, Wyo., La Prele Creek near.....	67	Ravenwood, Mo., Platte River at.....	306
Osage River, at Osceola, Mo.....	479	Rawhide Creek near Lingle, Wyo.....	101
near Bagnell, Mo.....	486	Raymond, Colo., Middle St. Vrain Creek near.....	157
near St. Thomas, Mo.....	487	Red Oak, Iowa, East Nishnabotna River at.....	291
Osage River basin, gaging-station records in.....	466-489	Red Willow Creek (Kansas River basin) near Red Willow, Nebr.....	337
Osborne, Kans., South Fork Solomon River at.....	401	Red Willow Creek (Platte River basin) near Bayard, Nebr.....	115
Osceola, Mo., Osage River at.....	479	Republican City, Nebr., Harlan County Reservoir near.....	358
Oshkosh, Nebr., North Platte River at.....	119	Republican River, at Benkelman, Nebr.....	316
Ottawa, Kans., Marais des Cygnes River near.....	470	at Cambridge, Nebr.....	348
Overton, Nebr., Buffalo Creek near.....	217	at Clay Center, Kans.....	371
Elm Creek near.....	218	at Concordia, Kans.....	370
Platte River near.....	215	at McCook, Nebr.....	336
Palisade, Nebr., Frenchman Creek at.....	331	at Milford, Kans.....	372
Stinking Water Creek near.....	332	at Scandia, Kans.....	369
Paradise Creek near Paradise, Kans.....	389	at Stratton, Nebr.....	323
Parks, Nebr., Rock Creek at.....	315	at Trenton, Nebr.....	325
Pass Creek near Elk Mountain, Wyo.....	39	below Harlan County Dam, Nebr.....	359
Pathfinder Reservoir, near Alcova, Wyo.....	52	near Bloomington, Nebr.....	361
North Platte River above.....	46	near Guide Rock, Nebr.....	365
North Platte River below.....	53	near Hardy, Nebr.....	366
Paxico, Kans., Mill Creek near.....	425	near Orleans, Nebr.....	350
Paxton, Nebr., South Platte River at.....	210		
Perry Creek at 38th St., Sioux City, Iowa.....	9		
Petite Saline Creek near Boonville, Mo.....	464		
Pinewood, Colo., Cottonwood Creek near.....	177		
Dry Creek near.....	176		
Rattlesnake Creek near.....	177		

	Page		Page
Republican River, North Fork, at		Scotia, Nebr., North Loup River at....	250
Colorado-Nebraska State line....	313	Scott City, Kans., Ladder Creek near....	374
North Fork, near Wray, Colo.....	312	Scottsbluff, Nebr., Tub Springs near....	109
South Fork, near Benkelman, Nebr.	322	Winter Creek near.....	110
near Colorado-Kansas State line...	321	Sedalia, Mo., Flat Creek near.....	457
near Hale, Colo.....	320	Seminole Reservoir near Leo, Wyo.....	45
near Idalia, Colo.....	317	Seneca, Kans., Turkey Creek near.....	298
Reservoirs. See Lakes and reservoirs.		Seneca, Nebr., Middle Loup River at....	226
Rich Fountain, Mo., Gasconade River		Seward, Nebr., Big Blue River at.....	411
near.....	498	Lincoln Creek near.....	410
Richmond, Mo., Crooked River near.....	438	Sheep Creek near Morrill, Nebr.....	106
Rivertale, Nebr., Wood River near.....	221	Shell Creek, at Newman Grove, Nebr.....	263
Riverton, Nebr., Thompson Creek at....	363	near Columbus, Nebr.....	264
Roaring Fork near Walden, Colo.....	502	Sheridan, Colo., Bear Creek at.....	142
Roca, Nebr., Salt Creek at.....	277	Shiloh Branch near Marshall, Mo.....	461
Salt Creek subwatershed No. 1 near...	274	Shoal Creek near Braymer, Mo.....	447
Salt Creek subwatershed No. 12 at...	275	Silver Creek, Nebr., Prairie Creek	
Salt Creek subwatershed No. 34 near...	276	near.....	224
Rock Creek (tributary to Medicine Bow		Silver Creek at Ithaca, Nebr.....	281
River), at Arlington, Wyo.....	42	Sinclair, Wyo., North Platte River	
below Rock River, Wyo.....	43	near.....	40
Rock Creek (tributary to Republican		Sioux City, Iowa, Missouri River at....	8
River) at Parks, Nebr.....	315	Perry Creek at.....	9
Rock Creek (tributary to Sweetwater		Skyline ditch at Chambers Lake,	
River), at Atlantic City, Wyo.....	50	Colo.....	185
near Atlantic City, Wyo.....	49	Slate Creek near Atlantic City, Wyo.....	49
near South Pass City, Wyo.....	48	Smithfield, Nebr., Plum Creek near....	214
Rock Creek (tributary to Tarryall		Smoky Hill River, at Cedar Bluff Dam,	
Creek) near Jefferson, Colo.....	503	Kans.....	379
Rock Creek (tributary to Vermillion		at Elkader, Kans.....	375
River) near Louisville, Kans.....	425	at Ellsworth, Kans.....	383
Rock River, Wyo., Rock Creek below...	43	at Enterprise, Kans.....	405
Rockville, Nebr., Middle Loup River		at Junction City, Kans.....	408
at.....	235	at Lindsborg, Kans.....	386
Rolla, Mo., Beaver Creek near.....	493	near Arnold, Kans.....	377
Little Beaver Creek near.....	494	near Ellis, Kans.....	380
Rose Creek near Wallace, Kans.....	373	near Langley, Kans.....	385
Rothville, Mo., Yellow Creek near....	451	near Mentor, Kans.....	387
Rulo, Nebr., Missouri River at.....	297	near New Cambria, Kans.....	393
Rumbo Branch at Danville, Mo.....	500	near Russell, Kans.....	382
Russell, Iowa, Honey Creek near....	451	North Fork, near McAllaster, Kans...	373
Russell, Kans., Saline River near....	388	Snipe Creek near Beattie, Kans.....	418
Smoky Hill River near.....	382	Soldier Creek, near Delia, Kans.....	427
Rustic, Colo., Cache la Poudre River		near Topeka, Kans.....	427
near.....	186	Soldier River at Pisgah, Iowa.....	25
South Fork Cache la Poudre River		Solomon River, at Beloit, Kans.....	402
near.....	187	at Niles, Kans.....	403
Sac River near Stockton, Mo.....	477	North Fork, at Glade, Kans.....	394
St. Joseph, Mo., Missouri River at....	305	at Kirwin, Kans.....	396
St. Louis, Mo., Coldwater Creek near...	501	near Downs, Kans.....	397
St. Michael, Nebr., South Loup River		South Fork, above Webster Reservoir,	
at.....	241	Kans.....	398
St. Paul, Nebr., Middle Loup River at.	244	at Alton, Kans.....	400
North Loup River near.....	253	at Osborne, Kans.....	401
St. Thomas, Mo., Osage River near....	487	below Webster Reservoir, Kans.....	399
St. Vrain Creek, at Lyons, Colo.....	158	South Boulder Creek, near Eldorado	
at mouth, near Plattville, Colo.....	165	Springs, Colo.....	163
Saline River, at Tescott, Kans.....	392	near Rollinsville, Colo.....	504
near Russell, Kans.....	388	South Brush Creek near Saratoga, Wyo...	36
near Wakeeney, Kans.....	388	South Crow Creek near Hecla, Wyo.....	196
near Wilson, Kans.....	390	South Grand River near Brownington,	
Salt Creek (Kansas River basin) near		Mo.....	482
Ada, Kans.....	403	South Loup River, at Ravenna, Nebr....	238
Salt Creek (Osage River basin) near...		at St. Michael, Nebr.....	241
Lyndon, Kans.....	467	near Cumro, Nebr.....	237
Salt Creek (Platte River basin), at		South Pass City, Wyo., Rock Creek near.	48
Lincoln, Nebr.....	279	Sweetwater River near.....	47
at Roca, Nebr.....	277	Willow Creek near.....	48
near Ashland, Nebr.....	282	South Platte, Colo., North Fork South	
Salt Creek subwatershed, Nos. 1 and 34		Platte River at.....	135
near Roca, Nebr.....	274, 276	South Platte River at.....	136
No. 3 near Sprague, Nebr.....	273	Lake, Colo.....	503
No. 12 at Roca, Nebr.....	275	above Elevenmile Canyon Reservoir,	
Sand Creek near Tie Siding, Wyo.....	84	near Hartsel, Colo.....	128
Sappa Creek, near Beaver City, Nebr....	352	above North Fork, at South Platte,	
near Oberlin, Kans.....	351	Colo.....	503
near Stamford, Nebr.....	356	at Balzac, Colo.....	205
South Fork, near Achilles, Kans.....	351	at Denver, Colo.....	147
Saratoga, Wyo., Jack Creek near.....	39	at Fort Lupton, Colo.....	154
North Brush Creek near.....	36	at Fort Morgan, Colo.....	204
North Platte River at.....	38	at Henderson, Colo.....	153
South Brush Creek near.....	36	at Julesburg, Colo.....	209
Sargent, Nebr., Middle Loup River at.	232	at Lake George, Colo.....	503
Scandia, Kans., Republican River at...	369	at Littleton, Colo.....	139

	Page		Page
South Platte River, at North Platte		Torrington, Wyo., Cherry Creek drain	
Nebr.....	211	near.....	102
at Orchard, Colo.....	504	Trading Post, Kans., Marais des	
at Paxton, Nebr.....	210	Cygnus River at.....	472
at South Platte, Colo.....	136	Transbasin diversions from North	
at Sublette, Colo.....	198	Platte River basin to Cache la	
at Waterton, Colo.....	137	Poudre River basin:	
below Cheesman Lake, Colo.....	133	Bob Creek ditch near Glendevay, Colo.	186
Middle Fork, at Alma, Colo.....	503	Cameron Pass ditch at Cameron Pass,	
at Fairplay, Colo.....	503	Colo.....	184
near Crook, Colo.....	206	Columbine ditch at Deadman Hill,	
near Kersey, Colo.....	194	Colo.....	189
near Lake George, Colo.....	130	Laramie-Poudre tunnel near Chambers,	
near Weldona, Colo.....	202	Lake, Colo.....	185
North Fork, at Grant, Colo.....	503	Michigan ditch at Cameron Pass, Colo.	184
at South Platte, Colo.....	135	Skyline ditch at Chambers Lake, Colo.	185
below Geneva Creek, at Grant,		Wilson supply ditch near Eaton	
Colo.....	134	Reservoir, Colo.....	189
South Fork, near Fairplay, Colo.....	503	Transmountain diversions from Colorado	
South St. Vrain Creek near Ward, Colo.	156	River basin to South Platte	
Spalding, Nebr., Cedar River near.....	255	River basin:	
Spalding power canal at.....	256	Alva B. Adams tunnel at east portal,	
Spalding power canal at Spalding,		near Estes Park, Colo.....	169
Nebr.....	256	Berthoud Pass ditch at Berthoud	
Spicer, Colo., Colorado Creek near.....	30	Pass, Colo.....	148
Sprague, Nebr., Salt Creek sub-		Boreas Pass ditch at Boreas Pass,	
watershed No. 3 near.....	273	Colo.....	131
Spring Creek at Cushing, Nebr.....	254	Eureka ditch near Flattop Mountain,	
Spring Valley Creek near Tabor, Iowa.	288	Colo.....	166
Stamford, Nebr., Sappa Creek near.....	356	Grand River ditch at La Poudre Pass,	
Stanton, Iowa, Tarkio River at.....	295	Colo.....	183
Starks Creek at Preston, Mo.....	485	Hoosier Pass tunnel at Hoosier Pass,	
Stinking Water Creek, near Fallsade,		Colo.....	128
Nebr.....	332	Jones Pass tunnel at east portal,	
Stockton, Kans., Bow Creek near.....	394	near Jones Pass, Colo.....	148
Webster Reservoir near.....	399	Moffat water tunnel at East Portal,	
Stockton, Mo., Sac River near.....	477	Colo.....	162
Stranger Creek near Tonganoxie, Kans.	432	Trenton, Mo., Thompson River at.....	446
Stratton, Nebr., Republican River at.	323	Trenton, Nebr., Republican River at.....	325
Struble, Iowa, West Branch Floyd		Swanson Lake near.....	324
River near.....	11	Tub Springs near Scottsbluff, Nebr.....	103
Sublette, Colo., South Platte River		Turin, Iowa, Little Sioux River near...	23
at.....	198	Monona-Harrison ditch near.....	15
Sumner, Mo., Grand River near.....	449	Turkey Creek (Kansas River basin), at	
Sutherland, Nebr., North Platte River		Naponee, Nebr.....	360
near.....	124	near Abilene, Kans.....	404
Swanson Lake near Trenton, Nebr.....	324	near Wilber, Nebr.....	412
Sweetwater, Nebr., Mud Creek near.....	240	Turkey Creek (Nemaha River basin) near	
Sweetwater River, near Alcovia, Wyo.....	51	Seneca, Kans.....	298
near Atlantic City, Wyo.....	50	Turkey Creek (Platte River basin) near	
near South Pass City, Wyo.....	47	Morrison, Colo.....	141
Switzler Creek at Burlingame, Kans.....	468	Two Rivers, Wyo., Laramie River at.....	86
Sybilie Creek, above Bluegrass Creek,		Little Laramie River at.....	88
near Wheatland, Wyo.....	92	Uehling, Nebr., Logan Creek near.....	270
at Muleshoe Ranch, near Wheatland,		Union, Nebr., Weeping Water Creek at...	285
Wyo.....	97	Uva, Wyo., Laramie River near.....	99
below Bluegrass Creek, near Wheat-			
land, Wyo.....	93	Valley City, Mo., Blackwater River at..	459
near Muleshoe Ranch, near Wheatland,		Valley Falls, Kans., Delaware River	
Wyo.....	97	at.....	429
Sylvan Grove, Kans., Wolf Creek near...	391	Van Cleve Branch near Meta, Mo.....	486
Syracuse, Nebr., Little Nemaha River		Verdon, Nebr., Muddy Creek at.....	301
near.....	293	Vermillion Creek near Wamego, Kans.....	424
Tabor, Iowa, Spring Valley Creek		Wagonhound Creek near La Bonte, Wyo....	69
near.....	288	Wahoo Creek at Ithaca, Nebr.....	280
Tarkio River, at Fairfax, Mo.....	296	Wakarusa River near Lawrence, Kans.....	431
at Stanton, Iowa.....	295	Wakeney, Kans., Saline River near.....	388
Tarkio River basin, gaging-station		Wakenda Creek at Carrollton, Mo.....	440
records in.....	295-296	Wallace, Kans., Rose Creek near.....	373
Tarryall Creek, near Jefferson,		Walworth, Nebr., Middle Loup River at...	231
Colo.....	503	Wamego, Kans., Kansas River at.....	423
near Lake George, Colo.....	131	Vermillion Creek near.....	424
Taylor, Nebr., North Loup River at...	246	Ward, Colo., South St. Vrain Creek	
Tekamah Creek at Tekamah, Nebr.....	24	near.....	156
Tescott, Kans., Saline River at.....	392	Washington, Kans., Mill Creek at.....	416
Thompson Branch near Albany, Mo.....	441	Waterloo, Nebr., Elkhorn River at.....	272
Thompson Creek at Riverton, Nebr.....	363	Waterton, Colo., South Platte River at.	137
Thompson River, at Davis City, Iowa...	443	Waterville, Kans., Little Blue River	
at Trenton, Mo.....	446	at.....	417
Tie Siding, Wyo., Sand Creek near.....	84	Waubonsie Creek near Bartlett, Iowa....	284
Tonganoxie, Kans., Stranger Creek		Waverly, Mo., Missouri River at.....	439
near.....	432	Waynesville, Mo., Gasconade River	
Topeka, Kans., Kansas River at.....	426	near.....	490
Soldier Creek near.....	427		

	Page		Page
Webster Reservoir, Kans., South Fork,		White Cloud Creek near Maryville, Mo...	308
Solomon River above.....	398	White Rock Creek, at Lovewell, Kans....	368
South Fork Solomon River below.....	399	near Burr Oak, Kans.....	367
Webster Reservoir near Stockton, Kans.	399	Wiggins, Colo., Bijou Creek near.....	203
Weeping Water Creek, at Union, Nebr....	285	Wilber, Kans., Turkey Creek near.....	412
Weldon River, at Mill Grove, Mo.....	445	Wilkins Spring near Newburg, Mo.....	496
near Leon, Iowa.....	444	Willow Creek (tributary to Illinois	
near Mercer, Mo.....	444	Creek) near Rand, Colo.....	502
Weldona, Colo., South Platte River		Willow Creek (tributary to Sweetwater	
near.....	202	River), near Atlantic City, Wyo..	47
Wendover, Wyo., Cottonwood Creek at...	77	near South Pass City, Wyo.....	48
West Fork ditch at Holly Springs,		Wilson, Kans., Saline River near.....	390
Iowa.....	14	Wilson supply ditch near Eaton Reser-	
West Nishnabotna River, at Hancock,		voir, Colo.....	189
Iowa.....	287	Winkler, Kans., Fancy Creek at.....	421
at Randolph, Iowa.....	289	Winter Creek near Scottsbluff, Nebr....	110
West Yellow Creek near Brookfield, Mo.	450	Wolf Creek, near Lucas, Kans.....	391
Westphalia, Mo., Maries River at.....	488	near Sylvan Grove, Kans.....	391
Whalen, Wyo., North Platte River		Wood River, near Alda, Nebr.....	223
below.....	80	near Gibbon, Nebr.....	222
Wheatland, Wyo., Bluegrass Creek near.	92	near Riverdale, Nebr.....	221
North Laramie River near.....	98	Woodbine, Kans., Lyon Creek near.....	407
Sybille Creek near.....	92,93,97	Woodruff, Kans., Prairie Dog Creek	
Wheatland Canals Nos. 1, 2, and 3		near.....	358
near.....	94,96,95	Woods, Wyo., Laramie River and Pioneer	
Wheatland Canals Nos. 1, 2, and 3		Canal near.....	83
near Wheatland, Wyo.....	94,96,95	Wray, Colo., North Fork Republican	
Wheatland Reservoir No. 2, near		River near.....	312
Lookout, Wyo.....	90	Yellow Creek near Rothville, Mo.....	451
Laramie River below.....	91		