UNITED STATES DEPARTMENT OF THE INTERIOR

SURFACE WATER SUPPLY *of the* UNITED STATES 1927

PART VII
LOWER MISSISSIPPI RIVER BASIN

GEOLOGICAL SURVEY WATER-SUPPLY PAPER 647

UNITED STATES DEPARTMENT OF THE INTERIOR
RAY LYMAN WILBUR, Secretary
GEOLOGICAL SURVEY
GEORGE OTIS SMITH, Director

Water-Supply Paper 647

SURFACE WATER SUPPLY *of the* UNITED STATES 1927

PART VII
LOWER MISSISSIPPI RIVER BASIN

NATHAN C. GROVER, Chief Hydraulic Engineer
H. C. BECKMAN, ROBERT FOLLANSBEE, J. B. SPIEGEL
and C. E. ELLSWORTH, District Engineers

Prepared in cooperation with the States of
MISSOURI, COLORADO, KANSAS, and TEXAS

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON: 1930

For sale by the Superintendent of Documents, Washington, D. C. - - - - - - - Price 20 cents

CONTENTS

	Page
Authorization and scope of work	1
Definition of terms	2
Explanation of data	2
Accuracy of field data and computed results	4
Publications	5
Cooperation	9
Division of work	9
Gaging-station records	10
Meramec River Basin	10
Meramec River near Steelville, Mo	10
Meramec River near Sullivan, Mo	11
Meramec River near Eureka, Mo	13
Meramec Spring near St. James, Mo	14
Bourbeuse River at Union, Mo	16
Big River at Byrnesville, Mo	17
Headwater Diversion Channel Basin	19
Castor River at Zalma, Mo	19
St. Francis River Basin	20
Little River ditch No. 81 near Kennett, Mo	20
Little River ditch No. 1 near Kennett, Mo	22
Little River ditch No. 66 near Kennett, Mo	23
Little River ditch No. 66–A near Kennett, Mo	24
Little River ditch No. 251 near Kennett, Mo	26
Little River ditch No. 259 near Kennett, Mo	27
White River Basin	28
White River at Beaver, Ark	28
James River near Battlefield, Mo	29
James River at Galena, Mo	31
North Fork of White River at Tecumseh, Mo	32
Black River at Leeper, Mo	33
Current River at Van Buren, Mo	35
Current River at Doniphan, Mo	36
Jacks Fork at Eminence, Mo	38
Big Spring near Van Buren, Mo	39
Eleven Point River near Bardley, Mo	41
Greer Spring at Greer, Mo	42
Arkansas River Basin	43
Arkansas River at Granite, Colo	43
Arkansas River at Salida, Colo	45
Arkansas River at Canon City, Colo	46
Arkansas River near Pueblo, Colo	47
Arkansas River at Holly, Colo	49
Arkansas River at Syracuse, Kans	50
Arkansas River at Garden City, Kans	51
Arkansas River at Larned, Kans	53

Gaging-station records—Continued.
Arkansas River Basin—Continued. Page
Arkansas River near Wichita, Kans 54
Arkansas River at Arkansas City, Kans 56
Grape Creek near Westcliffe, Colo 57
West Beaver Creek near Victor, Colo 59
Boehmer Creek near Pikes Peak, Colo 59
Little Beaver Creek near Pikes Peak, Colo 60
Sackett Creek near Pikes Peak, Colo 61
Lion Creek near Halfway, Colo 61
Sheep Creek near Halfway, Colo 62
South Ruxton Creek at Halfway, Colo 63
Cabin Creek near Halfway, Colo 63
Sutherland Creek near Manitou, Colo 64
Bear Creek near Colorado Springs, Colo 65
Wild Horse Creek near Holly, Colo 66
Holly drain near Coolidge, Kans 70
Pawnee River near Larned, Kans 73
Little Arkansas River at Valley Center, Kans 74
Walnut River at Winfield, Kans 76
Verdigris River at Independence, Kans 77
Neosho River near Iola, Kans 78
Neosho River near Parsons, Kans 80
Neosho River near Grove, Okla 81
Cottonwood River at Elmdale, Kans 83
Spring River near Waco, Mo 84
Shoal Creek near Joplin, Mo 85
Red River Basin 87
Red River near Denison, Tex 87
Pease River near Crowell, Tex 88
Kiamichi River near Belzoni, Tex 89
Sulphur River near Darden, Tex 90
Cypress Creek near Jefferson, Tex 91
Ouachita River near Hot Springs, Ark 92
Ouachita River at Remmel Dam, near Malvern, Ark 93
Miscellaneous discharge measurements 95
Index 97

ILLUSTRATION

Page
FIGURE 1. Typical gaging station 3

SURFACE WATER SUPPLY OF LOWER MISSISSIPPI RIVER BASIN, 1927

AUTHORIZATION AND SCOPE OF WORK

This volume is one of a series of 14 reports presenting results of measurements of flow made on streams in the United States during the year ending September 30, 1927.

The data presented in these reports were collected by the United States Geological Survey under the following authority contained in the organic law (20 Stat. L., p. 394):

Provided, That this officer [the Director] shall have the direction of the Geological Survey and the classification of public lands and examination of the geological structure, mineral resources, and products of the national domain.

The work was begun in 1888 in connection with special studies relating to irrigation in the West. Since the fiscal year ending June 30, 1895, successive appropriation bills passed by Congress have carried the following items:

For gaging the streams and determining the water supply of the United States, and for the investigation of underground currents and artesian wells, and for the preparation of reports upon the best methods of utilizing the water resources.

Annual appropriations for the fiscal years ending June 30, 1895–1928

1895	$12, 500. 00	1918	$175, 000. 00
1896	24, 500. 00	1919	148, 244. 10
1897–1899	50, 000. 00	1920	175, 000. 00
1900	70, 000. 00	1921–1923	180, 000. 00
1901–2	100, 000. 00	1924–25	170, 000. 00
1903–1906	200, 000. 00	1926	165, 000. 00
1907	150, 000. 00	1927	151, 000. 00
1908–1910	100, 000. 00	1928	147, 000. 00
1911–1917	150, 000. 00		

In this work many private and State organizations have cooperated, either by furnishing records or by assisting in collecting data. Acknowledgments for cooperation of the first kind are made in connection with the description of each station affected; cooperation of the second kind is acknowledged on page 9.

Measurements of stream flow have been made at about 5,330 points in the United States and also at many points in Alaska and the Hawaiian Islands. In July, 1927, 1,750 gaging stations were being maintained by the Geological Survey and the cooperating organizations. Many miscellaneous discharge measurements were made at other points. In connection with this work data were also collected

in regard to precipitation, evaporation, storage reservoirs, river profiles, and water power in many sections of the country and will be made available in water-supply papers from time to time.

DEFINITION OF TERMS

The volume of water flowing in a stream—the "run-off" or "discharge"—is expressed in various terms, each of which has become associated with a certain class of work. These terms may be divided into two groups—(1) those that represent a rate of flow, as second-feet, gallons per minute, miner's inches, and discharge in second-feet per square mile, and (2) those that represent the actual quantity of water, as run-off in inches, acre-feet, and millions of cubic feet. The principal terms used in this series of reports are second-feet, second-feet per square mile, and run-off in inches and in acre-feet. They may be defined as follows:

"Second-feet" is an abbreviation for "cubic feet per second." A second-foot is the rate of discharge of water flowing in a channel of rectangular cross section 1 foot wide and 1 foot deep at an average velocity of 1 foot per second. It is generally used as a fundamental unit from which others are computed.

"Second-feet per square mile" is the average number of cubic feet of water flowing per second from each square mile of area drained, on the assumption that the run-off is distributed uniformly both as regards time and area.

"Run-off in inches" is the depth to which an area would be covered if all the water flowing from it in a given period were uniformly distributed on the surface. It is used for comparing run-off with rainfall, which is usually expressed in inches.

An "acre-foot," equivalent to 43,560 cubic feet, is the quantity required to cover an acre to the depth of 1 foot. The term is commonly used in connection with storage for irrigation.

The following terms not in common use are here defined:

"Stage-discharge relation," an abbrevation for the term "relation of gage height to discharge."

"Control," a term used to designate the section or sections of the stream channel below the gage which determine the stage-discharge relation at the gage. It should be noted that the control may not be the same section or sections at all stages.

The "point of zero flow" for a gaging station is that point on the gage—the gage height—at which water ceases to flow over the control.

EXPLANATION OF DATA

The data presented in this report cover the year beginning October 1, 1926, and ending September 30, 1927. At the beginning of January in most parts of the United States much of the precipitation in

the preceding three months is stored in the form of snow or ice, or in ponds, lakes, and swamps, or as ground water, and this stored water passes off in the streams during the spring break-up. At the end of September, on the other hand, the only stored water available for run-off is possibly a small quantity in the ground; therefore the run-off for the year beginning October 1 is practically all derived from precipitation within that year.

The base data collected at gaging stations consist of records of stage, measurements of discharge, and general information used to supplement the gage heights and discharge measurements in determining the daily flow. The records of stage are obtained either from direct readings on a staff or chain gage or from a water-stage recorder

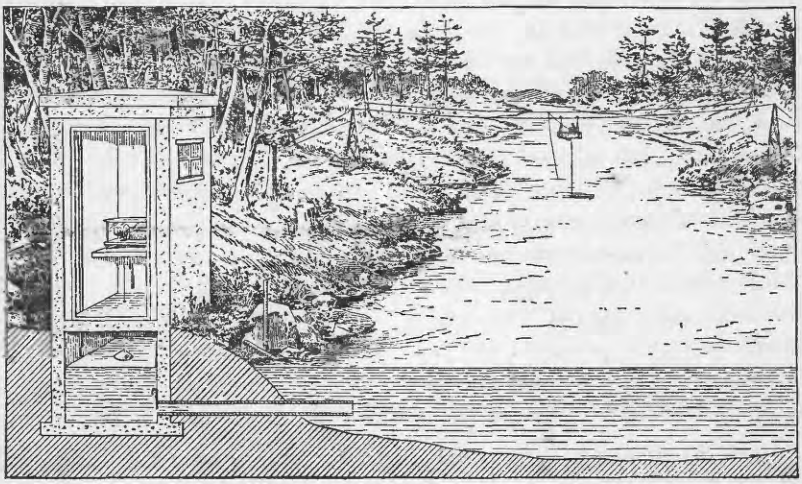

FIGURE 1.—Typical gaging station

that gives a continuous record of the fluctuations. Measurements of discharge are made with a current meter by the general methods outlined in standard textbooks on the measurement of river discharge. A typical gaging station, equipped with water-stage recorder and measuring cable and car, is shown in Figure 1.

From the discharge measurements rating tables are prepared that give the discharge for any stage. The application of the daily gage heights to these rating tables gives the daily discharge from which the monthly and yearly mean discharge is determined.

The data presented for each gaging station in the area covered by this report comprise a description of the station, a table showing the daily discharge of the stream, and a table of monthly and yearly discharge and run-off.

The description of the station gives, in addition to statements regarding location and equipment, information in regard to any condition that may affect the permanence of the stage-discharge relation,

covering such subjects as the occurrence of ice, the use of the stream for log driving, shifting of control, and the cause and effect of backwater. It gives also information as to diversions that decrease the flow at the gage, artificial regulation, maximum and minimum recorded stages, and the accuracy of the records.

The table of daily discharge gives, in general, the discharge in second-feet corresponding to the mean of the gage heights read each day. At stations on streams subject to sudden or rapid diurnal fluctuation the discharge obtained from the rating table and the mean daily gage height may not be the true mean discharge for the day. If such stations are equipped with water-stage recorders the mean daily discharge may be obtained by averaging discharge at regular intervals during the day or by use of the discharge integrator, an instrument operating on the principle of the planimeter and containing as an essential element the rating curve of the station.

In the table of monthly discharge the column headed "Maximum" gives the mean flow for the day when the mean gage height was highest. As the gage height is the mean for the day it does not indicate correctly the stage when the water surface was at crest height, and the corresponding discharge was consequently larger than given in the maximum column. Likewise, in the column headed "Minimum" the quantity given is the mean flow for the day when the mean gage height was lowest. The column headed "Mean" is the average flow in cubic feet per second during the month. On this average flow are based computations recorded in the remaining columns which are defined on page 2.

ACCURACY OF FIELD DATA AND COMPUTED RESULTS

The accuracy of stream-flow data depends primarily (1) on the permanence of the stage-discharge relation and (2) on the accuracy of observation of stage, measurements of flow, and interpretation of records.

A paragraph in the description of the station gives information regarding the (1) permanence of the stage-discharge relation, (2) precision with which the discharge rating curve is defined, (3) refinement of gage readings, (4) frequency of gage readings, and (5) methods of applying daily gage height to the rating table to obtain the daily discharge.

For the rating tables "well defined" indicates, in general, that the rating is probably accurate within 5 per cent; "fairly well defined," within 10 per cent; "poorly defined," within 15 to 25 per cent. These notes are very general and are based on the plotting of the individual measurements with reference to the mean rating curve.

The monthly means for any station may represent with high accuracy the quantity of water flowing past the gage, but the figures

showing discharge per square mile and run-off in inches may be misleading owing to the inclusion of large noncontributing districts in the measured drainage area, and they may also be subject to gross errors caused by lack of information concerning water diverted for irrigation or other use, or by inability to interpret the effect of artificial regulation of the flow of the river above the station. "Second-feet per square mile" and "run-off in inches" are therefore not computed if such errors appear probable. The computations are also omitted for stations on streams draining areas in which the annual rainfall is less than 20 inches. All figures representing "second-feet per square mile" and "run-off in inches" previously published by the Geological Survey should be used with caution because of possible inherent but unknown sources of error.

Many gaging stations on streams in the irrigated areas of the United States are situated above most of the diversions from those streams, and the discharge recorded does not show the water supply available for further development, as prior appropriations below the stations must first be satisfied. To give an idea of the amount of prior appropriations, a paragraph on diversions is presented in each station description. The figures given can not be considered exact but represent the best information available.

The tables of monthly discharge give only a general idea of the flow at the station and should not be used for other than preliminary estimates; the tables of daily discharge allow more detailed studies of the variation in flow. It should be borne in mind, however, that the observations in each succeeding year may be expected to throw new light on data previously published.

PUBLICATIONS

Investigation of water resources by the United States Geological Survey has consisted in large part of measurements of the volume of flow of streams and studies of the conditions affecting that flow, but it has comprised also investigation of such closely allied subjects as irrigation, water storage, water powers, underground waters, and quality of waters. Most of the results of these investigations have been published in the series of water-supply papers, but some have appeared in the monographs, bulletins, professional papers, and annual reports.

The results of stream-flow measurements are now published annually in 12 parts, each part covering an area whose boundaries coincide with natural drainage features as indicated below:

Part I. North Atlantic slope basins (St. John River to York River).
II. South Atlantic slope and eastern Gulf of Mexico basins (James River to the Mississippi).
III. Ohio River Basin.
IV. St. Lawrence River Basin.

V. Upper Mississippi River and Hudson Bay Basins.
VI. Missouri River Basin.
VII. Lower Mississippi River Basin.
VIII. Western Gulf of Mexico Basins.
IX. Colorado River Basin.
X. Great Basin.
XI. Pacific slope basins in California.
XII. North Pacific slope basins in three parts:
A, Pacific slope basins in Washington and upper Columbia River Basin.
B, Snake River Basin.
C, Pacific slope basins in Oregon and lower Columbia River Basin.

Water-supply papers and other publications of the United States Geological Survey containing data in regard to the water resources of the United States may be obtained or consulted as indicated below:

1. Copies may be purchased at nominal cost from the Superintendent of Documents, Government Printing Office, Washington, D. C., who will, on application, furnish lists giving prices.

2. Sets of the reports may be consulted in the libraries of the principal cities in the United States.

3. Sets are available for consultation in the local offices of the water-resources branch of the Geological Survey, as follows:

Augusta, Me., Statehouse.
Boston, Mass., 2500 Customhouse.
Hartford, Conn., 64 State Capitol.
Albany, N. Y., 506 Broadway-Arcade Building.
Trenton, N. J., 423 Statehouse Annex.
Charlottesville, Va., Brooks Museum, University of Virginia.
South Charleston, W. Va., Naval Ordnance Plant.
Asheville, N. C., 608 City Hall.
Chattanooga, Tenn., 630 Power Building.
Tuscaloosa, Ala., Post Office Building.
Columbus, Ohio, Engineering Experiment Station, Ohio State University.
Chicago, Ill., 1510 Consumers Building.
Madison, Wis., 337N State Capitol.
St. Paul, Minn., 202 Old State Capitol.
Topeka, Kans., 23 Federal Building.
Rolla, Mo., Rolla Building, School of Mines and Metallurgy.
Fort Smith, Ark., Post Office Building.
Austin, Tex., State Capitol.
Tucson, Ariz., 104 Agriculture Building, University of Arizona.
Denver, Colo., 403 Post Office Building.
Salt Lake City, Utah, 313 Federal Building.
Idaho Falls, Idaho, 228 Federal Building.
Boise, Idaho, Federal Building.
Helena, Mont., 45–46 Federal Building.
Tacoma, Wash., 406 Federal Building.
Portland, Oreg., 606 Post Office Building.
San Francisco, Calif., 303 Customhouse.
Los Angeles, Calif., 751 South Figueroa Street.
Honolulu, Hawaii, Territorial Office Building.

A list of the Geological Survey's publications may be obtained by applying to the Director, United States Geological Survey, Washington, D. C.

Stream-flow records have been obtained at about 5,330 points in the United States, and the data obtained have been published in the reports tabulated below.

Stream-flow data in reports of the United States Geological Survey

[A = Annual Report; B = Bulletin; W = Water-Supply Paper]

Report	Character of data	Year
10th A, pt. 2	Descriptive information only	
11th A, pt. 2	Monthly discharge and descriptive information	1884 to Sept., 1890.
12th A, pt. 2	do	1884 to June 30, 1891.
13th A, pt. 3	Mean discharge in second-feet	1884 to Dec. 31, 1892.
14th A, pt. 2	Monthly discharge (long-time records, 1871 to 1893)	1888 to Dec. 31, 1893.
B 131	Descriptions, measurements, gage heights, and ratings	1893 and 1894.
16th A, pt. 2	Descriptive information only	
B 140	Descriptions, measurements, gage heights, ratings, and monthly discharge (also many data covering earlier years).	1895.
W 11	Gage heights (also gage heights for earlier years)	1896.
18th A, pt. 4	Descriptions, measurements, ratings, and monthly discharge (also similar data for some earlier years).	1895 and 1896.
W 15	Descriptions, measurements, and gage heights, eastern United States, eastern Mississippi River, and Missouri River above junction with Kansas.	1897.
W 16	Descriptions, measurements, and gage heights, western Mississippi River below junction of Missouri and Platte Rivers, and western United States.	1897.
19th A, pt. 4	Descriptions, measurements, ratings, and monthly discharge (also some long-time records), 1897.	1897.
W 27	Measurements, ratings, and gage heights, eastern United States, eastern Mississippi River, and Missouri River.	1898.
W 28	Measurements, ratings, and gage heights, Arkansas River and western United States.	1898.
20th A, pt. 4	Monthly discharge (also for many earlier years)	1898.
W 35 to 39	Descriptions, measurements, gage heights, and ratings	1899.
21st A, pt. 4	Monthly discharge	1899.
W 47 to 52	Descriptions, measurements, gage heights, and ratings	1900.
22d A, pt. 4	Monthly discharge	1900.
W 65, 66	Descriptions, measurements, gage heights, and ratings	1901.
W 75	Monthly discharge	1901.
W 82 to 85	Complete data	1902.
W 97 to 100	do	1903.
W 124 to 135	do	1904.
W 165 to 178	do	1905.
W 201 to 214	do	1906.
W 241 to 252	do	1907–8.
W 261 to 272	do	1909.
W 281 to 292	do	1910.
W 301 to 312	do	1911.
W 321 to 332	do	1912.
W 351 to 362	do	1913.
W 381 to 394	do	1914.
W 401 to 414	do	1915.
W 431 to 444	do	1916.
W 451 to 464	do	1917.
W 471 to 484	do	1918.
W 501 to 514	do	1919–20.
W 521 to 534	do	1921.
W 541 to 554	do	1922.
W 561 to 574	do	1923.
W 581 to 594	do	1924.
W 601 to 614	do	1925.
W 621 to 634	do	1926.
W 641 to 654	do	1927.

NOTE.—No stream-flow data are given in the Fifteenth and Seventeenth Annual Reports.

The records at most of the stations discussed in these reports extend over a series of years, and miscellaneous measurements at many points other than regular gaging stations have been made each year. An index of the reports containing records obtained prior to 1904 has been published in Water-Supply Paper 119.

Numbers of water-supply papers containing results of stream measurements, 1899-1927

(For basins included see pp. 5 and 6)

Year	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII-A	XII-B	XII-C
1899 [a]	35	[b] 35, 36	36	36	36	[c] 36, 37	37	37	[d] 37, 38	38, [e] 39	38, [f] 39	38	38	38
1900 [g]	47, [h] 48	48	48, [i] 49	49	49	49, [j] 50	50	50	50	51	51	51	51	51
1901	65, 75	65, 75	65, 75	65, 75	[k] 65. 66, 75	66, 75	[k] 65, 66, 75	66, 75	66, 75	66, 75	66, 75	66, 75	66, 75	66, 75
1902	82	[b] 82, 83	83	[l] 82, 83	[k] 83. 85	84	[k] 83, 84	84	85	85	85	85	85	85
1903	97	[b] 97, 98	98	97	[k] 98, 99, [m] 100	99	[k] 98, 99	99	100	100	100	100	100	100
1904	[n] 124, [o] 125, [p] 126	[p] 126, 127	128	129	[k] 128, 130	130, [q] 131	[k] 128, 131	132	133	133, [r] 134	134	135	135	135
1905	[n] 165, [o] 166, [p] 167	[p] 167, 168	169	170	171	172	[k]169, 173	174	175, [s] 177	176, [r] 177	177	178	178	[t] 177, 178
1906	[n] 201, [o] 202, [p] 203	[p] 203, 204	205	206	207	208	[k] 205, 209	210	211	212, [r] 213	213	214	214	214
1907-8	241	242	243	244	245	246	247	248	249	250, [r] 251	251	252	252	252
1909	261	262	263	264	265	266	267	268	269	270, [r] 271	271	272	272	272
1910	281	282	283	284	285	286	287	288	289	290	291	292	292	292
1911	301	302	303	304	305	306	307	308	309	310	311	312	312	312
1912	321	322	323	324	325	326	327	328	329	330	331	332A	332B	332C
1913	351	352	353	354	355	356	357	358	359	360	361	362A	362B	362C
1914	381	382	383	384	385	386	387	388	389	390	391	392	393	394
1915	401	402	403	404	405	406	407	408	409	410	411	412	413	414
1916	431	432	433	434	435	436	437	438	439	440	441	442	443	444
1917	451	452	453	454	455	456	457	458	459	460	461	462	463	464
1918	471	472	473	474	475	476	477	478	479	480	481	482	483	484
1919-20	501	502	503	504	505	506	507	508	509	510	511	512	513	514
1021	521	522	523	524	525	526	527	528	529	530	531	532	533	534
1922	541	542	543	544	545	546	547	548	549	550	551	552	553	554
1923	561	562	563	564	565	566	567	568	569	570	571	572	573	574
1924	581	582	583	584	585	586	587	588	589	590	591	592	593	594
1925	601	602	603	604	605	606	607	608	609	610	611	612	613	614
1926	621	622	623	624	625	626	627	628	629	630	631	632	633	634
1927	641	642	643	644	645	646	647	648	649	650	651	652	653	654

[a] Rating tables and index to Water-Supply Papers 35–39 contained in Water-Supply Paper 39. Tables of monthly discharge for 1899 in Twenty-first Annual Report, Part IV.
[b] James River only.
[c] Gallatin River.
[d] Green and Gunnison Rivers and Grand River above junction with Gunnison.
[e] Mohave River only.
[f] Kings and Kern Rivers and south Pacific slope basins.
[g] Rating tables and index to Water-Supply Papers 47–52 and data on precipitation, wells, and irrigation in California and Utah contained in Water-Supply Paper 52. Tables of monthly discharge for 1900 in Twenty-second Annual Report, Part IV.
[h] Wissahickon and Schuylkill Rivers to James River.
[i] Scioto River.
[j] Loup and Platte Rivers near Columbus, Nebr., and all tributaries below junction with Platte.
[k] Tributaries of Mississippi from east.
[l] Lake Ontario and tributaries to St. Lawrence River.
[m] Hudson Bay only.
[n] New England rivers only.
[o] Hudson River to Delaware River, inclusive.
[p] Susquehanna River to Yadkin River, inclusive.
[q] Platte and Kansas Rivers.
[r] Great Basin in California except Truckee and Carson River Basins.
[s] Below junction with Gila.
[t] Rogue, Umpqua, and Siletz Rivers only.

The preceding table gives, by years and drainage basins, the numbers of the papers on surface-water supply published from 1899 to 1927. The data for any particular station will be found in the reports covering the years during which the station was maintained. For example, data for Machias River at Whitneyville, Me., 1903 to 1921, are published in Water-Supply Papers 97, 124, 165, 201, 241, 261, 281, 301, 321, 351, 381, 401, 431, 451, 471, 501, and 521, which contain records for the New England streams from 1903 to 1921. Results of miscellaneous measurements are published by drainage basins.

COOPERATION

In Missouri the work was done in cooperation with the Missouri Bureau of Geology and Mines, through H. A. Buehler, State geologist. Financial assistance was also rendered by the Missouri Game and Fish Department, Little River Drainage District, Empire District Electric Co., Missouri Hydroelectric Power Co., Willis H. Meredith, and Springfield City Water Co.

In Arkansas the station on White River at Beaver, Ark., was maintained in cooperation with the Missouri Bureau of Geology and Mines, and the stations on Ouachita River near Hot Springs and Malvern, Ark., were maintained in cooperation with the Arkansas Light & Power Co.

In Kansas the work was done in cooperation with the Kansas Water Commission, which was succeeded on February 11, 1927, by the Division of Water Resources, State Board of Agriculture, George S. Knapp, chief engineer.

In Oklahoma the station on Neosho River near Grove was maintained in cooperation with the Public Service Co. of Oklahoma. The other stations were maintained in cooperation with the United States Weather Bureau and Oklahoma Power Co.

In Texas the work was done in cooperation with the State through the Board of Water Engineers, John A. Norris, chairman, C. S. Clark, and A. H. Dunlap. Financial assistance has also been rendered by the Chamber of Commerce, Electra, Tex.

DIVISION OF WORK

Data for stations in Missouri and Arkansas were collected and prepared for publication under the direction of H. C. Beckman, district engineer, assisted by V. L. Austin, W. A. Werner, A. L. Hill, and C. H. Jennings.

Data for stations in Colorado were collected and prepared for publication under the direction of Robert Follansbee, district engineer, assisted by P. V. Hodges and Miss Nellie L. Esterly.

Data for stations in Kansas were collected and prepared for publication under the direction of J. B. Spiegel, district engineer, assisted by V. W. Stambaugh and R. H. Husted.

Data for station on Neosho River near Grove, Okla., were collected by J. B. Spiegel, district engineer, to June 30, 1927, and after that date were collected and prepared for publication under the direction of H. C. Beckman, district engineer, assisted by V. L. Austin.

Data for stations in Texas and station on Kiamichi River near Belzoni, Okla., were collected and prepared for publication under the direction of C. E. Ellsworth, district engineer, assisted by C. E. McCashin, W. E. Armstrong, Trigg Twichell, H. C. Pritchett, S. D. Breeding, Tate Dalrymple, W. C. Dodd, A. C. Cook, N. C. Magnuson, Kate Casparis, R. G. Fisher, E. S. Altgelt, J. E. Stewart, A. B. Goodwin, C. A. Young, B. M. Pember, B. S. Odom, V. W. Rupp, D. M. Corbett, and P. H. Holland.

The manuscript was reviewed and assembled by Otto Lauterhahn.

GAGING-STATION RECORDS

MERAMEC RIVER BASIN

MERAMEC RIVER NEAR STEELVILLE, MO.

LOCATION.—In NE. ¼ sec. 21, T. 38 N., R. 4 W., at highway bridge 400 feet below St. Louis-San Francisco Railway bridge, half a mile above Whittenberg Creek, and 2½ miles north of Steelville, Crawford County.

DRAINAGE AREA.—About 830 square miles (measured on topographic and soil-survey maps).

RECORDS AVAILABLE.—December 21, 1922, to September 30, 1927. The United States Weather Bureau has obtained records of stage 1 mile upstream since October 1, 1916.

EQUIPMENT.—Chain gage on downstream side of bridge. Zero of gage is 681.86 feet above mean sea level. Discharge measurements made from highway or railroad bridge or by wading.

CHANNEL AND CONTROL.—Bed of stream composed of clean, coarse gravel. Left bank high. Right bank thinly wooded; subject to overflow at stage of 20 feet. Control is a gravel bar extending 200 feet downstream from bridge; practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 19.40 feet at 5.30 p. m. April 1 (discharge, 36,000 second-feet); minimum discharge, 172 second-feet October 28.

1923–1927: Maximum stage recorded, that of April 1, 1927; minimum discharge, 115 second-feet July 25 to August 1, 1926.

Maximum stage of 26.5 feet (determined from records of United States Weather Bureau) occurred August 20, 1915 (discharge determined from extension of rating curve, about 60,000 second-feet).

DIVERSIONS AND REGULATION.—No diversions. Natural regulation by large springs.

ACCURACY.—Stage-discharge relation changed slightly during year; not affected by ice. Rating curve well defined by 10 discharge measurements, 5 of which, covering a range from 220 to 30,000 second-feet, were made during year. Gage read to hundredths once daily at low stages and twice daily at high stages. Daily discharge ascertained by shifting-control method until March 31 and by applying mean daily gage height to rating table after that date. Records good.

Daily discharge, in second-feet, of Meramec River near Steelville, Mo., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	945	908	620	230	1,260	282	27,800	620	16,200	416	282	213
2	945	620	556	213	1,100	264	11,700	587	26,400	416	282	207
3	498	498	442	213	945	264	2,700	556	6,620	368	282	201
4	469	392	392	[b]213	870	264	1,940	526	10,100	345	282	[b]210
5	526	345	368	213	870	282	1,600	526	2,790	345	282	[b]220
6	653	302	345	213	758	264	1,340	620	2,020	322	282	230
7	556	302	345	207	722	368	1,520	1,940	1,770	322	282	213
8	368	302	392	201	556	620	8,720	2,450	1,430	322	302	213
9	368	392	322	198	469	870	4,300	[b]3,680	1,340	322	322	213
10	2,620	392	368	186	442	[b]698	3,500	4,900	1,180	322	322	213
11	1,020	345	345	175	416	526	4,400	2,200	1,020	322	302	213
12	722	322	322	189	[b]429	653	3,320	[b]1,610	908	322	282	213
13	498	264	302	2,700	442	832	3,140	1,020	1,100	322	302	207
14	416	[a]1,000	302	2,960	870	795	6,840	908	1,770	322	442	204
15	345	2,450	246	1,600	758	653	12,600	722	795	322	653	201
16	302	2,110	230	945	688	498	7,720	620	795	322	526	198
17	264	1,340	230	832	620	498	2,790	620	795	322	[b]447	195
18	230	1,260	210	1,260	556	587	2,280	556	795	322	368	192
19	230	1,180	192	2,620	498	4,700	3,700	2,620	688	302	368	183
20	213	1,020	230	1,430	442	4,700	4,900	1,600	688	302	345	183
21	204	908	246	[b]1,240	416	5,100	2,450	1,100	1,520	282	322	183
22	195	870	282	[b]1,040	392	2,200	1,860	870	1,260	282	302	183
23	189	908	345	[b]846	392	1,430	1,520	832	832	282	282	183
24	183	908	345	653	[a]368	1,020	1,260	4,300	688	282	264	183
25	183	908	345	722	[a]346	908	1,100	25,000	653	282	264	183
26	183	1,680	322	1,100	322	758	1,020	8,270	526	282	246	183
27	178	1,260	282	945	302	653	870	2,360	469	282	246	213
28	172	[b]1,010	264	870	282	526	795	[b]2,020	442	282	246	246
29	368	758	264	1,180	-------	498	758	[b]1,680	416	282	230	302
30	442	722	246	1,860	-------	1,020	722	1,340	416	282	230	322
31	1,260	-------	246	1,600	-------	4,100	-------	4,700	-------	282	213	-------

[a] Discharge estimated; gage not read. [b] Interpolated; gage not read.

Monthly discharge of Meramec River near Steelville, Mo., for the year ending September 30, 1927

[Drainage area, 830 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	2,620	172	508	0.612	0.71
November	2,450	264	856	1.03	1.15
December	620	192	321	.387	.45
January	2,960	175	931	1.12	1.29
February	1,260	282	590	.711	.74
March	5,100	264	1,190	1.43	1.65
April	27,800	722	4,310	5.19	5.79
May	25,000	526	2,620	3.16	3.64
June	26,400	416	2,880	3.47	3.87
July	416	282	316	.381	.44
August	653	213	316	.381	.44
September	322	183	210	.253	.28
The year	27,800	172	1,250	1.51	20.45

MERAMEC RIVER NEAR SULLIVAN, MO.

LOCATION.—In N. ½ SW. ¼ sec. 35, T. 40 N., R. 2 W., at Sappington highway bridge, 3½ miles below Brazil Creek and 6 miles southeast of Sullivan, Franklin County.

DRAINAGE AREA.—1,550 square miles (measured on topographic and soil-survey maps).

RECORDS AVAILABLE.—September 9, 1921, to September 30, 1927.

EQUIPMENT.—Chain gage on upstream side of bridge. Zero of gage is 582.64 feet above mean sea level. Discharge measurements made from bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of silt, gravel, and rock; clean and fairly permanent. Right bank high. Left bank wooded and is overflowed at stage of 20 feet. Control is bar of gravel and boulders with brush on high part 400 feet below gage; fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 22.89 feet at 4.45 p. m. June 2 (discharge, 28,300 second-feet); minimum discharge, 350 second-feet September 20–23.

1921–1927: Maximum stage recorded, that of June 2, 1927; minimum discharge, 200 second-feet August 31 and September 8 and 9, 1925.

The flood of August, 1915, reached a stage of about 30.7 feet, determined by levels to somewhat indefinite floodmarks (discharge determined by extending rating curve for main channel and computing overflow by Kutter's formula, about 90,000 second-feet).

DIVERSIONS AND REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent during year; not affected by ice. Rating curve well defined by 14 discharge measurements; checked by 6 measurements during year. Gage read to hundredths once daily during low stages and twice daily during high stages. Daily discharge ascertained by applying mean daily gage height to rating table until August 6 and by shifting-control method after that date. Records good.

Daily discharge, in second-feet, of Meramec River near Sullivan, Mo., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,120	2,240	1,650	655	2,740	755	24,500	1,880	15,300	905	755	475
2	4,150	1,540	1,430	655	2,420	755	26,300	1,760	27,500	855	755	475
3	2,000	1,380	1,320	655	1,650	705	9,510	1,650	18,200	855	755	475
4	1,880	1,210	1,210	655	2,180	705	4,450	1,540	9,650	805	755	452
5	1,940	1,000	1,100	610	2,060	705	3,880	1,430	8,550	805	755	410
6	1,880	855	1,000	610	1,940	655	3,230	2,600	4,550	805	755	452
7	1,430	805	955	610	1,650	805	3,300	3,160	3,460	805	705	475
8	1,210	755	905	565	1,540	1,160	10,600	2,600	2,880	805	705	475
9	955	805	905	565	1,430	1,700	11,200	2,240	2,600	955	755	475
10	1,100	805	905	520	1,260	1,430	6,530	5,870	2,300	905	805	452
11	2,360	755	905	498	1,210	1,320	7,830	6,530	2,120	855	755	430
12	1,430	655	855	498	1,100	1,540	7,230	3,620	2,000	805	705	430
13	1,210	610	805	4,950	1,210	2,480	7,590	2,360	1,880	805	755	410
14	955	655	755	6,200	1,540	2,120	12,800	2,000	2,000	805	1,100	390
15	905	3,300	705	3,700	1,880	1,940	18,000	1,650	1,940	855	1,100	390
16	805	4,550	655	2,600	1,760	1,540	15,300	1,600	1,820	855	1,160	390
17	705	3,300	610	1,880	1,650	1,430	10,200	1,540	1,700	805	955	390
18	610	2,420	565	2,600	1,480	1,480	5,150	1,480	1,650	755	855	370
19	565	2,600	565	4,550	1,380	8,070	5,650	1,650	1,540	755	805	370
20	565	2,300	565	4,950	1,260	9,950	8,430	3,620	1,540	755	755	350
21	520	2,600	610	2,540	1,100	9,090	5,980	2,360	1,760	705	755	350
22	520	2,360	705	2,120	1,100	5,870	4,850	1,820	2,420	705	705	350
23	498	1,760	755	1,880	1,000	3,460	3,230	1,760	2,000	755	655	350
24	475	2,000	855	1,650	955	2,670	2,810	3,460	1,600	805	655	370
25	452	2,060	905	2,000	905	2,240	2,540	22,900	1,480	755	610	370
26	430	2,600	905	1,820	855	1,940	2,420	22,500	1,380	755	610	350
27	430	2,480	855	2,120	855	1,700	2,240	7,590	1,260	705	520	370
28	430	2,120	755	2,240	805	1,540	2,060	6,990	1,210	705	520	565
29	755	1,820	755	2,060	-------	1,430	2,000	4,250	1,160	705	520	755
30	2,000	1,700	705	3,300	-------	1,320	2,000	3,160	1,100	755	498	755
31	2,950	-------	705	3,880	-------	6,310	-------	4,060	-------	805	498	------

Monthly discharge of Meramec River near Sullivan, Mo., for the year ending September 30, 1927

[Drainage area, 1,550 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	4,150	430	1,230	0.794	0.92
November	4,550	610	1,800	1.16	1.29
December	1,650	565	867	.559	.64
January	6,200	498	2,070	1.34	1.54
February	2,740	805	1,460	.942	.98
March	9,950	655	2,540	1.64	1.89
April	26,300	2,000	7,730	4.99	5.57
May	22,900	1,430	4,250	2.74	3.16
June	27,500	1,100	4,280	2.76	3.08
July	955	705	797	.514	.59
August	1,160	498	742	.479	.55
September	755	350	437	.282	.31
The year	27,500	350	2,340	1.51	20.52

MERAMEC RIVER NEAR EUREKA, MO.

LOCATION.—In SE. ¼ sec. 32, T. 44 N., R. 4 E., at Votaw Ford highway bridge on Eureka-Valley Park Road, 2 miles east of Eureka, St. Louis County, and 3 miles below Big River.

DRAINAGE AREA.—3,800 square miles (measured on topographic and soil-survey maps).

RECORDS AVAILABLE.—August 26, 1903, to July 21, 1906, and October 6, 1921, to September 30, 1927.

EQUIPMENT.—Chain gage bolted to handrail on downstream side of bridge. Zero of gage is 407.40 feet above mean sea level; not at same datum as gage used 1903–1906. Discharge measurements made from bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of coarse gravel and boulders. Right bank high. Left bank wooded at edge and cultivated beyond; is overflowed at stage of 25 feet. Low-water control is gravel bar just below gage; practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 29.47 feet at 5.20 p. m. April 3 (discharge, 64,000 second-feet); minimum stage, 0.92 foot September 24 and 25 (discharge, 550 second-feet).

1922–1927: Maximum stage recorded, that of April 3, 1927; minimum discharge, 320 second-feet September 28, 1922.

The flood of August 22, 1915, reached a stage of 39.2 feet (revised), as determined from levels to high-water marks (discharge determined by extending rating curve for main channel and computing overflow by Kutter's formula, about 175,000 second-feet).

DIVERSIONS AND REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent during year; not affected by ice. Rating curve fairly well defined by 15 discharge measurements; 5 of these, covering a range of 858 to 29,400 second-feet, were made during year. Gage read to hundredths once daily during low stages and twice daily during high stages. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

Daily discharge, in second-feet, of Meramec River near Eureka, Mo., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7,800	7,100	4,480	a1,690	8,780	1,590	31,600	5,890	18,800	1,690	1,080	775
2	10,200	5,500	3,860	1,690	7,240	1,490	51,000	4,220	23,600	1,590	1,040	740
3	11,100	4,100	3,500	1,690	6,420	1,490	63,400	3,740	32,000	1,590	1,040	740
4	9,230	3,260	2,780	1,790	6,280	1,390	54,200	3,500	37,400	1,490	1,040	705
5	7,240	2,560	2,780	1,790	6,150	1,390	23,600	3,140	30,700	1,390	1,000	810
6	5,890	2,230	2,450	1,690	a5,440	1,390	9,860	3,020	15,200	1,390	1,000	845
7	4,480	2,010	2,230	1,590	4,720	a1,810	b9,000	3,020	8,930	1,590	1,000	845
8	3,860	1,690	2,230	1,490	4,350	2,230	14,000	18,100	6,420	a1,440	1,590	845
9	3,380	1,690	2,340	1,390	4,720	2,340	21,700	18,700	5,110	1,300	1,210	810
10	2,450	1,590	2,900	1,300	3,140	2,670	26,800	18,700	4,350	1,300	1,120	775
11	1,900	1,490	2,900	1,210	2,900	2,780	34,400	15,600	3,860	1,120	1,120	740
12	4,720	1,490	a2,680	b1,150	2,780	3,860	30,700	11,800	3,140	1,120	1,040	740
13	3,620	1,490	2,450	12,600	2,780	4,100	28,000	8,080	4,350	a1,120	1,080	705
14	a2,820	2,230	2,010	14,300	a3,500	5,370	31,100	5,110	4,850	1,120	1,390	670
15	2,010	4,350	1,790	14,500	4,220	4,600	32,700	4,220	4,600	1,210	2,450	670
16	1,690	7,380	1,590	13,000	4,220	3,860	38,600	3,860	4,100	1,300	2,560	670
17	1,490	a7,310	1,490	5,890	3,860	3,140	44,200	3,500	3,140	1,390	2,010	640
18	b1,300	7,240	1,390	7,380	3,380	3,140	31,100	3,140	2,900	1,300	a1,700	640
19	b1,200	6,420	1,210	10,000	a3,140	11,000	12,400	3,380	2,900	1,210	1,390	a630
20	3,620	6,280	a1,260	9,380	2,780	20,300	14,000	3,620	2,670	1,120	1,120	a620
21	2,900	6,150	1,300	8,220	2,560	23,000	16,900	4,720	6,420	1,120	1,120	610
22	2,230	a5,500	1,390	5,890	2,340	24,100	13,800	3,980	4,220	a1,160	1,080	580
23	1,690	4,850	1,390	4,720	2,230	22,000	8,500	3,380	3,980	1,210	1,040	580
24	1,590	5,630	1,900	4,100	2,340	7,520	6,560	10,000	3,860	1,120	960	550
25	1,490	5,890	2,120	4,100	2,120	6,150	a5,840	16,700	2,670	1,210	920	550
26	1,300	7,800	2,450	4,350	1,790	4,720	5,110	25,700	2,450	1,120	920	580
27	1,300	7,520	2,780	4,350	1,690	4,220	4,720	33,400	2,230	1,080	880	a642
28	1,210	a6,900	2,340	5,630	1,690	3,620	4,220	33,200	2,010	1,040	880	705
29	b2,500	6,280	2,010	6,150	-------	3,380	4,100	28,800	1,900	1,080	845	1,210
30	4,720	6,020	1,790	8,080	-------	3,020	5,240	27,600	1,790	1,040	810	2,560
31	5,630	-------	1,690	10,700	-------	12,100	-------	22,400	-------	1,120	810	------

a Interpolated. b Estimated.

Monthly discharge of Meramec River near Eureka, Mo., for the year ending September 30, 1927

[Drainage area, 3,800 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	11,100	1,200	3,760	0.989	1.14
November	7,800	1,490	4,660	1.23	1.37
December	4,480	1,210	2,240	.589	.68
January	14,500	1,150	5,540	1.46	1.68
February	8,780	1,690	3,840	1.01	1.05
March	24,100	1,390	6,250	1.64	1.89
April	63,400	4,100	22,600	5.95	6.64
May	33,400	3,020	11,400	3.00	3.46
June	37,400	1,790	8,350	2.20	2.46
July	1,690	1,040	1,260	.332	.38
August	2,560	810	1,200	.316	.36
September	2,560	550	773	.203	.23
The year	63,400	550	5,970	1.57	21.34

MERAMEC SPRING NEAR ST. JAMES, MO.

LOCATION.—In SE. ¼ sec. 1, T. 37 N., R. 6 W., 600 feet below outlet of spring, 1 mile above mouth of Spring Branch, and 6 miles southeast of St. James, Phelps County.

RECORDS AVAILABLE.—March 1, 1903, to July 21, 1906, and November 11, 1921, to September 30, 1927.

EQUIPMENT.—Staff gage fastened to tree on right bank. Zero of gage is 774.80 feet above mean sea level. Discharge measurements made by wading.

CHANNEL AND CONTROL.—Bed composed of coarse gravel; small growth of aquatic plants in channel. Control is a coarse gravel bar 200 feet below gage; clean and practically permanent.

EXTREMES OF DISCHARGE.—Maximum discharge during year, estimated (owing to backwater effect from Meramec River) at 650 second-feet on April 1; minimum stage recorded, 0.91 foot October 26–28 (discharge, 76 second-feet).

1922–1927: Maximum discharge, that of April 1, 1927; minimum discharge, 69 second-feet September 25–27, 1926.

DIVERSIONS AND REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent; not affected by ice but affected by backwater from Meramec River whenever river is more than about 6 feet above low-water stage. Rating curve fairly well defined. Gage read to hundredths once daily except Sundays and holidays. Daily discharge ascertained by shifting-control method upon basis of three discharge measurements. Records good except for periods of backwater.

Daily discharge, in second-feet, of Meramec Spring near St. James, Mo., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	212	159	176	a 110	229	124	b 650	a 212	b 500	181	145	129
2	222	132	164	a 109	237	124	b 600	206	b 600	178	145	129
3	a 181	121	161	108	229	a 124	a 550	203	b 580	a 176	142	129
4	140	108	150	106	219	124	474	196	b 560	a 175	142	a 129
5	170	104	a 142	104	212	124	424	322	a 540	173	142	a 129
6	142	101	134	101	a 200	a 132	360	193	520	170	142	129
7	129	a 98	137	98	187	140	311	297	461	167	a 144	129
8	114	96	153	98	173	256	b 600	a 272	407	164	145	129
9	104	111	150	a 96	167	229	566	248	360	161	142	129
10	a 188	108	150	94	161	196	a 560	322	333	a 160	140	129
11	273	101	150	91	161	178	553	292	302	159	a 140	a 129
12	a 220	96	a 146	94	159	215	540	252	a 266	156	140	129
13	167	94	142	269	a 187	a 212	527	229	229	156	145	127
14	142	a 222	129	412	215	209	b 550	215	278	156	a 156	127
15	127	350	121	306	229	190	b 600	a 207	252	153	167	124
16	116	288	116	a 259	219	181	b 550	199	241	153	156	a 124
17	a 108	237	114	212	199	173	a 500	193	233	a 152	a 154	a 124
18	101	241	108	203	184	203	467	196	225	150	a 151	a 124
19	101	237	a 111	302	173	311	442	278	a 220	150	a 148	124
20	91	222	114	269	a 167	a 374	480	297	215	150	a 145	121
21	88	a 210	119	237	161	436	430	256	244	145	a 142	119
22	86	199	132	215	a 154	372	430	a 236	248	148	140	a 119
23	84	190	137	a 203	148	311	338	215	225	150	140	119
24	a 82	199	140	a 190	145	269	a 283	418	219	a 152	137	119
25	81	a 206	a 133	178	140	237	228	b 600	206	153	134	a 119
26	76	212	a 126	244	137	222	269	b 580	a 200	150	134	119
27	76	203	119	233	a 133	a 206	252	546	193	150	134	119
28	76	a 194	114	222	129	190	237	442	193	150	a 134	124
29	81	184	114	252	-------	184	229	a 397	190	a 149	134	127
30	a 100	184	111	a 248	-------	184	219	a 352	187	a 147	132	129
31	a 200	-------	111	244	-------	233	-------	306	-------	a 146	132	------

a Gage not read; discharge estimated.
b Backwater effect from Meramec River; discharge estimated.

Monthly discharge of Meramec Spring near St. James, Mo., for the year ending September 30, 1927

Month	Discharge in second-feet			Month	Discharge in second-feet		
	Maximum	Minimum	Mean		Maximum	Minimum	Mean
October	273	76	132	May	600	193	296
November	350	94	174	June	600	187	314
December	176	108	133	July	181	145	157
January	412	91	191	August	167	132	143
February	237	129	180	September	129	119	125
March	436	124	215				
April	650	219	441	The year	650	76	208

BOURBEUSE RIVER AT UNION, MO.

LOCATION.—In SW. ¼ sec. 26, T. 43 N., R. 1 W., at highway bridge on St. Clair-Union Road, 800 feet above Flat Creek and 1 mile east of Union, Franklin County.

DRAINAGE AREA.—767 square miles (measured on topographic maps and base map of Missouri).

RECORDS AVAILABLE.—June 7, 1921, to September 30, 1927. United States Weather Bureau has records of stage since October 19, 1916.

EQUIPMENT.—Chain gage on downstream side of bridge. Zero of gage is 491.93 feet above mean sea level. Discharge measurements made from bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of clay and coarse gravel. Banks are overflowed at stage of 12 feet. Control is coarse gravel bar 800 feet below gage; fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 19.10 feet, crest of flood, at 1 a. m. April 3 (discharge, 22,500 second-feet); minimum stage, 1.62 feet September 21, 22, and 24 (discharge, 55 second-feet).

1921–1927: Maximum stage recorded, that of April 3, 1927; minimum discharge, 27 second-feet September 20, 1925.

On August 22, 1915, the river reached a stage of 25.5 feet, determined by United States Weather Bureau from levels to high-water marks (discharge determined by extending rating curve for main channel and computing overflow by Kutter's formula, about 50,000 second-feet).

DIVERSIONS AND REGULATION.—None.

ACCURACY.—Stage-discharge relation changed during high water April 3; not affected by ice. Rating curve fairly well defined and checked by discharge measurements on January 4 and April 3. Gage read to hundredths twice daily. Daily discharge October 1 to April 3 ascertained by applying mean daily gage height to rating table; shifting-control method used April 4 to September 30 upon basis of three discharge measurements made August 1 and September 8. Records good.

Daily discharge, in second-feet, of Bourbeuse River at Union, Mo., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	745	2,950	1,360	280	1,610	214	11,200	890	3,740	140	98	71
2	2,500	1,780	965	262	1,280	187	17,700	455	5,080	130	100	71
3	4,440	815	745	262	1,280	187	16,600	320	5,630	121	116	68
4	5,190	560	620	230	1,360	174	1,700	245	2,680	106	112	66
5	2,320	455	532	230	1,360	174	1,200	214	2,320	114	98	77
6	2,050	382	455	214	1,200	187	890	1,120	1,120	109	90	79
7	965	340	480	214	965	187	680	4,440	680	245	100	71
8	620	300	480	214	712	187	1,870	8,180	505	109	140	76
9	455	320	965	214	590	200	5,850	3,840	405	102	130	71
10	382	300	1,200	200	480	532	8,780	5,630	360	98	111	69
11	2,410	340	1,120	187	430	455	8,060	6,310	300	94	92	77
12	3,040	405	965	174	405	505	8,060	1,280	340	94	98	68
13	1,040	455	745	2,950	405	852	5,740	680	712	92	140	63
14	680	430	590	6,310	430	1,280	6,310	480	1,780	96	187	64
15	480	1,120	480	8,800	532	780	8,060	320	815	98	340	60
16	382	5,080	360	6,080	650	560	9,620	300	430	121	262	62
17	320	3,340	320	1,520	620	430	4,970	245	300	119	174	61
18	280	1,780	280	1,200	505	360	1,360	230	262	104	140	60
19	280	1,960	262	1,200	430	3,040	1,440	455	262	101	118	61
20	780	2,140	245	1,700	360	7,340	3,440	532	230	95	106	58

Daily discharge, in second-feet, of Bourbeuse River at Union, Mo., for the year ending September 30, 1927—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
21	1,780	1,780	230	1,200	320	12,300	3,740	532	340	94	98	55
22	890	1,440	262	815	300	8,800	1,200	382	405	130	89	55
23	430	1,440	280	680	280	1,780	745	280	650	101	89	57
24	382	1,440	405	620	262	1,200	532	2,140	382	130	84	55
25	340	2,050	1,200	650	245	928	430	4,340	262	151	81	56
26	340	3,740	1,200	928	230	712	360	6,880	230	151	80	58
27	300	4,540	712	1,440	214	590	300	3,840	200	121	76	66
28	280	4,140	505	1,610	214	505	262	4,540	174	121	76	121
29	280	1,520	405	1,440	-------	455	280	3,240	151	111	74	320
30	650	1,440	340	2,140	-------	405	1,360	1,700	151	106	74	560
31	2,140	-------	300	2,140	-------	2,410	-------	5,850	-------	96	71	------

Monthly discharge of Bourbeuse River at Union, Mo., for the year ending September 30, 1927

[Drainage area, 767 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	5,190	280	1,200	1.56	1.80
November	5,080	300	1,630	2.13	2.38
December	1,360	230	613	.799	.92
January	8,800	174	1,490	1.94	2.24
February	1,610	214	631	.823	.86
March	12,300	174	1,550	2.02	2.33
April	17,700	262	4,420	5.76	6.43
May	8,180	214	2,250	2.93	3.38
June	5,630	151	1,030	1.34	1.50
July	245	92	116	.151	.17
August	340	71	118	.154	.18
September	560	55	91.9	.120	.13
The year	17,700	55	1,260	1.64	22.32

BIG RIVER AT BYRNESVILLE, MO.

LOCATION.—In SE. ¼ sec. 12, T. 42 N., R. 3 E., at highway bridge in Byrnesville, Jefferson County, 200 feet below dam and mill and 4 miles above Heads Creek.

DRAINAGE AREA.—892 square miles (measured on topographic and soil-survey maps).

RECORDS AVAILABLE.—May 10, 1922, to September 30, 1927.

EQUIPMENT.—Chain gage on downstream side of bridge. Zero of gage is 432.58 feet above mean sea level. Discharge measurements made from bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of silt, gravel, and rock. Right bank is overflowed at stage of 18 feet. Control is gravel bar with brush on high part 500 feet below gage; practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 22.63 feet at 6 a. m. April 2 (discharge, 18,400 second-feet); minimum discharge, 114 second-feet September 25 and 27.

1922–1927: Maximum stage recorded, that of April 2, 1927; minimum discharge, 64 second-feet October 1, 1922, and August 12, 1926.

Flood of August, 1915, reached a stage of 30.2 feet, determined from levels to high-water marks (discharge determined by extending rating curve for main channel and computing overflow by Kutter's formula, about 80,000 second-feet).

DIVERSIONS AND REGULATION.—No diversions. Slight diurnal fluctuation at low stages is caused by gristmills above.

ACCURACY.—Stage-discharge relation permanent during year; not affected by ice. Rating curve well defined below 12,000 second-feet by 23 discharge measurements, 3 of which were made during current year. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good for discharge above 200 second-feet and fair for lower discharge.

Daily discharge, in second-feet, of Big River at Byrnesville, Mo., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4,020	1,640	1,020	596	2,580	454	15,200	1,640	7,200	348	257	150
2	4,720	1,120	892	596	2,220	454	17,400	1,160	10,900	333	246	143
3	2,520	892	762	596	2,220	454	8,200	1,020	8,900	320	213	143
4	1,310	720	720	720	2,040	423	3,400	892	3,620	294	203	143
5	1,310	596	596	936	1,860	423	2,520	805	2,700	269	234	136
6	1,160	520	557	805	1,530	423	2,580	3,260	1,800	269	224	143
7	848	520	557	678	1,260	596	1,860	3,620	1,480	306	234	203
8	637	454	520	596	1,070	980	7,200	4,180	1,260	348	306	203
9	520	454	486	520	936	720	10,300	3,780	1,120	281	224	175
10	454	393	486	486	892	678	8,600	3,120	980	257	213	158
11	423	363	454	423	805	678	9,400	2,910	936	246	203	150
12	393	333	454	363	805	1,360	8,800	1,700	848	234	193	143
13	378	320	423	4,630	1,020	1,640	8,200	1,310	1,120	224	213	136
14	333	678	393	3,860	1,750	1,480	11,000	1,120	1,160	234	320	136
15	306	2,100	363	2,640	1,750	1,120	12,100	980	892	269	1,020	136
16	281	1,640	306	2,460	1,310	936	13,700	936	762	333	637	128
17	257	1,420	281	1,980	1,070	805	10,700	848	678	393	393	121
18	246	1,420	294	3,860	936	2,040	3,620	805	678	281	306	121
19	257	1,640	306	5,440	848	7,800	3,260	805	848	257	269	121
20	1,210	1,420	320	2,980	762	7,100	5,710	848	678	234	246	121
21	520	1,260	348	1,920	720	7,300	3,470	805	3,120	224	213	121
22	348	1,160	393	1,480	678	3,540	2,340	762	1,360	246	203	121
23	281	1,120	423	1,310	637	2,100	1,860	720	848	257	193	121
24	269	1,480	596	1,160	596	1,580	1,530	2,220	678	224	184	121
25	281	1,700	848	1,160	557	1,310	1,360	8,400	596	213	175	114
26	269	1,580	762	1,310	520	1,160	1,260	11,800	520	203	166	121
27	257	1,420	520	1,160	486	1,020	1,120	4,540	454	193	166	114
28	246	1,210	520	1,310	454	892	1,070	3,860	423	193	158	158
29	1,420	1,070	596	2,580	-------	805	1,530	5,800	393	234	150	281
30	3,260	1,070	520	4,720	-------	762	2,400	1,920	348	224	150	257
31	2,910	-------	520	4,990	-------	4,720	-------	4,720	-------	294	150	-------

Monthly discharge of Big River at Byrnesville, Mo., for the year ending September 30, 1927

[Drainage area, 892 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	4,720	246	1,020	1.14	1.31
November	2,100	320	1,060	1.19	1.33
December	1,020	281	524	.587	.68
January	5,440	363	1,880	2.11	2.43
February	2,580	454	1,150	1.29	1.34
March	7,800	423	1,800	2.02	2.33
April	17,400	1,070	6,060	6.79	7.58
May	11,800	720	2,620	2.94	3.39
June	10,900	348	1,910	2.14	2.39
July	393	193	266	.298	.34
August	1,020	150	260	.291	.34
September	281	114	148	.166	.19
The year	17,400	114	1,550	1.74	23.65

HEADWATER DIVERSION CHANNEL BASIN

CASTOR RIVER AT ZALMA, MO.

LOCATION.—In S. ½ sec. 29, T. 29 N., R. 9 E., at highway bridge in Zalma, Bollinger County, and 2 miles below Perkins Creek.

DRAINAGE AREA.—395 square miles (measured on topographic maps, soil-survey maps, and base map of Missouri).

RECORDS AVAILABLE.—September 12, 1921, to September 30, 1927. The Little River Drainage District, Cape Girardeau, has records of stage from July 1, 1919, to September 11, 1921.

EQUIPMENT.—Chain gage on downstream side of bridge. Zero of gage is 350 feet above mean sea level. Discharge measurements made from bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of silt, sand, and gravel; fairly permanent. No well-defined control. Banks are overflowed at stage of 24 feet.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 24.64 feet at 1 a. m. April 16 (discharge, 12,100 second-feet); minimum stage, 1.60 feet September 19, 21–23, 26, and 27 (discharge, 47 second-feet).

1921–1927: Maximum stage recorded, that of April 16, 1927; minimum stage, 1.10 feet August 31, 1924 (discharge, 30 second-feet).

Flood of August, 1915, reached stage of 28.0 feet, determined by levels to high-water marks (discharge determined by extending rating curve for main channel and computing overflow by Kutter's formula, 30,000 second-feet).

DIVERSIONS AND REGULATION.—None.

ACCURACY.—Stage-discharge relation changed during high water April 15; not affected by ice. Both rating curves well defined between 600 and 16,000 second-feet and fairly well defined beyond these limits; checked during year by three discharge measurements ranging from 90 to 2,400 second-feet. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good for discharge between 600 and 16,000 second-feet; others fair.

Daily discharge, in second-feet, of Castor River at Zalma, Mo., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	105	554	898	828	1,160	365	9,720	614	6,980	112	124	69
2	100	397	480	740	1,140	365	9,720	614	9,720	79	142	64
3	87	255	365	740	1,140	349	5,150	594	7,160	75	130	60
4	68	255	333	740	740	365	3,270	2,860	7,440	71	130	64
5	153	255	317	718	654	365	1,110	2,830	5,000	67	130	64
6	159	197	301	516	654	381	1,830	3,080	4,200	64	112	59
7	159	197	210	516	516	381	1,830	5,320	1,670	60	106	95
8	115	210	270	429	516	381	2,830	3,270	850	112	100	84
9	91	270	285	429	516	365	2,620	1,590	124	112	136	74
10	91	381	285	429	429	317	2,300	3,630	124	100	112	84
11	100	255	270	429	446	285	2,760	3,310	118	100	100	84
12	120	225	210	413	429	3,890	2,760	2,300	124	100	95	79
13	120	210	210	413	413	4,700	3,350	994	806	162	90	69
14	120	197	210	413	429	4,420	9,100	3,270	446	162	397	59
15	120	2,090	210	413	429	2,970	11,800	2,090	270	168	381	60
16	87	2,560	210	397	381	1,720	10,800	1,090	210	155	225	57
17	83	1,380	210	365	381	740	7,070	762	349	182	182	57
18	72	2,180	184	413	381	4,700	3,760	740	301	130	136	55
19	83	1,670	184	1,800	365	6,800	3,510	898	381	124	142	47
20	79	970	210	3,890	365	3,800	2,790	762	349	112	136	53

Daily discharge, in second-feet, of Castor River at Zalma, Mo., for the year ending September 30, 1927—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
21	75	1,430	397	2,330	365	5,320	2,790	762	429	100	124	47
22	70	634	2,000	5,150	365	4,200	1,330	534	516	95	118	47
23	65	534	1,970	6,800	349	2,000	1,330	762	365	95	106	47
24	100	480	1,720	5,420	365	1,560	1,310	1,280	285	90	106	50
25	142	365	534	3,760	317	1,210	1,280	4,650	270	90	95	50
26	110	674	534	1,720	301	1,190	740	5,720	225	84	84	47
27	110	534	922	1,720	285	718	634	2,300	210	84	84	47
28	100	1,460	922	1,720	270	696	634	1,670	210	84	84	84
29	115	1,260	922	970	-------	654	614	1,110	182	84	84	95
30	159	970	828	1,720	-------	874	614	970	162	84	79	142
31	740	-------	828	1,670	-------	696	-------	946	-------	182	74	------

NOTE.—Gage not read Oct. 21–24 and July 3–7; discharge estimated from rainfall records and records of flow of near-by streams.

Monthly discharge of Castor River at Zalma, Mo., for the year ending September 30, 1927

[Drainage area, 395 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	740	65	126	0.319	0.37
November	2,560	197	768	1.94	2.16
December	2,000	184	562	1.42	1.64
January	6,800	365	1,550	3.92	4.52
February	1,160	270	504	1.28	1.33
March	6,800	285	1,830	4.63	5.34
April	11,800	614	3,650	9.24	10.31
May	5,720	534	1,980	5.01	5.78
June	9,720	118	1,650	4.18	4.66
July	182	60	107	.271	.31
August	397	74	134	.339	.39
September	142	47	66.4	.168	.19
The year	11,800	47	1,080	2.73	37.00

ST. FRANCIS RIVER BASIN

LITTLE RIVER DITCH NO. 81 NEAR KENNETT,[1] MO.

LOCATION.—In NE. ¼ sec. 4, T. 18 N., R. 10 E., at bridge on State highway No. 84, 4 miles east of Kennett, Dunklin County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—October 1, 1926, to September 30,1927, at present site; September 13, 1921, to September 30, 1926, at Kirk, 1¼ miles upstream. Records prior to October, 1926, not comparable with later records because of interchange of water between ditches Nos. 1, 66, and 81 and the diversions from these ditches into two main ditches, Nos. 251 and 259, which were constructed during summer of 1926.

EQUIPMENT.—Chain gage on upstream side of bridge. Zero of gage is 240 feet above mean sea level. Discharge measurements made from bridge or by wading.

[1] Previously published as "at Kirk."

CHANNEL AND CONTROL.—Bed composed of sand and gravel; fairly permanent. No well-defined control.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 15.11 feet at 7 a. m. April 21 (discharge, 2,760 second-feet); minimum discharge, 73 second-feet September 17 and 18.

ACCURACY.—Stage-discharge relation not permanent during year; not affected by ice. Two rating curves used well defined above and fairly well defined below 180 second-feet by 12 discharge measurements. Gage read to hundredths once daily during low stages and twice daily during high stages. Daily discharge ascertained by applying mean daily gage height to rating table; shifting-control method used January 26 to February 6. Records good.

Daily discharge, in second-feet, of Little River ditch No. 81 near Kennett, Mo., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	124	112	264	574	2,270	216	960	1,620	800	228	202	87
2	102	264	246	494	2,140	232	960	1,470	1,070	228	202	82
3	97	246	228	434	1,980	218	800	1,320	1,230	210	178	82
4	92	102	202	394	1,770	218	682	1,200	1,470	210	186	87
5	102	97	186	354	1,590	218	646	1,280	1,470	202	178	92
6	107	92	178	336	1,420	218	610	1,160	1,420	178	157	82
7	102	92	164	300	1,440	218	610	1,200	1,520	150	228	82
8	92	92	157	300	1,050	218	920	1,180	1,640	143	210	92
9	92	97	164	264	860	218	1,470	1,110	1,900	143	194	87
10	92	97	246	264	760	218	1,850	1,250	1,980	136	124	87
11	97	102	282	246	682	204	1,980	1,230	1,960	136	124	92
12	92	102	246	228	628	216	1,980	1,280	1,800	136	118	82
13	97	97	228	228	574	520	1,980	1,230	1,980	130	112	78
14	92	97	202	228	538	610	2,030	1,350	1,850	124	136	78
15	92	130	194	246	466	520	2,060	1,300	1,360	118	336	78
16	92	210	178	228	418	418	2,140	1,250	888	171	336	78
17	87	228	171	210	370	354	2,190	1,200	594	178	318	73
18	82	210	164	210	386	628	2,290	900	792	150	318	73
19	82	194	157	434	434	1,000	2,480	960	574	150	300	82
20	82	171	157	1,090	402	1,030	2,730	860	514	157	264	78
21	82	157	414	1,250	370	1,090	2,760	820	936	194	178	78
22	102	150	724	1,280	338	1,030	2,650	646	1,280	228	171	78
23	97	143	724	1,570	306	920	2,530	1,050	1,140	228	164	78
24	92	130	636	1,880	290	840	2,420	982	888	228	136	78
25	107	124	614	2,040	274	780	2,320	780	658	202	130	78
26	107	178	534	2,090	60	740	2,240	760	494	178	124	78
27	92	246	474	2,090	216	780	2,140	610	394	164	112	78
28	82	246	534	2,090	216	780	1,980	520	318	136	102	82
29	82	228	746	2,110	-------	760	1,880	740	282	130	97	82
30	102	300	768	2,220	-------	740	1,750	610	264	157	92	264
31	112	-------	658	2,320	-------	760	-------	556	-------	186	92	-------

NOTE.—Gage not read May 15 and 16; discharge interpolated.

Monthly discharge of Little River ditch No. 81 near Kennett, Mo., for the year ending September 30, 1927

Month	Discharge in second-feet			Month	Discharge in second-feet		
	Maximum	Minimum	Mean		Maximum	Minimum	Mean
October	124	82	95.3	May	1,620	520	1,050
November	300	92	158	June	1,980	264	1,120
December	768	157	350	July	228	118	171
January	2,320	210	903	August	336	92	181
February	2,270	216	802	September	264	73	87.5
March	1,090	204	546				
April	2,760	610	1,800	The year	2,760	73	601

LITTLE RIVER DITCH NO. 1 NEAR KENNETT,[2] MO.

LOCATION.—In NE. ¼ sec. 4, T. 18 N., R. 10 E., at bridge on State highway No. 84, 4 miles east of Kennett, Dunklin County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—October 1, 1926, to September 30, 1927, at present site; September 13, 1921, to September 30, 1926, at Kirk, 1¼ miles upstream. Records prior to October, 1926, not comparable with later records because of interchange of water between ditches Nos. 1, 66, and 81 and diversion from these ditches into two main ditches, Nos. 251 and 259, which were constructed during summer of 1926.

EQUIPMENT.—Chain gage on upstream side of bridge. Zero of gage is 240 feet above mean sea level. Discharge measurements made from bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of sand and gravel; fairly permanent. No well-defined control.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 16.56 feet at 7 a. m. April 25 (discharge, 7,520 second-feet); minimum discharge, 139 second-feet July 29 and September 20–25.

ACCURACY.—Stage-discharge relation not permanent during year; not affected by ice. Rating curve well defined above and fairly well defined below 200 second-feet by eight discharge measurements. Gage read to hundredths once daily during low stages and twice daily during high stages. Daily discharge ascertained by applying mean daily gage height to rating table; shifting-control method based upon two discharge measurements used October 1–28 and July 27 to September 30. Records good.

Daily discharge, in second-feet, of Little River ditch No. 1 near Kennett, Mo., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	232	301	686	2,360	6,020	622	3,320	5,670	910	301	212	186
2	203	301	622	1,940	5,600	622	4,060	5,460	2,660	281	194	186
3	194	261	562	1,550	5,180	590	3,850	5,040	3,180	281	178	186
4	194	261	534	1,400	4,480	562	3,640	4,760	3,510	241	194	194
5	194	212	506	1,300	3,780	562	3,440	5,040	2,990	232	203	203
6	186	212	450	1,150	3,060	562	3,380	5,320	2,240	222	186	186
7	186	203	426	990	2,540	562	3,120	5,600	1,650	212	186	186
8	186	194	404	910	2,360	562	3,250	5,460	1,350	212	178	194
9	178	203	426	830	1,880	562	4,830	5,250	1,150	230	170	186
10	178	222	562	750	1,550	562	5,110	4,900	1,070	194	162	186
11	178	404	750	686	1,350	562	5,180	5,110	990	194	154	178
12	178	404	750	686	1,300	562	4,970	4,900	830	186	162	170
13	170	383	654	654	1,200	1,250	5,040	4,270	686	186	170	170
14	170	341	562	622	1,150	3,120	5,880	3,510	622	186	212	170
15	162	341	562	686	1,150	2,920	6,240	2,840	654	178	506	162
16	154	534	506	686	1,070	2,060	6,540	2,170	562	170	450	162
17	162	750	478	654	990	1,400	6,700	1,500	478	178	426	178
18	154	718	450	686	1,110	1,880	6,770	1,200	534	170	383	178
19	146	686	426	1,200	1,350	4,340	6,920	1,030	321	170	362	178
20	154	622	404	4,270	1,250	4,900	6,920	1,300	506	170	321	139
21	154	534	686	5,460	1,110	5,110	6,920	1,300	622	232	321	139
22	154	478	2,000	6,170	1,030	5,110	6,920	790	2,600	232	281	139
23	146	426	3,640	6,620	950	4,760	7,300	1,550	2,420	232	251	139
24	154	383	3,380	6,770	870	4,200	7,300	2,540	2,240	222	241	139
25	154	362	2,860	6,840	790	3,380	7,300	1,940	1,500	203	241	139
26	154	404	2,420	6,840	750	2,660	6,840	1,300	950	154	232	154
27	194	534	1,760	6,770	686	2,120	6,620	870	590	162	212	154
28	194	654	1,650	6,620	622	1,650	6,240	654	450	146	203	212
29	170	622	2,600	6,540	-------	1,350	5,950	622	383	139	203	186
30	212	750	3,320	6,540	-------	1,200	5,740	506	341	170	212	404
31	261	-------	2,920	6,320	-------	1,200	-------	450	-------	203	203	-------

NOTE.—Gage not read May 15 and 16; discharge interpolated.

[2] Previously published as "at Kirk."

Monthly discharge of Little River ditch No. 1 near Kennett, Mo., for the year ending September 30, 1927

Month	Discharge in second-feet			Month	Discharge in second-feet		
	Maximum	Minimum	Mean		Maximum	Minimum	Mean
October	261	146	178	May	5,670	450	3,000
November	750	194	423	June	3,510	321	1,300
December	3,640	404	1,220	July	301	139	202
January	6,840	622	3,080	August	506	154	245
February	6,020	622	1,970	September	404	139	179
March	5,110	562	1,980				
April	7,300	3,120	5,540	The year	7,300	139	1,600

LITTLE RIVER DITCH NO. 66 NEAR KENNETT,[3] MO.

LOCATION.—In NE. ¼ sec. 4, T. 18 N., R. 10 E., at bridge on State highway No. 84, 4 miles east of Kennett, Dunklin County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—October 1, 1926, to September 30, 1927, at present site; September 13, 1921, to September 30, 1926, at Kirk, 1¼ mile upstream. Records prior to October, 1926, not comparable with later records because of interchange of water between ditches Nos. 1, 66, and 81 and diversions from these ditches into two new main ditches, Nos. 251 and 259, which were constructed during summer of 1926.

EQUIPMENT.—Chain gage on upstream side of bridge. Zero of gage is 240 feet above mean sea level. Discharge measurements made from bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of sand and gravel; shifting. No well-defined control. Little River ditch No. 66–A is an auxiliary to ditch No. 66, the two ditches being separated by a low, narrow bank and interconnected by cut-offs. Above stage of 6.2 feet, part of flow is carried by ditch No. 66–A, and above stage of 13 feet the two ditches in the vicinity of the gage unite to form one continuous body of water. For the purpose of determining the discharge of each ditch, the division between them is taken at the top of the bank which separates them during low stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 17.69 feet at 7 a. m. April 25 (discharge, 3,650 second-feet); minimum discharge, 95 second-feet November 7–10, 13, and 14.

DIVERSIONS AND REGULATION.—Above gage height 6.2 feet a part of the flow of this ditch is carried in ditch No. 66–A. See "channel and control."

ACCURACY.—Stage-discharge relation not permanent during year; not affected by ice. Rating curve well defined above and fairly well defined below 500 second-feet by nine discharge measurements. Gage read to hundredths once daily during low stages and twice daily during high stages. Daily discharge ascertained by shifting-control method. Records fair.

[3] Previously published as "at Kirk,"[2]

Daily discharge, in second-feet, of Little River ditch No. 66 near Kennett, Mo., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	157	207	247	558	1,610	217	982	2,860	770	364	289	227
2	148	197	207	478	1,400	207	1,300	2,740	2,020	336	267	217
3	148	177	197	420	1,230	207	1,200	2,500	2,150	324	247	207
4	139	177	187	378	1,140	197	1,140	2,290	2,320	300	247	312
5	157	103	167	336	1,050	197	1,070	2,220	2,180	289	267	364
6	148	103	148	312	920	197	1,050	2,260	1,960	267	257	257
7	148	95	139	289	842	187	960	2,220	1,800	257	257	257
8	148	95	139	278	752	187	1,050	2,090	1,580	257	247	247
9	139	95	121	257	608	197	1,750	1,750	1,250	247	247	237
10	130	95	187	245	510	197	1,960	1,580	940	227	217	227
11	139	112	227	227	448	187	1,930	1,630	824	227	227	217
12	139	103	207	217	420	207	1,800	1,420	662	227	217	207
13	130	95	187	207	364	542	1,770	1,180	590	217	207	207
14	130	95	177	197	364	626	2,320	920	680	217	247	197
15	130	112	167	207	364	526	2,460	805	1,090	207	448	207
16	130	167	157	207	336	434	2,580	689	1,090	207	806	197
17	130	177	148	207	312	350	2,700	574	960	257	788	197
18	121	167	139	187	364	420	2,620	494	842	237	680	187
19	121	167	130	278	478	1,180	2,500	448	1,070	227	590	187
20	121	157	130	960	420	1,500	2,400	494	1,030	257	448	177
21	112	148	237	1,520	378	1,660	2,430	478	824	324	364	177
22	112	139	698	1,470	336	1,660	2,500	420	1,370	350	312	187
23	112	121	716	1,690	312	1,450	2,900	558	1,470	300	278	187
24	130	121	644	1,770	278	1,230	3,560	824	1,470	289	278	187
25	139	112	590	1,890	267	960	3,600	920	1,280	247	267	187
26	139	148	510	2,020	247	734	3,510	1,110	1,030	227	267	187
27	139	217	448	2,020	237	542	3,380	1,160	734	227	247	187
28	130	207	434	1,990	227	448	3,240	940	542	217	237	207
29	130	207	734	1,960	-------	378	3,150	752	448	217	227	207
30	157	257	752	1,930	-------	350	2,980	626	406	237	227	590
31	207	-------	644	1,830	-------	336	-------	542	-------	267	217	-------

NOTE.—Gage probably read erroneously Nov. 9 and not read May 15 and 16; discharge interpolated.

Monthly discharge of Little River ditch No. 66 near Kennett, Mo., for the year ending September 30, 1927

Month	Discharge in second-feet			Month	Discharge in second-feet		
	Maximum	Minimum	Mean		Maximum	Minimum	Mean
October	207	112	137	May	2,860	420	1,270
November	257	95	146	June	2,320	406	1,180
December	752	121	317	July	364	207	260
January	2,020	187	856	August	806	207	326
February	1,610	227	579	September	590	177	228
March	1,660	187	571				
April	3,600	960	2,230	The year	3,600	95	673

LITTLE RIVER DITCH NO. 66-A NEAR KENNETT, MO.

LOCATION.—In NE. ¼ sec. 4, T. 18 N., R. 10 E., at bridge on State highway No. 84, 4 miles east of Kennett, Dunklin County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—January 23 to September 30, 1927.

EQUIPMENT.—Chain gage on upstream side of bridge. Zero of gage is 240 feet above mean sea level. Discharge measurements made from bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of sand and gravel; fairly permanent. No well-defined control.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period of records, 17.62 feet at 7 a. m. April 25 (discharge, 2,340 second-feet). No flow numerous days during period.

DIVERSIONS AND REGULATION.—The only flow carried by this ditch is the overflow from Little River ditch No. 66 which occurs when the latter is above gage height 6.2 feet. See "Channel and control" under Little River ditch No 66.

ACCURACY.—Stage-discharge relation changed during high water in April; not affected by ice. Rating curve used January 23 to March 31 well defined above 40 second-feet by five discharge measurements made during the period. Curve used April 1 to September 30 well defined above and fairly well defined below 150 second-feet by six discharge measurements, one of which was made this year. Gage read to hundredths once daily during low stages and twice daily during high stages. Daily discharge ascertained by applying mean daily gage height to rating table; shifting-control method used April 1–24. Records good for discharge above 20 second-feet and poor for discharge below.

Daily discharge, in second-feet, of Little River ditch No. 66–A near Kennett, Mo., for the year ending September 30, 1927

Day	Jan.	Feb.	Mar.	Apr.	May	June	Aug.	Sept.
1				442	1,810	140		
2				382	1,730	1,210		
3				442	1,600	1,320		
4				382	1,450	1,470		
5				326	1,420	1,370		
6				308	1,420	1,190		
7		144		242	1,400	1,060		
8		88		308	1,270	836		
9		42		812	980	542		
10		19		1,080	836	274		
11		8		1,110	860	177		
12				980	696	94		
13			25	956	482	64		
14			47	1,400	274	212		
15			24	1,500	204	422	4	
16			3	1,600	134	422	134	
17				1,660	64	290	129	
18			2	1,630	27	198	70	
19		15	360	1,550	12	382	41	
20		2	600	1,470	34	344	4	
21			774	1,500	24	177		
22			730	1,580	8	674		
23	780		560	1,580	53	764		
24			396	2,250	170	740		
25	934		216	2,340	274	564		
26			80	2,250	422	344		
27			25	2,170	482	129		
28			5	2,090	308	50		
29				2,000	134	18		
30				1,890	74	5		41
31					44			

NOTE.—Results of current-meter measurement used Jan. 23, 25, Feb. 7, 8. Gage height computed from gage height of Little River ditch No. 66 Feb. 20, Mar. 16, 18, 27, June 30, Aug. 15, 20. No flow on days after Feb. 7 for which no records are given. Gage heights missing Jan. 1–22, 24, 26–31.

Monthly discharge of Little River ditch No. 66–A near Kennett, Mo., for the year ending September 30, 1927

Month	Discharge in second-feet			Month	Discharge in second-feet		
	Maximum	Minimum	Mean		Maximum	Minimum	Mean
March	774	0	124	July	0	0	0
April	2,340	242	1,280	August	134	0	12.3
May	1,810	8	603	September	41	0	1.4
June	1,470	5	524				

LITTLE RIVER DITCH NO. 251 NEAR KENNETT, MO.

LOCATION.—In NW. ¼ sec. 3, T. 18 N., R. 10 E., at bridge on State highway No. 84, 4 miles east of Kennett, Dunklin County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—November 12, 1926, to September 30, 1927.

EQUIPMENT.—Chain gage on upstream side of bridge. Zero of gage is 240 feet above mean sea level. Discharge measurements made from bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of sand and gravel; fairly permanent. No well-defined control.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period, 17.67 feet April 24 and 25 (discharge, 6,510 second-feet); minimum discharge, 134 second-feet November 14.

ACCURACY.—Stage-discharge relation changed during high water April 25; not affected by ice. Rating curve used November 12 to April 25 well defined by eight discharge measurements; curve used April 26 to September 30 well defined above and fairly well defined below 400 second-feet by 10 discharge measurements. Gage read to hundredths once daily during low stages and twice daily during high stages. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

Daily discharge, in second-feet, of Little River ditch No. 251 near Kennett, Mo., for the year ending September 30, 1927

Day	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	------	384	658	2,960	330	1,730	5,340	1,640	840	696	296
2	------	330	788	2,680	314	2,360	5,140	3,970	792	576	276
3	------	314	682	2,360	314	2,200	4,780	4,190	720	480	276
4	------	298	610	2,050	298	2,000	4,420	4,540	672	480	456
5	------	266	564	1,910	298	1,860	4,360	4,240	648	528	600
6	------	235	480	1,640	298	1,820	4,360	3,920	600	504	456
7	------	220	460	1,440	298	1,640	4,420	3,640	552	504	384
8	------	220	402	1,260	298	1,860	4,140	3,180	552	432	318
9	------	220	402	1,050	298	3,260	3,520	2,560	504	432	296
10	------	348	384	872	298	3,740	3,230	2,120	456	384	276
11	------	402	366	734	282	3,680	3,280	1,760	456	362	256
12	154	348	330	682	314	3,380	2,980	1,460	432	362	256
13	140	330	330	634	872	3,320	2,520	1,320	432	340	238
14	134	285	330	610	1,020	4,380	2,000	1,490	408	456	220
15	161	266	330	586	844	4,640	1,780	2,290	384	1,070	220
16	266	235	298	542	658	4,900	1,570	2,290	408	1,720	211
17	266	235	298	520	564	5,020	1,350	1,920	576	1,600	211
18	266	220	298	564	658	4,900	1,100	1,840	528	1,320	202
19	250	205	440	760	2,150	4,760	1,050	2,200	504	1,100	211
20	235	205	1,820	658	2,800	4,500	866	2,120	528	840	202
21	220	420	2,960	586	3,200	4,570	1,100	1,800	672	672	202
22	205	1,330	2,850	542	3,080	4,760	970	2,830	720	576	202
23	205	1,330	3,200	500	2,680	5,420	1,380	3,030	624	504	202
24	175	1,160	3,380	460	2,200	6,370	1,800	3,030	624	504	194
25	175	1,050	3,620	420	1,640	6,440	1,960	2,600	552	456	194
26	235	872	3,800	384	1,220	6,380	2,340	2,120	456	432	194
27	348	816	3,860	366	900	6,180	2,420	1,600	432	384	194
28	330	734	3,740	330	760	5,920	2,000	1,220	408	362	220
29	314	1,260	3,680	------	634	5,790	1,600	1,020	384	340	220
30	420	1,300	3,680	------	542	5,530	1,350	918	456	318	1,020
31	------	1,080	3,440	------	564	------	1,190	------	672	318	------

NOTE.—Gage not read May 15 and 16; discharge interpolated.

Monthly discharge of Little River ditch No. 251 near Kennett, Mo., for the year ending September 30, 1927

Month	Discharge in second-feet			Month	Discharge in second-feet		
	Maximum	Minimum	Mean		Maximum	Minimum	Mean
November 12–30	420	134	237	May	5,340	866	2,590
December	1,330	205	546	June	4,540	918	2,430
January	3,860	298	1,560	July	840	384	548
February	2,960	330	1,000	August	1,720	318	615
March	3,200	282	988	September	1,020	194	290
April	6,440	1,640	4,110				

LITTLE RIVER DITCH NO. 259 NEAR KENNETT, MO.

LOCATION.—In NW. ¼ sec. 3, T. 18 N., R. 10 E., at bridge on State highway No. 84, 4 miles east of Kennett, Dunklin County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—November 12, 1926, to September 30, 1927.

EQUIPMENT.—Chain gage on upstream side of bridge. Zero of gage is 240 feet above mean sea level. Discharge measurements made from bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of sand and gravel; shifting. No well-defined control.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period, 15.57 feet at 7 a. m. April 29 (discharge, 4,140 second-feet); minimum discharge, 15 second-feet November 13.

ACCURACY.—Stage-discharge relation not permanent during period; not affected by ice. Rating curve fairly well defined above 40 second-feet by nine discharge measurements; extended below. Gage read to hundredths once daily during low stages and twice daily during high stages. Daily discharge ascertained by shifting-control method. Records fair.

Daily discharge, in second-feet, of Little River ditch No. 259 near Kennett, Mo., for the year ending September 30, 1927

Day	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-------	79	260	722	98	460	3,900	344	94	123	46
2	-------	65	224	722	94	328	3,660	794	86	98	49
3	-------	65	188	630	94	248	3,330	914	82	86	49
4	-------	58	178	500	94	212	3,110	1,140	76	86	49
5	-------	55	148	440	94	272	2,900	866	72	82	52
6	-------	52	138	344	90	248	2,750	674	65	86	49
7	-------	49	138	284	94	212	2,610	608	62	82	46
8	-------	52	118	248	98	722	2,480	480	58	72	43
9	-------	55	123	200	94	1,440	2,340	328	55	79	43
10	-------	65	114	178	94	1,710	2,210	260	55	79	43
11	-------	76	106	168	94	1,710	1,640	236	55	72	40
12	16	68	106	158	128	1,380	1,020	188	49	68	40
13	15	65	114	158	564	1,540	542	168	46	68	38
14	16	72	110	168	380	1,820	328	158	46	79	40
15	24	65	110	148	272	1,850	285	284	43	138	40
16	38	62	106	148	200	1,930	243	312	46	188	40
17	38	58	102	128	178	1,970	200	260	68	168	38
18	35	58	102	128	842	1,820	178	328	65	128	38
19	32	58	200	138	1,170	1,410	188	312	62	110	40
20	30	62	866	128	1,050	1,290	188	344	62	90	38
21	28	344	1,230	128	1,140	1,440	178	380	79	86	38
22	29	630	1,300	123	794	1,500	168	564	72	79	38
23	28	460	2,090	118	480	1,470	312	586	65	72	38
24	26	400	1,710	110	380	1,570	284	586	65	68	38
25	27	328	1,640	106	312	1,820	298	500	55	62	38
26	52	248	1,440	102	248	2,250	284	344	49	62	40
27	68	236	1,200	102	200	3,160	236	212	46	58	40
28	62	328	1,040	94	178	3,900	212	148	49	55	43
29	65	674	994	-------	168	4,140	248	118	46	52	43
30	90	460	914	-------	158	4,080	212	102	76	46	110
31	-------	328	866	-------	200	-------	168	-------	138	46	-------

NOTE.—Gage not read May 15 and 16; discharge interpolated.

Monthly discharge of Little River ditch No. 259 near Kennett, Mo., for the year ending September 30, 1927

Month	Discharge in second-feet			Month	Discharge in second-feet		
	Maximum	Minimum	Mean		Maximum	Minimum	Mean
November 12-30	90	15	37.8	May	3,900	168	1,180
December	674	49	183	June	1,140	102	418
January	2,090	102	580	July	138	43	64.1
February	722	94	236	August	188	46	86.1
March	1,170	90	325	September	110	38	44.2
April	4,140	212	1,600				

WHITE RIVER BASIN

WHITE RIVER AT BEAVER, ARK.

LOCATION.—In sec. 20, T. 21 N., R. 26 W., at Missouri & North Arkansas Railroad bridge, one-fourth of a mile east of depot at Beaver, Carroll County, and 3 miles above Leatherwood Creek.

DRAINAGE AREA.—1,270 square miles (measured on topographic maps and base map of Arkansas).

RECORDS AVAILABLE.—July 17, 1909, to December 31, 1910, and May 16, 1923, to September 30, 1927.

EQUIPMENT.—Chain gage on upstream side of bridge. Zero of gage is 885.55 feet above mean sea level. Discharge measurements made from bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of clean sand and gravel. Right bank high. Left bank is overflowed at stage of 30 feet. Control is gravel bar half a mile below gage; practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 37.0 feet at 6 a. m. April 16 (discharge, 65,000 second-feet); minimum stage, 2.80 feet September 23 (discharge, 182 second-feet).

1909–10, 1923–1927: Maximum stage recorded, that of April 16, 1927; minimum discharge, 33 second-feet September 10, 1925.

DIVERSIONS AND REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent during year; not affected by ice. Rating curve well defined between 212 and 50,000 second-feet by 12 discharge measurements, 6 of which covering a range from 236 to 25,600 second-feet were made during current year. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

Daily discharge, in second-feet, of White River at Beaver, Ark., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	18,200	7,080	1,040	1,360	2,870	770	4,360	2,250	8,520	635	14,600	668
2	5,480	4,360	920	1,270	3,560	735	5,340	2,050	4,920	575	3,680	575
3	2,980	3,090	840	1,140	4,500	770	4,080	1,850	15,100	548	3,940	520
4	5,760	2,450	770	1,000	3,440	805	3,200	1,650	21,200	495	2,650	470
5	14,400	2,050	735	920	2,870	840	2,650	2,250	10,800	470	2,050	445
6	12,200	1,650	668	840	2,550	1,180	2,250	2,250	7,240	445	3,680	398
7	4,640	1,450	1,650	770	2,250	1,750	2,250	1,950	15,800	420	2,980	375
8	2,980	1,360	2,150	700	2,050	2,150	5,060	2,050	4,780	398	1,950	352
9	2,250	1,360	3,680	635	1,850	2,250	10,600	3,090	3,200	375	1,450	330
10	2,650	1,360	4,920	575	1,750	2,050	7,080	9,000	2,550	375	2,150	310
11	11,100	1,270	4,920	520	1,550	1,850	5,480	12,400	2,050	352	4,780	290
12	8,520	1,140	3,680	520	1,550	2,150	9,480	5,340	1,650	330	6,760	270
13	4,500	1,000	2,980	880	1,550	4,080	13,700	3,680	1,450	352	3,090	270
14	3,090	1,270	2,450	1,270	1,550	3,090	29,600	2,870	1,180	420	2,050	250
15	2,350	3,940	2,050	2,250	1,550	2,450	55,600	2,450	1,040	420	1,550	246

Daily discharge, in second-feet, of White River at Beaver, Ark., for the year ending September 30, 1927—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
16	1,950	9,640	1,550	1,750	1,450	2,150	57,800	2,050	960	548	1,180	239
17	1,550	5,060	1,360	1,450	1,360	2,350	23,200	1,750	920	735	2,050	227
18	1,360	3,680	1,180	1,450	1,270	5,200	12,000	1,550	1,040	735	11,500	216
19	1,090	3,320	1,040	1,450	1,180	8,840	26,800	1,750	1,360	605	6,320	209
20	920	2,760	1,090	2,150	1,140	8,680	34,400	2,450	2,050	520	2,980	203
21	840	2,550	2,650	2,980	1,040	9,320	16,900	3,800	3,800	470	2,050	194
22	700	2,450	8,520	3,560	1,000	6,460	11,900	2,450	4,220	770	1,550	188
23	635	2,250	7,080	9,960	960	4,500	8,360	2,150	2,980	495	1,360	182
24	575	2,050	4,500	24,600	920	3,440	6,320	3,320	2,050	420	1,360	188
25	605	1,850	3,440	28,800	880	2,870	5,200	3,940	1,650	398	1,180	188
26	575	1,750	2,760	18,200	805	2,450	4,360	4,360	1,270	375	1,000	185
27	548	1,550	2,350	9,160	770	2,150	3,680	3,090	1,040	352	770	212
28	495	1,360	2,050	6,180	735	1,850	3,090	2,350	880	330	700	227
29	2,250	1,270	1,950	4,780	-------	2,250	2,760	1,850	770	330	700	310
30	8,680	1,090	1,850	3,940	-------	4,080	2,550	1,550	700	445	668	1,450
31	16,500	-------	1,550	3,320	-------	4,640	-------	1,360	-------	7,080	805	------

Monthly discharge of White River at Beaver, Ark., for the year ending September 30, 1927

[Drainage area, 1,270 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	18,200	495	4,530	3.57	4.12
November	9,640	1,000	2,580	2.03	2.26
December	8,520	668	2,530	1.99	2.29
January	28,800	520	4,460	3.51	4.05
February	4,500	735	1,750	1.38	1.44
March	9,320	735	3,170	2.50	2.88
April	57,800	2,250	12,700	10.00	11.16
May	12,400	1,360	3,060	2.41	2.78
June	21,200	700	4,240	3.34	3.73
July	7,080	330	684	.539	.62
August	14,600	668	3,020	2.38	2.74
September	1,450	182	340	.268	.30
The year	57,800	182	3,590	2.83	38.37

JAMES RIVER NEAR BATTLEFIELD, MO.

LOCATION.—Near center of sec. 27, T. 28 N., R. 22 W., 1,500 feet above Inniman Branch and 2½ miles southeast of Battlefield, Greene County.

DRAINAGE AREA.—306 square miles (measured on soil-survey and topographic maps).

RECORDS AVAILABLE.—February 17, 1926, to September 30, 1927.

EQUIPMENT.—Vertical staff gage in three sections fastened to trees on right bank. Zero of gage is about 1,175 feet above mean sea level. Discharge measurements made from cable or by wading.

CHANNEL AND CONTROL.—Bed composed of clean gravel. Banks are overflowed at stage of 12 feet. Control is gravel bar 150 feet below gage; practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 15.00 feet at 7 a. m. April 15 (discharge, 14,600 second-feet); minimum stage, 1.75 feet at 5 p. m. September 26 (discharge, 66 second-feet).

1926–1927: Maximum stage recorded, that of April 15, 1927; minimum discharge, 66 second-feet on August 14, 1926, and September 26, 1927.

DIVERSIONS AND REGULATION.—None.

ACCURACY.—Stage-discharge relation changed during high water April 15; not affected by ice. Rating curve used October 1 to April 15 fairly well defined by 14 discharge measurements, five of which, between 402 and 5,310 second-feet, were made during the current year. Curve used April 16 to September 30 fairly well defined by nine discharge measurements, one of which was made during the year. Gage read to hundredths once daily during low stages and twice daily during high stages. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

Daily discharge, in second-feet, of James River near Battlefield, Mo., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,260	425	425	217	621	146	5,450	350	233	210	287	210
2	802	309	376	217	578	146	2,450	317	233	187	317	198
3	334	296	348	196	535	146	1,310	302	621	176	1,840	187
4	1,310	250	309	175	495	146	1,000	273	472	157	1,370	166
5	1,050	217	284	166	442	137	802	1,780	317	140	802	157
6	1,000	206	261	156	408	137	710	1,780	259	131	664	148
7	664	175	272	156	376	217	535	1,420	233	123	756	148
8	535	238	442	146	334	621	392	900	210	115	4,190	131
9	442	217	535	146	309	460	7,020	2,450	198	110	3,810	123
10	535	238	535	137	296	392	5,010	1,260	166	101	1,970	123
11	535	238	460	120	272	348	3,480	1,000	148	96	1,310	115
12	460	228	425	120	272	425	2,170	802	148	92	900	110
13	442	217	392	284	261	408	2,380	710	157	85	664	105
14	334	392	361	802	261	361	4,320	535	148	80	850	99
15	261	900	322	535	261	322	12,700	452	140	115	2,310	96
16	238	578	284	460	261	309	2,600	416	140	112	900	91
17	238	495	261	425	250	309	2,170	350	710	101	5,300	89
18	228	950	238	802	250	284	2,740	317	756	95	2,600	85
19	196	850	228	1,970	238	334	5,600	287	1,910	85	1,310	82
20	186	802	217	1,260	217	1,840	2,450	259	1,200	96	900	80
21	175	710	228	850	206	1,200	2,170	233	5,010	472	900	76
22	156	578	361	710	196	900	802	233	1,660	1,000	664	72
23	146	535	442	621	186	621	710	233	900	452	452	71
24	146	621	442	621	175	556	900	1,150	710	246	434	70
25	137	756	376	1,100	166	425	802	756	492	198	416	68
26	128	900	361	1,910	166	376	710	621	400	166	350	66
27	120	756	334	1,310	156	296	664	416	350	140	334	85
28	112	556	296	1,100	146	309	492	366	273	105	302	105
29	146	495	284	1,000	-------	334	434	273	233	802	287	115
30	156	495	261	710	-------	334	383	246	233	472	273	166
31	535	-------	238	621	-------	7,500	-------	222	-------	366	233	-------

NOTE.—Discharge Jan. 8 and Mar. 19 computed on assumption that gage was read 1.0 foot in error.

Monthly discharge of James River near Battlefield, Mo., for the year ending September 30, 1927

[Drainage area, 306 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	1,310	112	420	1.37	1.58
November	950	175	487	1.59	1.77
December	535	217	342	1.12	1.29
January	1,970	120	614	2.01	2.32
February	621	146	298	.974	1.01
March	7,500	137	656	2.14	2.47
April	12,700	383	2,450	8.01	8.94
May	2,450	222	668	2.18	2.51
June	5,010	140	622	2.03	2.26
July	1,000	80	220	.719	.83
August	5,300	233	1,220	3.99	4.60
September	210	66	115	.376	.42
The year	12,700	66	676	2.21	30.00

JAMES RIVER AT GALENA, MO.

LOCATION.—In NW. ¼ sec. 7, T. 24 N., R. 23 W., at bridge on State highway No. 44 at Galena, Stone County, one-fourth of a mile above Missouri Pacific Railway bridge and half a mile above Railey Creek.

DRAINAGE AREA.—1,000 square miles (measured on topographic and soil-survey maps).

RECORDS AVAILABLE.—October 28, 1921, to September 30, 1927.

EQUIPMENT.—Chain gage on upstream side of bridge. Discharge measurements made from bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of sand and gravel. Left bank high. Small overflow on right bank at stages above 15 feet. Low-water control is a heavy gravel riffle 100 feet below gage; practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 25.15 feet at 2.45 p. m. April 15 (discharge, 41,900 second-feet); minimum stage, 2.17 feet at 6.30 p. m. September 25 (discharge, 394 second-feet).

1921–1927: Maximum stage recorded, that of April 15, 1927: Minimum stage, 0.56 foot September 6, 7, 9, and 10, 1925 (discharge, 52 second-feet).

DIVERSIONS AND REGULATION.—None.

ACCURACY.—Stage-discharge relation changed during high water April 15; not affected by ice. Rating curve used October 1 to April 15 fairly well defined below 30,000 second-feet by 11 discharge measurements, 4 of which were made during this period; curve used after April 15 fairly well defined by 2 discharge measurements and shape of previous curve. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good for discharge below 30,000 second-feet and fair for discharge above.

Daily discharge, in second-feet, of James River at Galena, Mo., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4,240	1,420	1,620	865	2,280	630	22,300	1,760	1,280	980	2,360	1,100
2	2,820	1,220	1,420	755	2,280	630	8,600	1,550	1,350	865	1,900	980
3	2,360	1,100	1,280	755	2,040	605	4,720	1,480	2,040	755	3,560	980
4	4,600	1,040	1,220	705	1,900	582	3,670	1,350	1,760	755	7,960	920
5	5,920	920	1,100	655	1,760	558	2,920	4,240	1,480	705	4,360	865
6	4,600	810	1,040	655	1,690	536	2,360	6,840	1,220	655	2,920	810
7	3,020	755	1,040	630	1,620	582	2,120	4,960	1,220	630	2,540	810
8	2,360	705	1,220	630	1,480	1,550	2,280	3,890	1,040	582	6,200	755
9	1,970	758	1,690	605	1,420	1,970	5,080	8,920	980	536	17,200	705
10	1,900	810	1,900	582	1,220	1,760	19,100	10,700	865	514	7,800	655
11	1,760	755	1,970	558	1,160	1,620	7,640	5,640	810	493	4,360	630
12	1,620	810	1,900	536	1,100	1,550	7,640	3,780	755	472	3,230	605
13	1,550	755	1,760	655	1,040	1,690	8,280	3,020	980	432	2,540	558
14	1,480	920	1,480	1,970	1,100	1,620	18,100	2,360	920	605	6,360	558
15	1,280	2,120	1,280	2,120	1,040	1,480	39,100	2,120	810	605	7,640	536
16	1,160	2,540	1,100	1,900	1,040	1,350	17,700	1,900	755	558	15,200	536
17	1,100	2,450	1,040	1,760	1,040	1,280	7,960	1,690	810	582	15,200	536
18	980	2,630	980	2,200	980	1,280	9,580	1,620	1,420	536	16,200	514
19	865	2,920	865	5,080	980	1,280	15,800	1,690	4,240	472	6,680	514
20	755	2,720	755	4,000	865	1,420	13,400	1,480	4,960	432	4,600	472
21	755	2,450	755	3,020	810	4,000	6,840	1,350	7,480	4,360	3,340	452
22	705	2,280	1,100	2,450	810	3,120	4,960	1,280	7,160	3,670	2,920	413
23	705	1,970	1,420	2,360	810	2,450	3,780	1,220	3,450	2,200	2,450	413
24	705	1,900	1,480	2,720	755	2,120	3,120	2,360	2,540	1,620	2,120	413
25	705	2,120	1,350	3,780	755	1,900	3,020	6,360	1,900	1,280	1,900	394
26	605	2,360	1,350	4,840	705	1,620	2,720	3,560	1,550	1,100	1,690	413
27	582	2,200	1,280	4,840	655	1,480	2,360	2,280	1,420	980	1,550	452
28	536	2,040	1,220	3,780	655	1,350	2,200	1,830	1,280	865	1,420	493
29	705	1,830	1,160	3,230	-------	1,350	2,040	1,550	1,160	1,280	1,350	493
30	755	1,760	1,100	2,920	-------	1,420	1,900	1,350	1,040	5,780	1,220	705
31	1,160	-------	920	2,540	-------	2,820	-------	1,220	-------	4,000	1,160	------

NOTE.—Gage not read Nov. 9; discharge interpolated.

Monthly discharge of James River at Galena, Mo., for the year ending September 30, 1927

[Drainage area, 1,000 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	5,920	536	1,750	1.75	2.02
November	2,920	705	1,640	1.64	1.83
December	1,970	755	1,280	1.28	1.48
January	5,080	536	2,070	2.07	2.39
February	2,280	655	1,210	1.21	1.26
March	4,000	536	1,540	1.54	1.78
April	39,100	1,900	8,380	8.38	9.35
May	10,700	1,220	3,080	3.08	3.55
June	7,480	755	1,960	1.96	2.19
July	5,780	432	1,270	1.27	1.46
August	17,200	1,160	5,160	5.16	5.95
September	1,100	394	623	.623	.70
The year	39,100	394	2,500	2.50	33.96

NORTH FORK OF WHITE RIVER AT TECUMSEH, MO.

LOCATION.—In sec. 16, T. 22 N., R. 12 W., at bridge on State highway No. 80 at west edge of Tecumseh, Ozark County, half a mile below Bryant Creek and 8 miles above Missouri-Arkansas line.

DRAINAGE AREA.—1,180 square miles (measured on soil-survey maps).

RECORDS AVAILABLE.—October 24, 1921, to September 30, 1927.

EQUIPMENT.—Chain gage on downstream side of bridge. Discharge measurements made from bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of sand, gravel, and boulders. Left bank high. Right bank is overflowed at stage of 24 feet. Control is gravel bar 400 feet below gage; practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 20.80 feet at 11 a. m. April 14 (discharge, 41,300 second-feet); minimum stage, 0.92 foot at 5 p. m. October 28 (discharge, 740 second-feet).

1921–1927: Maximum stage recorded, that of April 14, 1927; minimum discharge, 363 second-feet September 5, 1925.

Flood of July, 1905, reached a stage of 31.6 feet and that of August, 1915, a stage of 31.0 feet; determined from levels to high-water marks.

DIVERSIONS AND REGULATION.—None.

ACCURACY.—Stage-discharge relation changed during high water April 14; not affected by ice. Rating curve used October 1 to April 13 well defined above 8,000 second-feet and fairly well defined below; checked by three discharge measurements. Curve used April 14 to September 30 well defined by 11 discharge measurements, 9 of which were made during the period. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

Daily discharge, in second-feet, of North Fork of White River at Tecumseh, Mo., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,880	2,650	1,310	1,420	3,060	1,260	11,000	2,480	1,960	1,640	1,400	1,460
2	1,420	2,130	1,260	1,360	3,200	1,210	5,160	2,350	3,300	1,700	1,230	1,400
3	1,160	1,760	1,260	1,360	3,060	1,210	4,040	2,350	4,600	1,520	1,280	2,350
4	1,760	1,530	1,210	1,310	2,920	1,210	3,340	2,220	3,300	1,460	2,480	1,520
5	2,260	1,360	1,160	1,260	2,650	1,210	3,200	2,480	2,610	1,400	1,830	1,400
6	1,640	1,260	1,110	1,210	2,520	1,210	2,780	8,500	2,220	1,340	1,520	1,340
7	1,420	1,160	1,110	1,210	2,260	1,260	2,650	4,900	2,090	1,340	1,460	1,280
8	1,210	1,210	1,110	1,160	2,130	1,360	4,320	3,870	1,960	1,280	1,830	1,230
9	1,060	1,360	1,260	1,110	2,000	1,360	4,880	4,600	1,830	1,230	3,720	1,230
10	1,420	1,160	1,530	1,060	1,880	1,420	8,600	5,500	1,700	1,230	2,350	1,230
11	1,530	1,110	1,530	1,010	1,880	1,360	7,120	3,870	1,700	1,180	1,960	1,180
12	1,360	1,060	1,530	1,010	1,760	1,760	6,000	3,300	1,580	1,180	1,700	1,180
13	1,210	1,010	1,530	1,210	1,880	1,880	13,300	2,880	1,640	1,120	1,960	1,120
14	1,110	3,760	1,310	1,760	1,880	1,760	35,800	2,740	1,580	1,280	7,300	1,060
15	1,010	7,850	1,210	1,640	1,880	1,640	22,000	2,480	1,460	1,230	11,000	1,060
16	962	3,900	1,160	1,640	1,760	1,640	10,700	2,350	1,400	1,180	5,050	1,060
17	915	3,340	1,110	1,530	1,760	1,640	7,600	2,220	1,580	1,120	8,050	1,010
18	870	3,200	1,060	1,530	1,640	5,440	12,200	2,220	1,830	1,120	6,100	1,010
19	870	2,780	1,060	2,780	1,640	4,600	22,900	2,220	1,830	1,060	4,160	1,010
20	870	2,520	1,160	2,390	1,530	4,040	11,000	2,090	2,090	1,400	3,160	1,010
21	870	2,260	1,530	2,390	1,530	4,740	7,600	1,960	15,100	1,830	2,740	960
22	825	2,130	1,760	4,880	1,530	3,760	5,800	2,220	5,200	1,830	2,480	960
23	825	2,000	1,760	5,160	1,530	3,200	4,900	2,220	3,580	1,580	2,220	960
24	870	1,880	1,760	6,280	1,420	2,780	4,300	2,220	2,880	1,340	2,090	960
25	825	1,760	1,760	5,720	1,360	2,520	3,870	6,550	2,480	1,230	1,830	910
26	782	1,760	1,640	5,440	1,310	2,390	3,440	3,580	2,220	1,180	1,830	910
27	782	1,640	1,420	4,600	1,310	2,130	3,300	2,880	1,960	1,120	1,700	960
28	782	1,530	1,640	4,320	1,260	2,000	3,020	2,480	1,830	1,060	1,640	1,180
29	6,280	1,530	1,530	4,040	-------	2,000	2,880	2,350	1,730	1,060	1,700	1,960
30	5,580	1,360	1,420	3,760	-------	2,130	2,740	2,090	1,640	1,280	1,580	1,700
31	3,620	-------	1,420	3,340	-------	2,390	-------	1,960	-------	1,960	1,520	------

Monthly discharge of North Fork of White River at Tecumseh, Mo., for the year ending September 30, 1927

[Drainage area, 1,180 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	6,280	782	1,550	1.31	1.51
November	7,850	1,010	2,130	1.81	2.02
December	1,760	1,060	1,370	1.16	1.34
January	6,280	1,010	2,540	2.15	2.48
February	3,200	1,260	1,950	1.65	1.72
March	5,440	1,210	2,210	1.87	2.16
April	35,800	2,650	8,010	6.79	7.58
May	8,500	1,960	3,100	2.63	3.03
June	15,100	1,400	2,700	2.29	2.56
July	1,960	1,060	1,340	1.14	1.31
August	11,000	1,230	2,930	2.48	2.86
September	2,350	910	1,220	1.03	1.15
The year	35,800	782	2,580	2.19	29.72

BLACK RIVER AT LEEPER, MO.

LOCATION.—In SW. ¼ NE. ¼ sec. 27, T. 28 N., R. 3 E., at Missouri Southern Railway bridge at Leeper, Wayne County, and 3 miles below McKenzie Creek.

DRAINAGE AREA.—957 square miles (measured on soil-survey maps).

RECORDS AVAILABLE.—June 15, 1921, to September 30, 1927.

EQUIPMENT.—Chain gage on downstream side of bridge. Zero of gage is 423.97 feet above mean sea level. Discharge measurements made from railroad or highway bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of sand and gravel. Banks are overflowed at stage of 12 feet. Control is gravel bar 800 feet below gage; fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 16.35 feet at 7.30 a. m. April 15 (discharge, 37,000 second-feet); minimum discharge, 280 second-feet October 23 and 24.

1921–1927: Maximum stage recorded, that of April 15, 1927; minimum discharge, 194 second-feet September 9–11, 1925.

River reached stage of 21.3 feet in August, 1915 (determined by levels to high-water marks by United States Weather Bureau).

DIVERSIONS AND REGULATION.—None.

ACCURACY.—Stage-discharge relation changed during high water April 15; not affected by ice. Rating curve used October 1 to April 14 well defined below 25,000 second-feet and that used April 15 to September 30 fairly well defined; curves coincide above 3,200 second-feet. Curves checked during year by eight measurements of discharge between 535 and 21,200 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

Daily discharge, in second-feet, of Black River at Leeper, Mo., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,140	1,530	795	650	2,870	498	33,600	1,500	29,200	655	610	500
2	875	1,230	758	650	2,080	498	9,860	1,360	19,600	610	610	500
3	685	1,000	720	650	1,860	470	5,000	1,360	12,700	655	655	500
4	650	875	685	685	1,860	470	3,700	1,580	9,860	610	655	500
5	720	758	650	758	1,750	470	3,030	1,500	5,000	610	655	500
6	795	720	618	795	1,640	470	2,580	2,500	3,530	570	655	500
7	720	650	585	758	1,430	498	2,320	5,600	2,880	570	655	500
8	650	585	555	758	1,230	525	2,580	3,360	2,380	570	810	500
9	555	618	685	720	1,140	498	5,000	2,620	1,900	570	655	500
10	525	525	525	650	1,050	498	5,000	3,030	1,660	570	610	500
11	470	498	525	618	960	498	4,060	3,190	1,660	570	610	500
12	470	470	525	618	918	618	4,060	2,380	1,500	570	610	465
13	470	415	498	585	875	2,450	6,000	2,500	1,500	570	610	465
14	470	470	470	585	795	2,080	19,600	1,820	1,500	755	920	465
15	442	875	470	1,530	758	1,640	33,600	1,660	1,360	705	975	465
16	365	1,430	442	1,640	758	1,430	16,300	1,500	1,220	655	865	465
17	342	1,430	415	960	875	1,230	8,640	1,500	1,150	610	810	465
18	320	1,430	390	960	918	3,700	6,640	1,430	1,430	610	810	465
19	320	1,230	390	3,700	795	5,400	12,500	1,990	1,500	610	755	465
20	320	1,230	415	2,720	758	5,000	11,200	1,820	1,150	610	705	435
21	300	1,140	470	2,200	720	4,600	5,400	1,740	1,430	655	655	435
22	300	1,140	498	4,600	685	3,190	3,880	1,660	1,360	655	610	435
23	280	960	498	3,880	650	2,450	2,880	2,280	1,220	610	570	435
24	280	918	650	3,030	618	1,970	2,380	8,880	1,090	535	610	435
25	300	875	685	2,720	618	1,750	2,280	24,400	1,030	535	570	435
26	320	875	720	2,450	585	1,430	1,990	8,400	975	535	570	435
27	300	1,050	720	2,450	555	1,330	1,820	4,240	920	535	535	435
28	300	1,000	720	2,200	525	1,230	1,660	3,190	810	570	535	500
29	365	875	720	2,080	-------	1,230	1,660	2,620	755	570	500	535
30	2,870	875	685	2,200	-------	1,230	1,740	2,380	705	610	500	570
31	2,080	-------	685	2,320	-------	5,400	-------	2,380	-------	610	500	------

Monthly discharge of Black River at Leeper, Mo., for the year ending September 30, 1927

[Drainage area, 957 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	2,870	280	613	0.641	0.74
November	1,530	415	923	.964	1.08
December	795	390	586	.612	.71
January	4,600	585	1,650	1.72	1.98
February	2,870	525	1,080	1.13	1.18
March	5,400	470	1,770	1.85	2.13
April	33,600	1,660	7,370	7.70	8.59
May	24,400	1,360	3,430	3.58	4.13
June	29,200	705	3,770	3.94	4.40
July	755	535	602	.629	.73
August	975	500	658	.688	.79
September	570	435	477	.498	.56
The year	33,600	280	1,900	1.99	27.02

CURRENT RIVER AT VAN BUREN, MO.

LOCATION.—In NE ¼ NW. ¼ sec. 25, T. 27 N., R. 1 W., at bridge on State highway No. 60 in Van Buren, Carter County, and half a mile below Davis Creek.

DRAINAGE AREA.—1,640 square miles (measured on soil-survey maps).

RECORDS AVAILABLE.—June 18, 1921, to September 30, 1927. The Engineering Experiment Station, University of Missouri, has records at the same site from August 25, 1912, to July 30, 1921.[4]

EQUIPMENT.—Chain gage on downstream side of bridge. Zero of gage is 445.79 feet above mean sea level. Discharge measurements made from bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of gravel. Right bank high. Left bank is overflowed at stage of 20 feet. Control is coarse gravel bar 1,000 feet below gage; practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 13.22 feet at 5.30 a. m. June 2 (discharge, 35,000 second-feet); minimum stage, 1.26 feet at 7.30 a. m. October 25 (discharge, 622 second-feet).

1921–1927: Maximum stage recorded, that of June 2, 1927; minimum discharge, 542 second-feet September 6, 8, 9, and 12, 1925.

Flood of March 26, 1904, reached a stage of 26.0 feet and that of August 21, 1915, a stage of 22.9 feet (discharge, uncertain; discharge previously published may be considerably in error); both stages determined by levels to floodmarks.

DIVERSIONS AND REGULATION.—No diversions. Natural regulation through large springs.

ACCURACY.—Stage-discharge relation changed during fairly high stage August 15; not affected by ice. Rating curve used October 1 to August 15 fairly well defined below 25,000 second-feet by 13 discharge measurements; 3 of the measurements, covering a range from 1,720 to 12,200 second-feet, were made during the period. Curve used after August 15 defined by one discharge measurement and shape of previous curve. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good for discharge below 25,000 second-feet and fair for discharge above.

[4] Missouri Univ. Eng. Exper. Sta. Bull. 35, ser. 22, vol. 21; or Missouri Bur. Geology and Mines, 2d ser., vol. 20.

Daily discharge, in second-feet, of Current River at Van Buren, Mo., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,830	2,580	1,490	1,380	4,340	1,280	23,600	4,020	25,600	2,320	1,600	1,830
2	1,600	2,070	1,380	1,280	3,720	1,230	19,200	3,720	34,500	2,190	1,600	1,710
3	1,230	1,490	1,230	1,380	3,570	1,180	8,600	5,060	27,400	2,070	2,070	1,710
4	1,090	1,380	1,280	1,280	3,720	1,090	6,600	3,420	16,200	2,070	1,830	1,830
5	1,380	1,230	1,180	1,280	3,570	1,180	5,720	3,870	10,100	1,950	1,830	2,070
6	1,710	1,040	1,180	1,280	3,280	1,180	4,680	7,560	7,800	1,950	1,710	2,070
7	1,380	1,040	1,140	1,230	3,000	1,230	4,680	9,500	6,600	1,950	1,600	2,070
8	1,180	1,000	1,040	1,090	2,580	1,280	9,200	6,840	5,720	1,830	3,720	1,950
9	1,040	1,000	1,040	1,140	2,450	1,380	9,200	5,720	5,060	1,830	10,700	1,830
10	958	878	958	958	2,320	1,380	8,900	7,560	4,500	1,710	4,180	1,710
11	958	878	1,040	878	2,070	1,380	8,600	7,560	4,180	1,710	3,000	1,600
12	915	840	1,090	1,000	2,070	2,580	8,900	5,060	3,870	1,710	2,450	1,600
13	878	808	1,040	1,140	1,710	3,570	11,300	4,500	3,720	1,710	2,230	1,600
14	840	878	1,040	1,490	1,710	3,280	28,700	4,020	4,180	1,950	6,840	1,600
15	808	2,320	1,040	2,450	2,070	2,860	34,000	3,720	3,720	2,070	11,000	1,490
16	742	5,940	915	2,190	2,070	2,580	24,000	3,280	3,420	1,830	5,720	1,490
17	742	3,720	915	2,070	1,950	2,450	13,500	3,140	3,720	1,710	4,020	1,380
18	710	3,420	878	2,190	1,950	4,500	12,800	3,000	3,870	1,600	10,100	1,380
19	742	3,140	915	4,180	1,830	7,800	23,600	3,720	2,720	1,710	5,280	1,380
20	710	2,860	1,000	4,340	1,830	6,380	20,800	3,570	3,420	1,710	3,870	1,380
21	710	2,580	1,090	3,720	1,710	6,600	12,500	3,280	4,020	1,710	3,280	1,230
22	710	2,070	1,000	5,940	1,600	5,940	9,500	3,140	8,900	1,710	2,860	1,230
23	742	1,830	1,280	6,160	1,600	4,680	7,560	3,720	4,680	1,600	2,720	1,380
24	775	1,710	1,180	5,720	1,490	4,020	6,600	4,680	3,720	1,600	2,450	1,380
25	650	1,710	1,280	5,060	1,490	3,420	5,940	13,800	3,280	1,600	2,320	1,380
26	650	1,950	1,380	5,060	1,380	3,140	5,280	14,500	3,060	1,600	2,190	1,380
27	650	1,710	1,380	5,500	1,380	2,860	4,860	7,080	2,720	1,600	2,070	1,490
28	680	1,600	1,230	4,860	1,280	2,580	4,500	5,500	2,580	1,490	1,950	1,490
29	1,280	1,490	1,000	4,020	-------	2,450	4,340	4,680	2,450	1,600	1,950	1,710
30	3,720	1,380	1,230	4,500	-------	2,860	4,340	4,680	2,450	1,710	1,950	1,830
31	3,570	-------	1,230	5,720	-------	5,060	-------	4,340	-------	1,600	1,830	-------

Monthly discharge of Current River at Van Buren, Mo., for the year ending September 30, 1927

[Drainage area, 1,640 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	3,720	650	1,150	0.701	0.81
November	5,940	808	1,880	1.15	1.28
December	1,490	878	1,130	.689	.79
January	6,160	878	2,920	1.78	2.05
February	4,340	1,280	2,280	1.39	1.45
March	7,800	1,090	3,010	1.84	2.12
April	34,000	4,340	11,700	7.13	7.96
May	14,500	3,000	5,430	3.31	3.82
June	34,500	2,450	7,270	4.43	4.94
July	2,320	1,490	1,790	1.09	1.26
August	11,000	1,600	3,580	2.18	2.51
September	2,070	1,230	1,610	.982	1.10
The year	34,500	650	3,640	2.22	30.09

CURRENT RIVER AT DONIPHAN, MO.

LOCATION.—In N. ½ sec. 27, T. 23 N., R. 2 E., at highway bridge three-fourths of a mile west of Doniphan, Ripley County, and 2 miles above Briar Creek.

DRAINAGE AREA.—2,030 square miles (measured on soil-survey maps).

RECORDS AVAILABLE.—June 14, 1921, to September 30, 1927.

EQUIPMENT.—Chain gage on upstream side of bridge. Zero of gage is 323.30 feet above mean sea level. Discharge measurements made from bridge.

CHANNEL AND CONTROL.—Bed composed of clean, coarse gravel. Right bank high. Left bank is overflowed at stage of 10 feet. No well-defined control.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 17.30 feet at 7 a. m. April 15 (discharge, 48,800 second-feet); minimum discharge, 1,300 second-feet October 22–24 and 27–29.

1921–1927: Maximum stage recorded, that of April 15, 1927; minimum discharge, 1,020 second-feet August 27 to September 14, 1925.

The flood of August, 1915, reached a stage of 25.5 feet (determined by levels of floodmarks by United States Engineer Corps).

DIVERSIONS AND REGULATION.—No diversions. Natural regulation through numerous large springs.

ACCURACY.—Stage-discharge relation changed during high water April 2; not affected by ice. Both rating curves fairly well defined; curve used until April 1 checked by one discharge measurement of 1,840 second-feet, and curve used after that date checked by six measurements covering a range from 1,900 to 39,700 second-feet. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good.

Daily discharge, in second-feet, of Current River at Doniphan, Mo., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,110	3,800	2,310	2,310	6,370	2,310	9,300	5,940	14,200	3,630	2,620	2,620
2	2,420	3,130	2,210	2,310	5,880	2,110	27,000	5,760	39,400	3,480	2,490	2,620
3	2,110	2,880	2,110	2,310	5,720	2,210	25,500	5,400	40,800	3,480	2,620	2,620
4	1,810	2,420	2,110	2,310	5,570	2,110	9,300	5,400	32,600	3,330	2,900	2,490
5	2,110	2,210	2,010	2,310	5,120	2,110	8,300	5,060	21,300	3,180	2,900	2,760
6	2,310	2,110	2,010	2,310	4,820	2,110	7,020	10,400	11,700	3,180	2,760	2,900
7	2,310	1,910	2,010	2,210	4,520	2,110	6,120	11,300	9,500	3,040	2,620	2,760
8	2,110	1,810	1,910	2,110	4,080	2,210	9,500	11,700	8,300	3,040	3,040	3,180
9	1,910	1,810	1,910	2,010	3,800	2,210	11,900	8,700	7,380	2,900	5,940	2,620
10	1,720	1,910	1,910	2,010	3,660	2,310	12,100	8,700	6,840	2,900	12,100	2,490
11	1,720	1,810	1,910	1,810	3,390	2,310	11,700	9,940	6,300	2,760	5,580	2,360
12	1,630	1,720	1,810	1,810	3,260	2,640	11,300	8,300	5,940	2,760	4,260	2,240
13	1,630	1,630	2,010	1,810	3,260	4,080	13,000	7,200	5,580	2,760	3,630	2,240
14	1,540	1,630	2,010	1,910	3,130	4,520	30,600	6,480	5,400	2,900	7,920	2,240
15	1,460	2,110	1,910	2,530	3,130	4,080	48,800	5,760	5,580	3,180	10,200	2,120
16	1,460	4,970	1,810	3,000	3,260	3,660	42,100	5,220	5,060	3,040	12,600	2,120
17	1,380	5,570	1,720	2,880	3,130	3,520	32,200	5,060	4,740	2,760	6,840	2,000
18	1,380	4,670	1,720	2,760	3,130	5,880	17,100	4,580	5,760	2,620	6,660	2,120
19	1,380	4,220	1,720	3,260	3,000	7,760	20,400	4,740	5,400	2,620	11,900	2,000
20	1,380	3,940	1,630	5,270	2,880	9,300	28,200	5,580	5,060	2,620	6,480	2,000
21	1,380	3,390	2,110	5,270	2,760	7,760	26,200	5,220	5,220	2,620	5,060	2,000
22	1,300	3,260	2,210	11,300	2,760	7,760	14,200	5,060	5,940	2,620	4,580	1,890
23	1,300	3,130	2,310	11,500	2,760	7,050	10,800	5,760	9,100	2,620	4,100	1,890
24	1,300	2,760	2,420	10,100	2,640	5,880	9,100	6,120	6,120	2,490	3,780	1,890
25	1,380	2,640	2,530	8,500	2,530	5,270	8,300	7,200	5,220	2,490	3,480	1,890
26	1,380	2,640	2,530	7,580	2,420	4,670	7,920	14,200	4,740	2,360	3,330	1,890
27	1,300	2,760	2,420	7,220	2,420	4,220	7,020	17,600	4,420	2,360	3,180	1,890
28	1,300	2,640	2,530	7,050	2,310	3,940	6,660	8,500	4,100	2,360	3,040	1,890
29	1,300	2,530	2,420	6,200	-------	3,800	6,120	7,380	3,940	2,360	2,900	2,240
30	2,420	2,420	2,420	5,720	-------	3,800	6,300	6,480	3,780	2,760	2,760	4,580
31	5,570	-------	2,420	6,040	-------	4,220	-------	6,120	-------	2,620	2,760	-------

NOTE.—Daily discharge interpolated Sept. 25 and 26; gage not read.

Monthly discharge of Current River at Doniphan, Mo., for the year ending September 30, 1927

[Drainage area, 2,030 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	5,570	1,300	1,800	0.887	1.02
November	5,570	1,630	2,810	1.38	1.54
December	2,530	1,630	2,100	1.03	1.19
January	11,500	1,810	4,380	2.16	2.49
February	6,370	2,310	3,630	1.79	1.86
March	9,300	2,110	4,130	2.03	2.34
April	48,800	6,120	16,100	7.93	8.85
May	17,600	4,580	7,450	3.67	4.23
June	40,800	3,780	9,980	4.92	5.49
July	3,630	2,360	2,830	1.39	1.60
August	12,600	2,490	5,000	2.46	2.84
September	4,580	1,890	2,350	1.16	1.29
The year	48,800	1,300	5,200	2.56	34.74

JACKS FORK AT EMINENCE, MO.

LOCATION.—In W. ½ sec. 26, T. 29 N., R. 4 W., at bridge on State highway No. 19, half a mile north of Eminence, Shannon County, and 1 mile below Mahans Creek.

DRAINAGE AREA.—About 376 square miles (measured on soil-survey maps).

RECORDS AVAILABLE.—October 18, 1921, to September 30, 1927.

EQUIPMENT.—Chain gage on bridge. Discharge measurements made from bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of sand and gravel. Right bank high. Left bank is overflowed at stage of 16 feet. Control is coarse gravel bar 300 feet below gage; fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 8.80 feet at 12.30 p. m. June 2 (discharge, 10,900 second-feet); minimum discharge, 120 second-feet October 26.

1921–1927: Maximum stage recorded, 10.0 feet February 1, 1923 (discharge, 12,200 second-feet); minimum discharge, 86 second-feet September 1 and 6–11, 1925.

DIVERSIONS AND REGULATION.—No diversions. Natural regulation through large springs.

ACCURACY.—Stage-discharge relation changed during high water April 15; not affected by ice. Rating curve used October 1 to April 15 well defined below 5,000 second-feet by 10 discharge measurements, 1 of which was made during the period; curve extended above 5,000 second-feet. Curve used after April 15 defined by four discharge measurements and shape of previous curve. Gage read to hundredths once daily during low stages and twice daily during high stages. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

Daily discharge, in second-feet, of Jacks Fork at Eminence, Mo., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	554	675	283	338	1,040	283	5,240	1,040	7,500	462	302	376
2	357	484	250	338	1,200	283	2,370	970	8,970	462	302	376
3	266	302	250	320	1,120	266	1,450	900	5,410	439	338	727
4	250	338	250	357	970	250	1,040	836	2,850	419	419	727
5	376	283	234	338	836	250	970	836	2,370	376	419	554
6	507	250	234	302	780	250	836	8,220	1,450	357	376	462
7	338	234	234	283	626	250	1,040	3,510	1,280	357	376	439
8	266	250	218	266	577	302	1,830	1,930	1,120	338	1,360	395
9	218	204	234	283	530	338	1,930	1,630	970	338	3,650	395
10	204	189	218	250	462	320	2,250	3,650	900	338	1,280	338
11	204	204	234	218	462	320	2,130	2,030	836	338	900	338
12	204	178	320	218	439	577	1,930	1,450	780	338	727	320
13	234	178	320	250	439	970	3,090	1,200	780	338	626	302
14	189	204	320	357	439	780	8,590	1,040	780	395	1,450	302
15	178	3,370	218	602	554	626	8,040	900	675	376	4,910	283
16	167	1,360	218	462	507	530	5,240	780	626	376	1,540	266
17	152	900	218	439	484	507	2,970	780	602	376	1,200	266
18	152	780	167	484	395	727	5,580	675	900	338	2,610	266
19	143	780	162	970	419	2,130	10,100	836	780	320	1,040	266
20	152	602	204	900	376	1,450	5,920	900	727	320	900	266
21	143	554	234	780	376	1,730	3,090	675	1,450	338	780	250
22	138	507	320	1,040	376	1,280	2,130	780	2,370	376	675	250
23	134	439	357	1,930	357	970	1,730	1,280	1,280	338	602	250
24	152	419	395	1,360	338	675	1,450	1,040	970	320	554	250
25	138	395	462	1,450	320	675	1,360	5,070	727	302	507	234
26	120	357	395	1,540	320	626	1,200	2,370	626	302	507	234
27	138	439	376	1,630	283	530	1,120	1,450	675	302	462	266
28	138	320	395	1,280	266	484	1,040	1,200	577	266	439	320
29	162	338	320	1,120	-------	554	970	1,450	507	266	419	338
30	1,540	302	320	1,360	-------	780	970	1,280	507	302	419	338
31	970	-------	320	1,360	-------	780	-------	970	-------	357	419	------

Monthly discharge of Jacks Fork at Eminence, Mo., for the year ending September 30, 1927

[Drainage area, 376 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	1,540	120	287	0.763	0.88
November	3,370	178	528	1.40	1.56
December	462	162	280	.745	.86
January	1,930	218	736	1.96	2.26
February	1,200	266	546	1.45	1.51
March	2,130	250	661	1.76	2.03
April	10,100	836	2,920	7.77	8.67
May	8,220	675	1,670	4.44	5.12
June	8,970	507	1,670	4.44	4.95
July	462	266	351	.934	1.08
August	4,910	302	984	2.62	3.02
September	727	234	346	.920	1.03
The year	10,100	120	912	2.43	32.97

BIG SPRING NEAR VAN BUREN, MO.

LOCATION.—In sec. 6, T. 26 N., R. 1 E., 1,000 feet above mouth of Spring Branch and 4 miles southeast of Van Buren, Carter County.

RECORDS AVAILABLE.—January 8 to June 30, 1922, and April 1, 1923, to September 30, 1927.

EQUIPMENT.—Vertical staff gage bolted to face of large rock on right bank of Spring Branch, 150 feet below outlet of spring. Zero of gage is 429.8 feet above mean sea level. Discharge measurements made from wagon bridge 500 feet below gage or by wading.

CHANNEL AND CONTROL.—Bed composed of sand and gravel; fairly permanent. Moderate growth of moss and weeds in channel. Gravel bar 400 feet below gage somewhat controls low flow. Stage-discharge relation is affected part of the time by backwater from Current River.

EXTREMES OF DISCHARGE.—Maximum discharge during year estimated at 1,000 second-feet during backwater from Current River in June; minimum discharge, 278 second-feet October 17–28.

1922–1927: Maximum discharge, that of June, 1927; minimum discharge, 268 second-feet September 17–24, 1926.

DIVERSIONS AND REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent during year; affected by backwater from Current River whenever river was above gage height 3.0 feet at Van Buren. Rating curve fairly well defined. Gage read to hundredths once daily. Daily discharge ascertained by shifting-control method based on three discharge measurements; allowance made for backwater October 30, 31, November 1 and 15–21. Records fair.

Daily discharge, in second-feet, of Big Spring near Van Buren, Mo., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	July	Aug.	Sept.
1	322	521	384	397		411	854	521	610
2	322	504	371	384		397	815	521	586
3	322	425	371	397		397	778	670	586
4	334	397	358	384		397	740	610	705
5	346	371	346	371		397	740	561	640
6	358	371	346	371		397	705	561	586
7	346	397	334	371		397	670	561	586
8	322	411	334	371		397	670		561
9	311	425	334	358		411	640		561
10	300	384	334	346	778	411	640		541
11	300	358	346	346	705	470	640		541
12	300	346	334	334	670		640		521
13	289	334	334	334	640		610		521
14	289	358	322	346	610		640		521
15	289	411	322	346	610		670		504
16	289	466	322		610		640		504
17	278	521	322		610		613		504
18	278	541	322		561		586		504
19	278	561	334		541		586		486
20	278	541	346		521		586		486
21	278	521	371		521		586		486
22	278	541	384		504		561		470
23	278	504	397		486		561		470
24	278	470	397		470		561	854	470
25	278	440	397		470		561	815	470
26	278	454	411		454		541	740	454
27	278	440	425		425		541	722	454
28	278	425	411		425		541	705	465
29	289	411	397				521	670	477
30	300	397	397				521	640	486
31	454		397				521	640	

NOTE.—Gage not read or stage-discharge relation seriously affected by backwater for periods for which no records are given. Discharge interpolated Nov. 16, July 16, Aug. 27, Sept. 28 and 29.

Monthly discharge of Big Spring near Van Buren, Mo., for the year ending September 30, 1927

Month	Discharge in second-feet			Month	Discharge in second-feet		
	Maximum	Minimum	Mean		Maximum	Minimum	Mean
October	454	278	304	February 10–28	778	425	558
November	561	334	442	March 1–11	470	397	407
December	425	322	361	July	854	521	628
January 1–15	397	334	364	September	705	454	525

ELEVEN POINT RIVER NEAR BARDLEY, MO.

LOCATION.—In NW. ¼ sec. 20, T. 23 N., R. 2 W., Oregon County, at bridge on State highway No. 42, 7 miles southwest of Bardley, Ripley County, and 7 miles above Fredericks Fork.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—October 22, 1921, to September 30, 1927.

EQUIPMENT.—Chain gage on upstream side of bridge. Discharge measurements made from bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of sand, gravel, and some outcropping rock. Right bank high. Left bank is overflowed at stage of 13 feet. Low-water control is gravel bar 300 feet below gage; practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage during year determined from levels to high-water mark, 18.74 feet at 6 p. m. April 14 (discharge, 27,800 second-feet); minimum stage, 1.40 feet at 8 a. m. October 23 (discharge, 307 second-feet).

1921–1927: maximum stage, that of April 14, 1927; minimum stage, 1.06 feet September 6–11, 1925 (discharge, 210 second-feet).

Flood of August, 1915, reached stage of 19.7 feet, determined from levels to high-water marks.

DIVERSIONS AND REGULATION.—No diversions. Natural regulation through large springs.

ACCURACY.—Stage-discharge relation permanent during year; not affected by ice. Rating curve well defined below 10,000 second-feet by nine discharge measurements, three of which were made during current year; extended above 10,000 second-feet. Gage read to hundredths once daily during low stages and twice daily during high stages. Daily discharge ascertained by applying mean daily gage height to rating table. Records good for discharge below 10,000 second-feet and fair for discharge above.

Daily discharge, in second-feet, of Eleven Point River near Bardley, Mo., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	375	785	575	730	1,720	845	2,860	2,160	6,860	1,580	1,230	1,030
2	346	730	552	730	1,720	730	2,160	2,080	6,440	1,510	1,160	1,030
3	332	675	552	702	1,650	730	1,860	2,000	5,800	1,440	1,160	1,030
4	346	625	530	675	1,580	702	1,440	3,060	4,600	1,440	1,160	1,030
5	405	575	530	675	1,580	675	1,580	4,840	3,260	1,440	1,100	1,030
6	405	552	510	650	1,510	675	1,510	5,560	2,770	1,440	1,100	1,030
7	390	530	490	625	1,440	702	1,440	3,760	2,500	1,440	1,100	1,030
8	375	510	490	600	1,300	675	1,860	2,960	2,320	1,440	1,860	1,030
9	360	552	510	575	1,230	675	2,320	2,680	2,160	1,370	1,650	965
10	360	575	530	552	1,160	675	4,120	3,260	2,080	1,300	1,440	965

Daily discharge, in second-feet, of Eleven Point River near Bardley, Mo., for the year ending September 30, 1927—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
11	360	530	490	530	1,160	675	3,560	2,860	2,000	1,300	1,300	965
12	332	510	530	510	1,160	845	3,060	2,000	1,860	1,300	1,230	965
13	332	490	575	552	1,100	1,100	8,160	2,240	2,860	1,300	1,230	965
14	332	490	530	530	1,100	1,100	19,900	2,080	2,500	1,300	1,580	965
15	332	1,100	490	530	1,100	965	12,500	2,000	1,860	1,650	1,860	905
16	332	1,030	472	552	1,030	965	10,100	1,930	1,790	1,300	1,510	905
17	320	1,030	455	575	1,030	965	5,080	1,860	1,720	1,300	1,440	905
18	320	1,160	455	575	965	3,260	7,140	1,860	2,000	1,300	2,160	905
19	320	1,030	455	650	965	2,860	10,700	1,860	1,860	1,230	1,720	905
20	320	965	455	785	965	2,160	7,280	1,860	1,790	1,230	1,580	905
21	320	905	730	1,030	905	2,000	4,600	1,790	3,660	1,230	1,440	905
22	307	845	730	1,440	905	1,100	3,660	1,860	4,360	1,160	1,370	905
23	307	785	785	4,120	845	1,100	3,360	2,160	2,320	1,160	1,300	905
24	332	702	785	4,120	845	1,580	2,960	2,160	2,000	1,160	1,230	905
25	332	675	730	3,460	845	1,440	2,770	2,080	1,930	1,160	1,230	845
26	332	675	702	2,960	785	1,300	2,590	2,680	1,790	1,160	1,160	845
27	320	675	675	2,500	785	1,300	2,500	2,240	1,720	1,100	1,160	905
28	320	650	702	2,320	845	1,230	2,320	2,160	1,720	1,100	1,160	905
29	390	625	702	2,160	-------	1,160	2,240	2,680	1,580	1,100	1,160	905
30	1,100	600	730	2,000	-------	1,100	2,320	2,160	1,580	2,000	1,100	2,860
31	905	-------	730	1,720	-------	1,160	-------	2,000	-------	1,300	1,100	------

Monthly discharge of Eleven Point River near Bardley, Mo., for the year ending September 30, 1927

Month	Discharge in second-feet			Month	Discharge in second-feet		
	Maximum	Minimum	Mean		Maximum	Minimum	Mean
October	1,100	307	386	May	5,560	1,790	2,480
November	1,160	490	719	June	6,860	1,580	2,720
December	785	455	586	July	2,000	1,100	1,330
January	4,120	510	1,290	August	2,160	1,100	1,350
February	1,720	785	1,150	September	2,860	845	1,010
March	3,260	675	1,180				
April	19,900	1,440	4,600	The year	19,900	307	1,560

GREER SPRING AT GREER, MO.

LOCATION.—In SE. ¼ SW. ¼ sec. 36, T. 25 N., R. 4 W., 500 feet below lower outlet of spring and 1 mile north of Greer, Oregon County.

RECORDS AVAILABLE.—August 10 to December 31, 1904, and November 18, 1921, to September 30, 1927.

EQUIPMENT.—Vertical staff gage fastened to tree on right bank. Discharge measurements made by wading 500 feet below gage.

CHANNEL AND CONTROL.—Bed composed of coarse gravel and boulders. Vegetation grows in channel. Control is section of boulders and rocks just below gage; fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 1.43 feet May 26 (discharge, 903 second-feet); minimum discharge, 218 second-feet October 1.

1921–1927: Maximum discharge, that of May 26, 1927; minimum discharge, 151 second-feet August 19, 1925.

DIVERSIONS AND REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent during year; not affected by ice. Rating curve fairly well defined by six discharge measurements. Gage read to hundredths three times a week. Daily discharge ascertained by shifting-control method on basis of four discharge measurements; interpolated for days on which gage was not read. Records fair.

Daily discharge, in second-feet, of Greer Spring at Greer, Mo., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	218	352	366	335	512	388	508	714	882	777	556	534
2	221	355	360	331	512	383	545	714	890	764	549	523
3	224	357	352	327	512	377	572	722	872	705	541	512
4	226	360	344	327	501	386	600	731	853	646	534	492
5	230	368	327	327	490	394	619	739	859	627	556	471
6	233	377	310	327	480	386	638	739	865	608	578	471
7	237	368	321	336	471	377	657	739	861	589	567	471
8	237	360	333	344	461	371	717	726	857	562	556	471
9	237	335	344	348	452	366	777	714	853	534	556	461
10	298	310	327	352	442	360	777	706	853	534	556	452
11	237	352	310	358	428	377	777	799	853	534	556	452
12	237	348	310	363	413	394	781	691	866	534	545	452
13	237	344	310	369	413	404	786	691	878	534	534	452
14	237	369	310	373	413	413	790	691	882	534	534	452
15	240	394	310	377	407	423	784	715	886	523	534	452
16	243	400	310	410	400	432	777	739	890	512	549	462
17	234	407	310	442	394	442	770	739	890	534	563	471
18	226	413	310	452	394	456	764	739	890	556	578	452
19	230	404	318	461	394	471	768	739	890	563	578	432
20	233	394	327	471	394	492	773	764	890	571	578	432
21	237	394	327	492	394	512	777	790	882	578	578	432
22	232	394	327	512	400	505	784	828	873	578	578	432
23	226	394	327	528	407	497	790	865	865	578	585	437
24	237	394	318	545	413	490	777	878	852	567	593	442
25	248	394	310	545	413	490	764	890	840	556	600	437
26	258	404	318	545	413	490	755	903	834	541	600	432
27	269	413	327	545	404	490	747	884	827	527	600	435
28	279	395	321	540	394	490	739	865	815	512	578	439
29	294	377	316	534	-------	484	691	865	802	512	556	442
30	310	371	310	523	-------	477	714	865	790	512	549	437
31	331	-------	322	512	-------	471	-------	873	-------	534	541	-------

Monthly discharge of Greer Spring at Greer, Mo., for the year ending September 30, 1927

Month	Discharge in second-feet			Month	Discharge in second-feet		
	Maximum	Minimum	Mean		Maximum	Minimum	Mean
October	331	218	246	May	903	691	776
November	413	310	377	June	890	790	861
December	366	310	324	July	777	512	572
January	545	327	427	August	600	534	563
February	512	394	433	September	534	432	458
March	512	360	435				
April	790	508	724	The year	903	218	516

ARKANSAS RIVER BASIN

ARKANSAS RIVER AT GRANITE, COLO.

LOCATION.—In sec. 31, T. 11 S., R. 79 W., at Granite, Lake County, below mouth of Lake Creek and above Lost Canyon and Clear Creeks.

DRAINAGE AREA.—431 square miles (measured on topographic map).

RECORDS AVAILABLE.—May 1, 1897, to September 10, 1899; April 6, 1910, to September 30, 1927.

EQUIPMENT.—Water-stage recorder on right bank 200 feet below highway bridge at Granite. Discharge measurements made from highway bridge near railroad station or by wading.

CHANNEL AND CONTROL.—Bed composed of coarse gravel and small boulders. Control shifting. Banks not subject to overflow.

EXTREMES OF DISCHARGE.—Maximum stage during year, from water-stage recorder, 3.99 feet at 2 a. m. June 29 (discharge, 1,880 second-feet); minimum discharge occurred during winter.

1910–1927: Maximum discharge, 2,900 second-feet June 16, 1924; minimum discharge recorded, 11 second-feet on March 15, 1918.

DIVERSIONS AND REGULATION.—Water diverted from Arkansas River for irrigation of 1,800 acres between this station and junction of Tennessee and East Forks. Discharge affected by operation of Twin Lakes Reservoir, which has a storage decree for 54,450 acre-feet.

COOPERATION.—Complete records furnished by State engineer.

Daily discharge, in second-feet, of Arkansas River at Granite, Colo., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	128	115	119	------	------		107	471	1,060	1,400	365	197
2	130	117	112	------	74		132	487	1,080	1,430	439	195
3	130	123	112	59	------		132	558	1,080	1,300	444	287
4	130	110	117	------	------		123	848	1,080	1,240	356	254
5	130	105	119	------	------		119	848	1,090	1,240	333	264
						95						
6	139	114	119	------	------		123	802	1,050	1,170	342	257
7	124	123	124	------	------		128	879	1,190	1,120	409	419
8	124	112	128	------	------		143	910	1,300	1,060	487	419
9	128	107	117	------	------		135	832	1,300	1,060	658	578
10	126	110	110	------	------		143	832	1,390	1,300	460	617
11	123	107		------	------		141	685	1,420	1,180	404	604
12	112	112		------	------		126	617	1,440	1,340	380	272
13	107	121		------	------		117	598	1,430	1,510	342	279
14	108	115		------	------		108	631	1,440	1,430	320	244
15	110	119		------	------		110	658	1,480	1,290	306	279
			80			90						
16	115	108		------	------		115	742	1,110	1,160	287	311
17	119	110		------	------		114	856	1,330	1,150	268	337
18	117	92		------	------		121	1,020	1,380	1,140	320	324
19	112	114		------	------		132	1,000	1,370	1,050	365	324
20	137	117		------	------		152	1,020	1,310	871	380	320
21	174	119		------	------	95	146	1,090	1,280	772	375	275
22	174	114		------	------	98	135	1,170	1,220	742	365	244
23	174	110		------	------	100	146	1,160	1,190	434	439	247
24	150	114		------	------	110	160	1,110	1,330	389	449	257
25	110	122		------	------	120	182	1,090	1,380	565	429	279
			60									
26	105	122		------	------	144	230	1,130	840	735	455	294
27	110	134		------	------	130	287	1,110	1,160	728	429	294
28	110	123		------	------	134	294	1,120	1,750	638	471	257
29	115	112		------	------	136	294	1,120	1,820	534	399	240
30	115	115		------	------	139	414	1,050	1,600	471	365	257
31	114	------		------	------	117	------	1,020	------	404	287	------

NOTE.—Braced figures show mean discharge for periods indicated.

Monthly discharge of Arkansas River at Granite, Colo., for the year ending September 30, 1927

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	174	105	126	7,750
November	134	92	115	6,840
December	128	60	85	5,230
January	----------	----------	65	4,000
February	----------	----------	72	4,000
March	144	90	102	6,270
April	414	107	160	9,520
May	1,170	471	886	54,500
June	1,820	840	1,300	77,400
July	1,510	389	995	61,200
August	658	268	391	24,000
September	617	195	314	18,700
The year	1,820	----------	386	279,000

ARKANSAS RIVER AT SALIDA, COLO.

LOCATION.—In sec. 32, T. 50 N., R. 9 E., at Salida, Chaffee County, some distance above mouth of South Fork of Arkansas River, the nearest large tributary.

DRAINAGE AREA.—1,210 square miles (measured on base map of Colorado).

RECORDS AVAILABLE.—April 11, 1895, to October 31, 1903; November 3, 1909, to September 30, 1927.

EQUIPMENT.—Water-stage recorder on right bank in City Park 400 feet below highway bridge. Discharge measurements made from highway bridge.

CHANNEL AND CONTROL.—Bed composed of coarse gravel; shifts at intervals. No well-defined control. Banks not subject to overflow.

EXTREMES OF DISCHARGE.—Maximum stage during year, from water-stage recorder, 6.51 feet at 7 a. m. June 29 (discharge, 3,780 second-feet); minimum discharge, 215 second-feet on February 14.

1909–1927: Maximum stage recorded, 7.2 feet June 16, 1924 (discharge, 5,100 second-feet); minimum discharge recorded, 155 second-feet January 28, 1915.

DIVERSIONS AND REGULATION.—Water diverted from Arkansas River between Granite and Salida for irrigation of 2,800 acres. Flow at station regulated to some extent by Twin Lakes and Clear Creek Reservoirs, which have storage decrees for 54,450 and 11,500 acre-feet respectively.

COOPERATION.—Complete records furnished by State engineer.

Daily discharge, in second-feet, of Arkansas River at Salida, Colo., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	277	293	290	253	233	228	268	645	1,630	2,340	554	435
2	280	296	280	256	228	220	268	688	1,700	2,280	599	367
3	286	286	286	259	230	217	280	688	1,700	2,140	682	356
4	296	293	286	253	230	225	283	1,030	1,680	2,010	574	488
5	296	280	286	253	230	222	280	1,170	1,740	2,020	507	484
6	296	286	280	244	233	225	262	1,090	1,790	1,890	498	484
7	286	280	286	247	228	222	268	1,120	1,920	1,840	526	479
8	280	280	290	244	230	228	280	1,180	2,210	1,760	609	609
9	283	277	286	244	225	236	286	1,100	2,230	1,680	834	677
10	274	277	277	236	225	244	283	1,000	2,330	2,030	731	822
11	271	277	274	239	222	247	277	960	2,370	1,900	698	896
12	274	280	277	236	222	230	271	822	2,400	1,840	704	909
13	274	286	274	230	217	230	259	776	2,360	2,160	645	614
14	268	280	244	230	215	253	236	817	2,340	2,030	584	574
15	271	274	233	236	217	268	230	941	2,510	1,930	574	559
16	274	277	230	242	222	262	236	1,100	2,270	1,760	554	609
17	277	265	230	236	230	228	236	1,350	1,680	1,650	526	650
18	277	265	239	233	222	236	236	1,570	2,320	1,600	516	661
19	274	283	239	230	217	244	244	1,640	2,310	1,630	619	640
20	271	299	244	228	222	225	256	1,580	2,180	1,380	635	614
21	290	302	236	230	225	225	250	1,680	2,150	1,310	604	599
22	271	302	233	233	230	236	239	1,810	2,080	1,320	574	526
23	306	296	233	236	222	244	253	1,790	2,010	947	599	545
24	277	312	230	230	217	239	274	1,650	2,180	682	671	545
25	283	330	228	228	220	268	283	1,610	2,270	682	671	569
26	271	330	233	228	222	306	359	1,730	2,230	1,120	688	619
27	265	341	233	230	236	274	435	1,700	1,990	1,110	754	635
28	262	326	233	225	230	283	457	1,690	3,000	1,120	776	624
29	265	286	233	233	-------	286	435	1,770	3,480	909	799	584
30	274	283	220	228	-------	296	530	1,650	3,050	788	688	594
31	265	-------	250	222	-------	296	-------	1,580	-------	640	656	-------

Monthly discharge of Arkansas River at Salida, Colo., for the year ending September 30, 1927

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	306	262	278	17,100
November	341	265	291	17,300
December	290	220	255	15,700
January	259	222	237	14,600
February	236	215	225	12,500
March	306	217	247	15,200
April	530	230	292	17,400
May	1,810	645	1,290	79,300
June	3,480	1,630	2,200	131,000
July	2,340	640	1,560	95,900
August	834	498	634	39,000
September	909	356	592	35,200
The year	3,480	215	677	490,000

ARKANSAS RIVER AT CANON CITY, COLO.

LOCATION.—Just below Hot Springs Hotel at mouth of canyon and 1 mile above Canon City, Fremont County. Nearest important tributary, Grape Creek, enters some distance above.

DRAINAGE AREA.—3,090 square miles (measured on base map of Colorado).

RECORDS AVAILABLE.—May 1, 1888, to September 30, 1927.

EQUIPMENT.—Water-stage recorder. Discharge measurements made from car and cable.

CHANNEL AND CONTROL.—Bed composed of gravel; very shifting. No well-defined control.

EXTREMES OF DISCHARGE.—Maximum stage during year, from water-stage recorder, 6.0 feet at 10 p. m. June 25 (discharge, 7,940 second-feet); minimum discharge, 214 second-feet on October 1.

1888–1927: Maximum stage recorded, 10.7 feet at 8 p. m. August 2, 1921 (discharge, 19,000 second-feet); minimum discharge, 108 second-feet on April 10, 1897.

DIVERSIONS AND REGULATION.—South Canon and Canon City Hydraulic & Irrigation Co.'s ditches, Canon City pipe line, and Southern Colorado Power Co.'s water supply for steam plant divert water above gaging station. Flow regulated to slight extent by operation of reservoirs on headwaters.

COOPERATION.—Complete records furnished by State engineer.

Daily discharge, in second-feet, of Arkansas River at Canon City, Colo., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	214	305	362	310	275	305	522	582	1,600	2,760	660	568
2	219	326	352	300	280	326	405	667	1,690	2,460	682	405
3	228	331	320	315	275	310	411	704	1,750	2,340	775	405
4	237	326	315	331	251	326	428	775	1,710	2,180	767	394
5	260	326	320	326	251	310	394	1,070	1,680	2,140	784	468
6	275	305	336	310	242	300	362	1,080	1,750	2,030	674	468
7	265	305	331	300	242	300	341	1,030	1,820	1,900	689	445
8	246	305	336	280	270	305	326	1,110	2,030	1,860	735	457
9	246	295	336	265	270	320	320	1,130	2,200	1,830	943	588
10	251	300	315	246	275	373	300	1,120	2,180	1,970	1,160	667
11	255	315	305	280	295	373	290	982	2,260	1,970	870	750
12	246	331	315	295	320	326	300	888	2,260	1,800	834	775
13	242	331	295	275	310	320	285	826	2,440	2,070	742	750
14	242	331	255	280	280	336	275	800	2,290	2,110	682	602
15	228	300	255	285	275	373	265	897	2,520	2,030	638	575

Daily discharge, in second-feet, of Arkansas River at Canon City, Colo., for the year ending September 30, 1927—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
16	228	295	251	305	280	416	260	991	2,700	1,800	624	588
17	246	336	270	285	315	367	255	1,230	1,940	1,670	588	631
18	255	341	280	270	320	373	237	1,450	2,260	1,640	568	689
19	246	389	300	265	315	389	237	1,680	2,460	1,630	609	682
20	242	394	300	280	305	310	242	1,600	2,350	1,450	682	660
21	237	384	295	305	315	326	251	1,640	2,290	1,320	674	631
22	280	373	265	300	336	362	237	1,850	2,160	1,430	667	588
23	290	357	295	295	320	389	232	1,870	2,110	1,310	631	561
24	275	357	280	280	305	357	242	1,760	2,060	897	682	575
25	270	394	223	280	285	373	251	1,660	2,450	834	660	575
26	232	405	228	280	285	394	280	1,730	2,230	962	652	652
27	223	405	246	295	295	498	384	1,830	1,890	1,160	720	689
28	214	462	265	295	326	609	462	1,790	2,580	1,360	727	720
29	219	378	251	285	-------	767	474	1,730	3,380	1,260	784	674
30	275	357	270	260	-------	826	468	1,670	3,300	897	750	767
31	290	-------	315	265	-------	735	-------	1,590	-------	735	638	------

Monthly discharge of Arkansas River at Canon City, Colo., for the year ending September 30, 1927

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	290	214	248	15,200
November	462	295	345	20,500
December	362	223	293	18,000
January	331	246	288	17,700
February	336	242	290	16,100
March	826	300	400	24,600
April	522	232	325	19,300
May	1,870	582	1,280	78,700
June	3,380	1,600	2,210	132,000
July	2,760	735	1,670	103,000
August	1,160	568	719	44,200
September	775	394	600	35,700
The year	3,380	214	725	525,000

ARKANSAS RIVER NEAR PUEBLO, COLO.

LOCATION.—In sec. 34, T. 20 S., R. 65W., at south side water-works dam, 2½ miles west of Pueblo, Pueblo County. Nearest tributary, Dry Creek, enters 1 mile below.

DRAINAGE AREA.—4,730 square miles (measured on base map of Colorado).

RECORDS AVAILABLE.—May 26, 1925, to September 30, 1927. May 1, 1885, to September 30, 1886; September 19, 1894, to May 25, 1925, for station near Main Street bridge in Pueblo. Except run-off in Dry Creek following infrequent heavy rains, discharge at two points comparable. From June 1 to September 30, 1887, and May 1 to August 31, 1889, station maintained at point 9 miles above Pueblo.

EQUIPMENT.—Water-stage recorder on right wing wall of dam 20 feet upstream from crest. Discharge measurements made by wading 200 feet below dam and during high stages from Denver & Rio Grande Western Railroad bridge just above Dry Creek and half a mile below dam.

CHANNEL AND CONTROL.—Bed composed of sand. Control formed by dam. Stage-discharge relation affected during low water by intake canal for water-works.

EXTREMES OF DISCHARGE.—Maximum stage during year, from water-stage recorder, 6.40 feet at noon July 22 (discharge, 12,400 second-feet); minimum discharge, 117 second-feet on April 26.

1894–1927: Maximum stage, from high-water mark, 24.66 feet at midnight June 3, 1921 (discharge estimated at 100,000 second-feet); minimum discharge, 25 second-feet on September 11, 1908.

DIVERSIONS AND REGULATION.—Water diverted from Arkansas River between Canon City and Pueblo for irrigation of 23,000 acres. Flow regulated to a slight extent by operation of reservoirs on headwaters.

COOPERATION.—Complete records furnished by State engineer.

Daily discharge, in second-feet, of Arkansas River near Pueblo, Colo., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	189	304	323	462	166	250	496	280	1,540	2,690	454	636
2	185	304	323	454	166	250	344	416	1,570	2,200	1,170	488
3	181	298	298	439	173	222	316	416	1,600	2,050	1,970	401
4	196	316	323	401	173	217	304	454	1,520	1,940	3,880	365
5	200	310	304	372	177	177	358	680	1,460	1,780	807	409
6	217	310	298	365	177	228	298	807	1,560	1,760	646	432
7	228	304	298	292	185	250	262	646	1,590	1,590	1,520	394
8	239	310	310	274	185	250	274	831	1,700	1,730	1,500	330
9	211	298	323	256	211	239	262	1,030	1,870	1,700	1,140	416
10	170	268	292	262	192	262	239	940	1,810	1,670	1,860	531
11	159	274	245	280	200	286	245	831	2,150	1,750	880	617
12	156	286	274	286	192	310	222	724	2,290	1,600	819	691
13	130	298	256	262	196	286	222	626	2,410	2,000	880	680
14	143	310	228	304	170	228	211	646	2,290	1,860	736	531
15	146	351	256	292	166	245	185	691	2,340	1,680	646	531
16	143	379	268	316	177	286	185	782	2,580	1,750	607	531
17	159	351	280	351	185	330	170	964	2,050	1,590	577	558
18	166	351	292	286	222	268	170	1,310	1,750	1,570	558	607
19	170	351	298	274	228	262	156	1,540	2,250	1,460	522	636
20	185	439	298	262	211	292	152	1,560	2,240	1,360	636	636
21	181	439	330	274	200	286	143	1,390	2,080	1,130	713	568
22	189	401	323	304	217	304	140	1,560	2,070	2,230	1,000	539
23	217	401	316	351	217	304	127	1,730	1,910	1,930	691	462
24	234	386	262	323	211	268	133	1,680	1,840	1,110	587	462
25	250	401	228	286	192	250	133	1,480	2,020	736	505	531
26	245	454	256	268	196	262	117	1,350	3,980	668	447	702
27	200	447	286	262	196	344	149	1,450	2,050	1,010	548	807
28	196	447	292	245	217	479	211	1,450	2,080	1,260	996	843
29	211	479	292	206	------	657	262	1,420	2,980	1,980	1,290	770
30	280	344	316	206	------	807	250	1,500	3,280	747	1,170	1,000
31	280	------	334	196	------	724	------	1,500	------	548	782	------

Monthly discharge of Arkansas River near Pueblo, Colo., for the year ending September 30, 1927

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	280	130	195	12,000
November	479	268	354	21,100
December	334	228	291	17,900
January	462	196	304	18,700
February	228	166	193	10,700
March	807	177	317	19,500
April	496	117	225	13,400
May	1,730	280	1,050	64,600
June	3,980	1,460	2,100	125,000
July	2,690	548	1,580	97,200
August	3,880	447	985	60,600
September	1,000	330	570	33,900
The year	3,980	117	683	495,000

ARKANSAS RIVER AT HOLLY, COLO.

LOCATION.—Between secs. 14 and 15, T. 23 S., R. 42 W., at highway bridge half a mile south of Holly, Prowers County. Nearest tributary, Wild Horse Creek, an intermittent tributary, enters 1 mile downstream.

DRAINAGE AREA.—25,000 square miles (measured on base map of Colorado).

RECORDS AVAILABLE.—October 15, 1907, to September 30, 1927.

EQUIPMENT.—Water-stage recorder on upstream side of bridge. Discharge measurements made from highway bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of sand and gravel; shifting. No well-defined control.

EXTREMES OF DISCHARGE.—Maximum stage during year, from water-stage recorder, 7.04 feet August 4 (discharge, 24,900 second-feet); minimum discharge, 1 second-foot during part of October, November, May, June, and July.

1907–1927: Maximum stage recorded, 11 feet at noon, October 20, 1908 (discharge determined from slope measurements, 136,000 second-feet); minimum discharge, river dry.

DIVERSIONS.—Water diverted from Arkansas River between Pueblo and Holly for irrigation of 300,000 acres.

COOPERATION.—Complete records furnished by State engineer.

The total flow of Arkansas River at the State line is obtained by adding the discharge of Arkansas River at Holly, Wild Horse Creek near Holly, Colo., and Holly drain near Coolidge, Kans.

Daily discharge, in second-feet, of Arkansas River at Holly, Colo., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1	1	10	100	390	10	27	17	1	1	7,420	508
2	1	2	11	100	255	38	26	13	2	1	9,780	532
3	1	2	10	110	237	93	22	12	2	1	8,940	548
4	1	2	9	130	188	228	24	13	1	1	19,830	485
5	1	2	24	150	125	76	26	13	3	1	12,500	287
6	1	3	24	115	151	51	24	15	3	1	6,290	448
7	1	3	44	104	65	36	20	10	2	1	2,590	315
8	1	3	51	82	87	21	35	12	2	1	2,070	222
9	1	3	109	69	104	29	26	8	1	1	10,190	144
10	1	4	62	36	195	35	26	10	1	1	8,780	123
11	1	3	98	35	76	51	21	7	1	424	12,580	118
12	1	3	340	26	125	219	12	6	4	58	4,670	113
13	1	3	158	24	87	136	13	5	4	12	2,460	110
14	1	5	112	17	58	282	26	5	5	5,160	2,460	110
15	2	7	100	54	65	130	19	5	4	2,870	1,260	71
16	1	5	92	62	93	87	12	6	5	1,360	768	86
17	1	6	92	120	98	93	11	5	4	460	630	74
18	1	9	100	150	17	40	16	4	5	246	470	58
19	1	12	100	170	51	188	18	5	9	76	1,410	66
20	1	14	100	190	40	104	33	2	13	61	3,350	59
21	1	104	90	180	62	158	17	2	13	564	1,750	50
22	1	330	90	180	44	158	19	1	10	7,750	1,030	48
23	1	360	90	185	44	54	18	1	6	6,280	826	46
24	1	300	90	180	26	54	21	3	4	6,790	691	49
25	1	104	90	180	12	44	17	1	4	3,380	524	42
26	1	31	90	180	16	31	15	1	3	1,800	1,540	45
27	2	47	90	250	8	31	12	1	2	1,300	1,140	50
28	1	11	90	424	5	33	18	2	1	1,350	923	53
29	1	12	90	496	-------	33	16	1	1	7,120	670	86
30	2	10	90	360	-------	33	12	1	1	8,940	485	86
31	1	-------	90	380	-------	36	-------	3	-------	7,630	315	------

Monthly discharge of Arkansas River at Holly, Colo., for the year ending September 30, 1927

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	2	1	1.10	68
November	360	1	46.7	2,780
December	340	9	85.0	5,230
January	496	17	156	9,590
February	390	5	97.3	5,400
March	282	10	84.3	5,180
April	35	11	20.1	1,200
May	17	1	6.13	377
June	13	1	3.90	232
July	8,940	1	2,050	126,000
August	19,830	315	4,140	255,000
September	548	42	168	10,000
The year	19,830	1	581	421,000

ARKANSAS RIVER AT SYRACUSE, KANS.

LOCATION.—In NW. ¼ sec. 18, T. 24 S., R. 40 W., at highway bridge half a mile south of Syracuse, Hamilton County.

DRAINAGE AREA.—25,500 square miles (measured by State irrigation commissioner).

RECORDS AVAILABLE.—August 21, 1902, to November 30, 1905; April 1 to July 31, 1906; June 20, 1921, to September 30, 1927.

EQUIPMENT.—Water-stage recorder on downstream side of bridge pier near center of channel. Discharge measurements made from downstream side of highway bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of loose, clean sand; shifting. Control not well defined.

EXTREMES OF DISCHARGE.—Maximum stage during year, from water-stage recorder, 5.50 feet at 10 p. m. July 14 (discharge, 12,500 second-feet); minimum discharge probably less than 4 second-feet in October.

1921–1927: Maximum stage about 9.75 feet on June 6, 1921 (discharge, about 45,000 second-feet); minimum discharge, 2 second-feet in August, 1926.

1902–1906: Maximum stage recorded, 7.5 feet July 11, 1903 (discharge, 28,300 second-feet); minimum discharge, 3 second-feet in January, 1905.

DIVERSIONS AND REGULATION.—Nearly all low-water flow is diverted for irrigation upstream. Flow is regulated by storage in reservoirs in Colorado.

ACCURACY.—Stage-discharge relation not permanent; not seriously affected by ice. Rating curve used October 1 to July 8 and July 14–21 well defined between 7 and 11,000 second-feet; four discharge measurements made during the period check the curve between 20 and 6,000 second-feet. Rating curve used remainder of the year well defined by three measurements, ranging in discharge from 300 to 10,600 second-feet, and shape of previous curve. Operation of water-stage recorder satisfactory except as indicated in footnote to table of daily discharge. Daily discharge ascertained by applying to rating table mean daily gage height determined by inspection of recorder graph. Records fair.

Daily discharge, in second-feet, of Arkansas River at Syracuse, Kans., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		5	40	34	204	55	34	13	12	5	5,140	524
2		5	40	43	215	55	33	12	60	5	6,220	412
3		5	40	53	164	55	29	12	27	5	4,540	305
4		6	38	65	121	75	24	12	19	4	9,760	272
5		7	38	78	106	117	22	12	75	4	6,850	339
6		7	40	93	96	93	20	11	31	4	5,620	390
7		7	40	93	90	78	19	12	19	4	4,290	322
8		8	40	67		70	19	10	15	4	3,260	266
9	14	8	43	50		70	21	10	12	112	5,140	215
10		8		41	85	60	21	10	10	225	6,020	174
11		9		40		65	19	9	8	151	6,640	118
12		9			84	50	17	9	16	240	4,000	111
13		8	80		84	46	16	9	26	272	2,020	109
14		9			84	84	19	9	17	715	1,320	106
15		10			87	136	20	9	14	3,940	1,680	103
16		10			81	125	21	9	13	1,810	1,610	100
17		10	88			102	19	9	12	770		98
18		10	85		78	87	19	8	11	276	2,000	95
19		11				78	24	8	10	150		97
20		15		70	75	78	23	7	9	84		97
21		24	75		75	78	22	7	9	96	2,640	94
22		188			72	81	21	6	10	5,410	1,810	87
23		132			67	87	19	5	10	10,100	1,090	82
24		125			65	84	19	5	10	8,470	1,090	76
25		102	72		62	65	18	5	10	5,120	920	74
26		70			58	50	18	5	9	3,450	1,000	90
27		53			58	45	17	5	8	2,470	1,430	95
28		48	70		58	41	15	5	7	2,080	920	95
29		45				40	15	5	6	5,610	1,090	98
30	4	41		169		38	14	5	5	8,320	760	114
31	5			169		38		5		7,680	620	

NOTE.—No gage-height record Oct. 1–8, 10–29, Dec. 10–16, 19–24, 26–31, Jan. 12–29, Feb. 8–11, 17–19, and Aug. 17–20; discharge based on engineer's notes, discharge measurements, and climatic records. Braced figures show estimated mean discharge for periods indicated.

Monthly discharge of Arkansas River at Syracuse, Kans., for the year ending September 30, 1927

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October			6	369
November	188	5	33.2	1,980
December			65.6	4,030
January	169		72.7	4,470
February	215	58	92.1	5,120
March	136	38	71.8	4,410
April	34	14	20.6	1,230
May	13	5	8.3	510
June	75	5	16.7	994
July	10,100	4	2,180	134,000
August	9,760	620	3,080	189,000
September	524	74	172	10,200
The year	10,100		493	356,000

ARKANSAS RIVER AT GARDEN CITY, KANS.

LOCATION.—In NW. ¼ sec. 19, T. 24 S., R. 32 W., at highway bridge half a mile south of Garden City, Finney County.

DRAINAGE AREA.—28,800 square miles.

RECORDS AVAILABLE.—June 21, 1922, to September 30, 1927.

EQUIPMENT.—Water-stage recorder on downstream side of concrete bridge pier near center of channel. Gage records height of underground water after surface flow ceases. Discharge measurements made from downstream side of bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of loose, clean sand and gravel; shifting. No well-defined control.

EXTREMES OF DISCHARGE.—Maximum stage during year, from water-stage recorder, 7.71 feet at 7.30 p. m. July 23 (discharge, 12,600 second-feet); minimum discharge, no flow on days in October, May, June, and July.

1922–1927: Maximum stage recorded, 7.86 feet June 18, 1923 (discharge, 19,500 second-feet); minimum discharge, no flow during several periods.

DIVERSIONS AND REGULATION.—Flow is regulated by diversion and storage of water in western Kansas and eastern Colorado for irrigation.

ACCURACY.—Stage-discharge relation not permanent; affected by ice. Rating curve used October 1 to January 27 and April 26 to July 14 well defined to 20 second-feet; checked by two discharge measurements made in November and December at low stages. Curve used indirectly January 28 to April 25 and directly July 15–29, fairly well defined to 5,000 second-feet by six measurements ranging in discharge from 2 to 4,500 second-feet. Curve used remainder of the year defined by discharge measurement of 3,900 second-feet and shape of previous curve. Water-stage recorder operated satisfactorily except as indicated in footnote to table of daily discharge. Daily discharge ascertained by applying to rating table mean daily gage height determined by inspecting recorder graph; shifting-control method used January 28 to April 30. Records fair.

Daily discharge, in second-feet, of Arkansas River at Garden City, Kans., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-------	5	8	13	51	2	10	6	-------	-------	5,070	130
2	-------	5	9	15	48	2	6	4	-------	-------	4,620	80
3	-------	5	9	16	34	4	2	3	-------	-------	3,710	48
4	-------	3	9	15	21	6	1	3	-------	-------	5,600	56
5	-------	2	9	15	8	14	1	3	4	-------	7,240	40
6	-------	2	11	16	5	14	1	4	5	-------	5,140	31
7	-------	3	11	18	4	12	6	3	6	-------	4,190	41
8	-------	4	11	18	2	8	25	1	6	-------	1,860	25
9	-------	4	11	14	2	13	13	-------	6	-------	634	19
10	-------	4	12	16	2	17	7	-------	7	-------	3,600	16
11	-------	3	12	}	7	66	3	-------	7	-------	4,120	12
12	-------	3	}		12	46	2	-------	7	-------	4,050	12
13	-------	4	10	10	20	46	7	-------	8	-------	1,980	13
14	-------	6	}		15	26	19	-------	5	-------	980	30
15	-------	4		}	14	8	12	-------	3	158	3,540	28
16	-------	4	9	}	8	10	9	-------	3	1,330	1,290	18
17	-------	4	9		5	9	6	-------	1	525	852	15
18	-------	3	9	5	7	8	21	-------	-------	}	552	12
19	-------	3	10		6	7	21	-------	-------		396	11
20	-------	4	8	}	10	6	18	-------	-------	50	319	10
21	-------	4	8	}	24	12	13	-------	-------	}	1,070	9
22	-------	4	9		29	17	9	-------	-------		1,070	10
23	-------	6	7		12	15	8	-------	-------	9,100	472	14
24	-------	7	6	}	7	11	8	-------	-------	4,330	344	12
25	-------	7	}	3	3	8	6	-------	-------	4,300	370	9
26	-------	11	5	}	3	5	8	-------	-------	2,020	331	14
27	-------	12	}		3	6	6	-------	-------	2,220	279	12
28	-------	9		11	2	18	6	-------	-------	599	516	11
29	-------	8	5	19	-------	14	6	-------	-------	410	390	10
30	1	8	6	27	-------	12	6	-------	-------	4,920	325	10
31	4	-------	9	30	-------	11	-------	-------	-------	5,290	156	------

NOTE.—Stage-discharge relation affected by ice Dec. 12–15, 25–28, and Jan. 11–27; discharge based on temperature records, gage-height records, and engineer's notes. No gage-height record for period July 18–22. Braced figures show mean discharge for periods indicated.

Monthly discharge of Arkansas River at Garden City, Kans., for the year ending September 30, 1927

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	4	0	0.161	10
November	12	2	5.03	299
December	12	----------	8.61	529
January	30	----------	10.9	670
February	51	2	13.0	721
March	66	2	14.6	898
April	25	1	8.87	528
May	6	0	.871	54
June	8	0	2.27	135
July	9,100	0	1,140	70,100
August	7,240	156	2,100	129,000
September	130	9	25.3	1,510
The year	9,100	0	283	204,000

ARKANSAS RIVER AT LARNED, KANS.

LOCATION.—In NE. ¼ sec. 5, T. 22 S., R. 16 W., at highway bridge half a mile above Pawnee River and half a mile south of Larned, Pawnee County.

DRAINAGE AREA.—34,900 square miles.

RECORDS AVAILABLE.—June 22, 1922, to September 30, 1927.

EQUIPMENT.—Water-stage recorder on downstream side of cylinder bridge pier near center of channel. Gage records height of ground water after surface flow ceases. Discharge measurements made from downstream side of bridge or by wading.

CHANNEL AND CONTROL.—Bed is composed of loose, clean sand and gravel; shifting. No definite control.

EXTREMES OF DISCHARGE.—Maximum stage, from water-stage recorder, 9.20 feet at 12 p. m. August 5 (discharge, 10,600 second-feet); minimum discharge, no flow for long periods.

1922–1927: Maximum stage recorded, 9.5 feet on August 25, 1923 (discharge, 14,300 second-feet); minimum discharge, no flow during several periods.

DIVERSIONS AND REGULATION.—Large portion of flow diverted in western Kansas and eastern Colorado for irrigation.

ACCURACY.—Stage-discharge relation not permanent. Rating curve used October 1 to April 6 well defined to 100 second-feet by two discharge measurements of 29 and 51 second-feet and shape of previous curve. Curve used April 7 to September 30 fairly well defined to 5,000 second-feet by seven measurements, ranging from 5 to 4,600 second-feet. Operation of water-stage recorder satisfactory except as indicated in footnote to table of daily discharge. Daily discharge ascertained by applying to rating table mean daily gage height determined by inspecting recorder graph, except April 21 to May 25, July 20–24, and September 17–20, for which periods discharge was ascertained by shifting-control method. Records fair.

Daily discharge, in second-feet, of Arkansas River at Larned, Kans., for the year ending September 30, 1927

Day	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		43		80	5		2,250	560
2		41		68	64		5,020	530
3		41	25	62	46		5,020	500
4	50	39		56	40		4,910	470
5		47	30	55	84		4,470	440
6		65	30	124	66		8,010	410
7	53	72	100	132	58		5,580	380
8	58	75	321	111	46		4,160	350
9		51	2,730	106	29		2,730	320
10		63	1,760	60	20		2,020	290
11	54	88	892	62	17		2,170	260
12		94	556	60	20		3,960	230
13	51	92	432	53	31		5,020	200
14	99	94	388	44	51		3,590	170
15	88	85	308	34	51		2,650	140
16	77	67	274	35	48		4,060	110
17	58	58	198	46	45		4,160	78
18	55	55	213	32	42		3,240	80
19	51	43	291	26	40		1,940	75
20	48	26	346	24	37	30	1,450	66
21	45	28	291	21	34	136	1,060	
22	60	39	274	20	31	109	1,010	
23	91	45	222	19	28	75	1,020	
24	77	26	194	16	25	41	1,310	
25	63	21	167	11	23	798	976	60
26	58	27	139	9	15	4,140	787	
27	47	27	124	6	6	3,130	743	
28	45	26	112	4	2	3,170	700	
29	-------	22	100	4	1	1,400	660	
30	-------	20	87	4	-------	880	620	
31	-------	20	-------	2	-------	440	590	-------

NOTE.—No gage-height record Oct. 13–17, Feb. 1–6, 9–12, 18–20, Mar. 30 to Apr. 4, June 16–24, June 30 to July 6, Aug. 29 to Sept. 16, and Sept. 21–30; discharge based on a study of weather records and engineer's and observer's notes. Braced figures give mean discharge for periods indicated.

Monthly discharge of Arkansas River at Larned, Kans., for the year ending September 30, 1927

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
February	99	----------	58.6	3,250
March	94	20	49.7	3,060
April	2,730	----------	356	21,200
May	132	2	44.7	2,750
June	84	0	33.5	1,990
July	4,140	0	463	28,500
August	8,010	590	2,770	170,000
September	560	----------	209	12,400
The year	8,010	0	336	243,000

NOTE.—No flow during October, November, December, and January.

ARKANSAS RIVER NEAR WICHITA, KANS.

LOCATION.—Near center of section line between sections 7 and 18, T. 27 S., R. 1 E., at Thirteenth Avenue highway bridge, 1½ miles above Little Arkansas River and 2 miles northwest of Wichita, Sedgwick County.

DRAINAGE AREA.—40,300 square miles.

RECORDS AVAILABLE.—June 11, 1921, to September 30, 1927.

EQUIPMENT.—Water-stage recorder on downstream side of bridge pier. Discharge measurements made from downstream side of bridge or by wading.

CHANNEL AND CONTROL.—Wide, flat bed composed of clean sand; shifting. No well-defined control.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 14.77 feet at 8 p. m. August 18 (discharge, 12,000 second-feet); minimum discharge, 7 second-feet on October 30.

1921–1927: Maximum discharge, that of August 18, 1927; minimum discharge, no flow during periods in several years.

DIVERSIONS AND REGULATION.—Most of low-water flow is diverted for irrigation in western Kansas and eastern Colorado.

ACCURACY.—Stage-discharge relation shifted during high water in April; not affected by ice. Rating curve used to April 11 based on previous curve and is poorly defined; curve used after April 11 fairly well defined between 100 and 12,000 second-feet by six discharge measurements made in July and August and ranging in discharge from 136 to 11,700 second-feet. Water-stage recorder operated satisfactorily except as indicated in footnote to table of daily discharge. Daily discharge ascertained by applying to rating table mean daily gage height determined by inspecting recorder graph. Records fair.

Daily discharge, in second-feet, of Arkansas River near Wichita, Kans., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	43	12		-------	20	69	612	243	665	1,280	2,800
2	69	12	13	-------	22	80	577	258	665	1,020	2,610
3	275	12		-------	22	76	535	307	605	1,110	2,420
4	808	12		-------	24	69	509	355	535	2,590	2,120
5	531	12	14	-------	26	57	482	521	470	4,070	2,360
6	327	14	15	-------	26	43	577	877	410	3,510	2,240
7	217	43	26	-------	34	40	1,080	1,180	355	4,530	2,120
8	160	171	30	-------	49	83	994	940	307	5,550	1,820
9	115	440	34	-------	54	171	877	1,050	265	5,200	1,720
10	149	489	38	-------	54	461	760	1,500	265	3,930	1,610
11	94	372	46	-------	63	1,120	680	1,440	265	2,920	1,500
12	110	275	40	46	80	2,990	680	1,150	265	2,660	1,380
13	275	240	30	36	80	2,600	605	1,170	265	3,860	1,330
14	282	200	20	49	80	2,180	522	958	228	5,920	1,260
15	183	175	10	52	80	1,940	489	712	228	7,090	1,200
16	177	150	8	52	80	1,660	463	620	194	7,630	1,140
17	126	125	8	57	76	1,600	457	658	194	9,350	1,070
18	76	100	8	13	76	1,770	439	1,050	163	12,000	1,050
19	54	75	-------	12	132	2,000	409	2,120	150	11,800	1,030
20	43	50	-------	30	126	1,820	393	2,180	136	11,500	985
21	34	25	-------	57	90	1,600	409	1,720	136	11,300	940
22	24	20	-------	60	66	1,500		1,820	136	5,800	954
23	18	15	-------	60	46	1,600		2,800	136	4,890	967
24	18	14	-------	43	32	1,420		3,120	112	3,720	922
25	15	18	-------	32	20	1,250	330	3,120	136	2,920	922
26	13	16	-------	26	14	1,140		2,120	112	3,440	952
27	12	12	-------	26	10	1,040		1,720	90	3,930	981
28	9		-------	24	13	958	265	1,130	71	3,440	1,010
29	8	12	-------	-------	22	868	261	922	1,440	2,730	1,010
30	7		-------	-------	28	680	246	760	1,550	2,600	1,010
31	8	-------	-------	-------	63	-------	235	-------	1,330	2,730	------

NOTE.—No gage-height record Nov. 14–23, 28–30, Dec. 1–4, 12–17, Dec. 19 to Feb. 11, May 22–27, July 3–20, 22–28, 31, Aug. 4, 7, Sept. 2, 6, 10, 16, 18, 20, 22, 26, 27, and 30; discharge interpolated or based on study of flow of Little Arkansas River at Valley Center, Kans., and gage-height record taken at Douglas Street Bridge in Wichita by United States Weather Bureau.

Monthly discharge of Arkansas River near Wichita, Kans., for the year ending September 30, 1927

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	808	7	138	8,480
November	489	12	105	6,250
December 1-18	46	8	21.1	753
February 12-28	60	12	39.7	1,340
March	132	10	51.9	3,190
April	2,990	40	1,100	65,500
May	1,080	235	501	30,800
June	3,120	243	1,280	76,200
July	1,550	71	383	23,600
August	12,000	1,020	5,000	307,000
September	2,800	922	1,450	86,300

ARKANSAS RIVER AT ARKANSAS CITY, KANS.

LOCATION.—In NW. ¼ sec. 25, T. 34 S., R. 3 E., at Chestnut Avenue highway bridge half a mile west of Arkansas City, Cowley County, 5 miles above mouth of Walnut River and 8 miles below Ninnescah River.

DRAINAGE AREA.—44,700 square miles.

RECORDS AVAILABLE.—September 23, 1902, to July 31, 1906, and September 10, 1921, to September 30, 1927.

EQUIPMENT.—Chain gage on upstream handrail of bridge. Discharge measurements made from upstream side of bridge or by wading.

CHANNEL AND CONTROL.—Bed is clean sand; shifting. No well-defined control.

EXTREMES OF DISCHARGE.—Maximum stage during year, from high-water mark, 20.97 feet October 4 (discharge, 45,300 second-feet); minimum stage recorded, 6.67 feet at 4.40 p. m. December 15 (discharge, 318 second-feet).

1902–1906, 1921–1927: Maximum stage recorded, 25.46 feet on June 11, 1923 (discharge not determined); minimum discharge, 12 second-feet in March and April, 1923.

DIVERSIONS AND REGULATION.—Diversions in western Kansas and eastern Colorado for irrigation takes large part of the natural flow.

ACCURACY.—Stage-discharge relation not permanent; affected by ice during winter. Rating curve used October 1 and 2 well defined; curve used after October 2 fairly well defined below 20,000 second-feet by three discharge measurements, ranging in discharge from 900 to 17,500 second-feet, and shape of previous curve. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table except as explained in footnote to table of daily discharge. Records good.

Daily discharge, in second-feet, of Arkansas River at Arkansas City, Kans., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	380	510	560	535	585	485	3,200	1,490	780	1,490	2,500	5,120
2	3,090	510	535	535	585	485	3,900	1,490	900	1,400	3,340	4,800
3	25,000	485	560	535	585	435	1,590	1,400	1,240	1,320	10,800	4,200
4	43,900	485	535	510	560	460	1,240	1,320	1,100	1,240	16,700	3,620
5	32,100	485	535	485	560	510	1,030	1,320	1,030	1,170	11,300	2,920
6	20,200	460	535	485	535	510	960	2,500	1,100	1,100	8,090	2,920
7	5,440	485	560	485	485	535	780	3,480	1,320	1,030	5,120	4,050
8	3,620	960	660	485	485	510	7,480	1,700	1,590	960	4,650	3,620
9	2,780	1,320	610	460	485	510	28,300	2,920	1,320	900	6,570	3,200
10	2,140	1,400	660	460	460	510	8,960	4,800	1,170	900	6,740	2,780

Daily discharge, in second-feet, of Arkansas River at Arkansas City, Kans., for the year ending September 30, 1927—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
11	1,490	1,680	660	460	435	535	6,240	3,620	1,320	840	5,280	2,500
12	1,490	1,950	610	460	410	585	4,500	2,360	1,400	840	5,120	2,360
13	2,640	1,400	585	485	460	585	6,080	1,950	5,120	900	6,570	1,950
14	5,120	1,240	535	485	510	610	4,960	1,700	5,120	1,170	8,300	1,820
15	4,050	1,170	370		535	610	4,050	1,400	4,650	1,170	10,800	1,700
16	2,780	1,030	380		535	610	3,900	1,320	2,500	1,030	11,600	1,590
17	2,140	900	435	475	535	585	2,780	1,490	1,950	900	13,300	1,490
18	1,490	840	485		510	560	2,500	1,170	3,480	840	14,800	1,400
19	1,240	840	510		510	1,100	14,200	1,100	4,650	840	18,200	1,320
20	1,030	780	510	560	435	1,820	14,500	1,100	5,440	900	6,740	1,320
21	900	720	560	510	410	1,490	9,880	1,030	5,120	840	17,100	1,320
22	900	660	660		390	900	5,600	1,030	5,280	1,240	15,400	1,240
23	780	660	660		485	720	4,200	960	4,350	2,220	11,300	1,240
24	720	660	660		510	660	3,480	960	4,350	1,500	6,570	1,320
25	720	660	585	480	510	610	3,060	900	4,650	780	5,600	1,320
26	610	660	585		485	535	2,780	900	3,900	660	5,120	1,320
27	585	610	560		485	535	2,360	780	3,620	610	5,280	1,320
28	585	610	535	560	485	510	2,080	780	2,780	660	5,760	1,320
29	560	585	535	535	-------	510	1,950	780	2,220	1,100	7,880	1,590
30	560	585	535	535	-------	585	1,820	720	1,700	2,640	6,570	1,490
31	535	-------	535	585	-------	780	-------	720	-------	2,500	5,440	-------

NOTE.—No gage-height record Oct. 10, 17, 31, Nov. 11, July 3, 24, and Sept. 8; discharge interpolated. Stage-discharge relation affected by ice Jan. 14–19 and 22–27; discharge based on observer's notes and gage-height records. Braced figures show discharge for periods indicated.

Monthly discharge of Arkansas River at Arkansas City, Kans., for the year ending September 30, 1927

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	43,900	380	5,470	336,000
November	1,950	410	845	50,300
December	660	370	556	34,200
January	585	460	497	30,600
February	585	390	499	27,700
March	1,820	435	658	40,500
April	28,300	780	5,280	314,000
May	4,800	720	1,590	97,800
June	5,440	780	2,840	169,000
July	2,640	610	1,150	70,700
August	18,200	2,500	8,660	532,000
September	5,120	1,240	2,270	135,000
The year	43,900	370	2,540	1,840,000

GRAPE CREEK NEAR WESTCLIFFE, COLO.

LOCATION.—In sec. 36, T. 21 S., R. 73 W., at concrete weir 1 mile above high-water line of DeWeese-Dye Reservoir, 3 miles northwest of Westcliffe, Custer County. Nearest tributary enters from west, half a mile upstream.

DRAINAGE AREA.—346 square miles (measured on Forest Service map).

RECORDS AVAILABLE.—December 1, 1924, to September 30, 1927.

EQUIPMENT.—Water-stage recorder at left bank 50 feet upstream from weir. Discharge measurements made by wading except at extreme high stage when measurements are made from bridge some distance upstream.

CHANNEL AND CONTROL.—Bed composed of sand and gravel. Control, concrete weir which is permanent. Banks subject to overflow at stage of 3 feet.

EXTREMES OF DISCHARGE.—Maximum stage during year, from water-stage recorder, 2.39 feet at 1 p. m. August 9 (discharge, 322 second-feet); minimum stage, 0.15 foot at 11 a. m. May 29 (discharge, 3.6 second-feet).

1925–1927: Maximum discharge during period, 425 second-feet June 8, 1926; minimum discharge, 2.4 second-feet on June 19, 1925.

DIVERSIONS AND REGULATION.—None.

ACCURACY.—Stage-discharge relation slightly shifting; affected by ice. Rating curve well defined by 19 discharge measurements, of which 6 were made during current year. Operation of water-stage recorder satisfactory during open water. Daily discharge ascertained by applying mean daily gage height to rating table; shifting-control method used November 1 to December 9 and September 3–30. Records good except for winter, for which they are fair.

COOPERATION.—Field data furnished by State engineer and Southern Colorado Power Co.

Daily discharge, in second-feet, of Grape Creek near Westcliffe, Colo., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7.7	22	25				85	19	9.7	77	45	28
2	9.3	19	24		18		68	17	12	44	53	25
3	9.3	19	23	20		20	85	14	9.7	26	71	25
4	9.3	18	22				68	14	8.5	21	62	24
5	8.9	16	22		19		52	13	8.5	18	100	20
6	9.3	20	21				45	12	9.7	15	97	20
7	9.3	21	21				40	12	13	12	85	20
8	8.9	17	21	23	18	22	38	13	18	11	103	19
9	9.7	19	21				35	14	16	20	287	24
10	9.7	21	21				29	14	12	39	152	32
11	9.7	20	20				28	13	10	41	80	30
12	9.3	21	19				30	12	35	29	62	28
13	10	25	18	18	19	21	33	9.3	126	26	55	39
14	10	20	17				36	9.3	62	28	48	69
15	9.7	20	15				41	8.5	61	18	47	66
16	10	17	14				35	8.9	234	14	57	56
17	10	17	13				28	13	114	11	48	51
18	10	17	12	17	20	20	25	18	54	8.9	48	69
19	11	18	12				26	20	57	10	43	89
20	11	19	12				26	19	65	11	62	74
21	11	21				25	22	15	87	11	58	62
22	10	24				30	19	11	68	11	52	55
23	11	24	13	16	20	35	19	9.3	42	20	50	55
24	9.7	24				45	18	9.3	31	67	49	53
25	9.7	23				50	19	9.3	23	135	43	51
26	9.7	16				55	19	8.5	31	55	40	77
27	11	20			22	110	20	5.0	30	45	41	92
28	11	19	15	17		277	20	4.6	31	68	50	85
29	12	28				419	21	4.2	53	226	44	66
30	15	26				406	20	5.3	92	184	36	130
31	25					270		6.9		67	32	

NOTE.—Stage-discharge relation affected by ice Nov. 17–21 and Dec. 10 to Mar. 25; discharge based on 4 current-meter measurements and temperature record.

Monthly discharge of Grape Creek near Westcliffe, Colo., for the year ending September 30, 1927

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	25	7.7	10.6	652
November	28	16	20.4	1,210
December	25	12	17.0	1,050
January			18.5	1,140
February			19.4	1,080
March	419		68.9	4,240
April	85	18	35.0	2,080
May	20	4.2	11.7	719
June	234	8.5	47.4	2,820
July	226	8.9	44.2	2,720
August	287	32	67.7	4,160
September	130	19	51.1	3,040
The year	419	4.2	34.4	24,900

WEST BEAVER CREEK NEAR VICTOR, COLO.

LOCATION.—In sec. 30, T. 16 S., R. 68 W., at Skaguay power station of Southern Colorado Power Co. about 7 miles southeast of Victor, Fremont County. Nearest tributary, East Beaver Creek, enters 2 miles downstream.

DRAINAGE AREA.—66 square miles (drainage area above reservoir outlet).

RECORDS AVAILABLE.—January 1, 1905, to September 30, 1927.

DETERMINATION OF DISCHARGE.—Water used through power house is brought by pipe line from reservoir 3½ miles upstream; quantity measured hourly by weir, and a quantity representing the gain or loss in the reservoir during the period is added or subtracted. To determine the natural flow of the stream the seepage through the dam is measured by weir and added to the total quantity thus obtained. This method takes no account of evaporation from the surface of the reservoir.

DIVERSIONS.—Above the power reservoir are three reservoirs from which the town of Victor obtains its municipal supply. In the upper basin are four reservoirs from which water is diverted through St. John Tunnel into Lake Moraine, and thence by natural channels to Colorado Springs, where it is used as municipal supply. During 1927, 2,260 acre-feet were diverted through St. John Tunnel. Below the power plant, adjudicated decrees for diversions of 126 second-feet from Beaver Creek, which is formed by East and West Beaver Creeks. In addition, there is an irrigation reservoir in operation which has a filing for 4,760 acre-feet.

COOPERATION.—Records are furnished by Southern Colorado Power Co.

Monthly discharge of West Beaver Creek near Victor, Colo., for the year ending September 30, 1927

Month	Mean discharge in second-feet	Run-off in acre-feet	Month	Mean discharge in second-feet	Run-off in acre-feet
October	18.2	1,120	May	13.8	848
November	17.6	1,050	June	13.7	815
December	17.1	1,050	July	13.8	848
January	13.4	824	August	16.9	1,040
February	8.40	466	September	18.7	1,110
March	9.06	557			
April	11.4	678	The year	14.4	10,400

BOEHMER CREEK NEAR PIKES PEAK, COLO.

LOCATION.—In NW. ¼ sec. 32, T. 14 S., R. 68 W., 3½ miles south of Pikes Peak, El Paso County, above Little Beaver and Sackett Creeks. Altitude, 11,000 feet.

DRAINAGE AREA.—7.2 square miles (measured on topographic map). About 75 per cent of this area is above timber line. To the natural drainage has been added that of West Beaver Creek above intake of Strickler Tunnel.

RECORDS AVAILABLE.—October 1, 1909, to September 30, 1927.

DETERMINATION OF DISCHARGE.—Flow measured by sharp-crested weir, 60 inches long, with complete end contractions. A stake is driven into bed of stream in pool above weir, so that its head is level with crest of weir; depth of water over stake is measured by steel scale. Discharge is computed by Francis formula.

DIVERSIONS AND REGULATION.—Water diverted above weir for use in Victor is measured and is added to flow over Boehmer Creek weir to show total run-off. Flow regulated by series of three reservoirs having an aggregate capacity of 1,400 acre-feet; reservoirs operated by Colorado Springs Water Department.

COOPERATION.—Monthly discharge computed from records furnished by Colorado Springs Water Department.

Monthly discharge of Boehmer Creek near Pikes Peak, Colo., for the year ending September 30, 1927

[Drainage area, 7.2 square miles]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	3.20	2.07	2.90	0.403	0.46	178
November	2.07	1.58	1.80	.250	.28	107
December	1.82	1.35	1.69	.235	.27	104
January	1.35	1.13	1.34	.186	.21	82.4
February	1.13	.73	1.09	.151	.16	60.5
March	.73	.73	.73	.101	.12	44.9
April	3.81	1.13	1.44	.200	.22	85.7
May	9.05	3.81	6.05	.840	.97	372
June	6.25	5.15	5.53	.768	.86	329
July	33.1	3.97	15.1	2.10	2.42	928
August	35.8	9.71	15.3	2.12	2.44	941
September	12.0	3.81	7.40	1.03	1.15	440
The year	35.8	.73	5.08	.706	9.56	3,670

LITTLE BEAVER CREEK NEAR PIKES PEAK, COLO.

LOCATION.—In NW. ¼ NW. ¼ sec. 32, T. 14 S., R. 68 W., just above mouth of creek and 3½ miles south of Pikes Peak, El Paso County. Little Beaver Creek enters Boehmer Creek from west 0.3 mile above reservoir No. 4. Altitude of station, 11,000 feet.

DRAINAGE AREA.—1.0 square mile (measured on topographic map). About 25 per cent of area above timber line; remainder sparsely timbered.

RECORDS AVAILABLE.—October 1, 1909, to September 30, 1927.

DETERMINATION OF DISCHARGE.—Flow measured by sharp-crested weir, 24 inches long, with complete end contractions. A stake is driven into bed of stream in pool above weir, so that its head is level with crest of weir; depth of water over stake is measured by steel scale. Discharge is computed by Francis formula.

DIVERSIONS AND REGULATION.—None.

COOPERATION.—Monthly discharge computed from records furnished by Colorado Springs Water Department.

Monthly discharge of Little Beaver Creek near Pikes Peak, Colo., for the year ending September 30, 1927

[Drainage area, 1.0 square mile]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	0.22	0.16	0.183	0.183	0.21	11.3
November	.17	.16	.162	.162	.18	9.6
December	.18	.16	.169	.169	.19	10.4
January	.16	.10	.158	.158	.18	9.7
February	.10	.08	.098	.098	.10	5.4
March	.07	.05	.051	.051	.06	3.1
April	.45	.07	.104	.104	.12	6.2
May	1.28	.45	.810	.810	.93	49.8
June	1.28	.82	.970	.970	1.08	57.7
July	1.04	.76	.929	.929	1.07	57.1
August	1.07	.87	.956	.956	1.10	58.8
September	.93	.60	.725	.725	.81	43.1
The year	1.28	.05	.445	.445	6.03	322

SACKETT CREEK NEAR PIKES PEAK, COLO.

LOCATION.—In SE. ¼ NW. ¼ sec. 32, T. 14 S., R. 68 W., just above mouth of creek and 4 miles southeast of Pikes Peak, El Paso County. Sackett Creek enters Boehmer Creek from north a short distance above reservoir No. 4. Altitude of station, 11,000 feet.

DRAINAGE AREA.—0.65 square mile (measured on topographic map). About 30 per cent of area above timber line; remainder sparsely timbered.

RECORDS AVAILABLE.—October 1, 1909, to September 30, 1927.

DETERMINATION OF DISCHARGE.—Flow measured by sharp-crested weir, 24 inches long, with complete end contractions. A stake is driven into bed of stream in pool above weir so that its head is level with crest of weir; depth of water over stake is measured by steel scale. Discharge is computed by Francis formula.

DIVERSIONS AND REGULATION.—None.

COOPERATION.—Monthly discharge computed from records furnished by Colorado Springs Water Department.

Monthly discharge of Sackett Creek near Pikes Peak, Colo., for the year ending September 30, 1927

[Drainage area, 0.65 square mile]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	0.03	0.01	0.018	0.028	0.03	1.1
November	.01	.01	.010	.015	.02	.6
December	.00	.00	.000	.000	.00	.0
January	.00	.00	.000	.000	.00	.0
February	.00	.00	.000	.000	.00	.0
March	.00	.00	.000	.000	.00	.0
April	.45	.00	.045	.069	.08	2.7
May	.82	.45	.581	.894	1.03	35.7
June	.72	.40	.485	.746	.83	28.9
July	.40	.22	.276	.425	.49	17.0
August	.45	.25	.301	.463	.53	18.5
September	.29	.18	.226	.348	.39	13.4
The year	.82	.00	.163	.251	3.40	118

LION CREEK NEAR HALFWAY, COLO.

LOCATION.—In NE. ¼ sec. 15, T. 14 S., R. 68 W., at mouth of creek, half a mile southwest of Halfway, El Paso County. Lion Creek enters Ruxton Creek from west. Altitude of station, 9,250 feet.

DRAINAGE AREA.—2.0 square miles (measured on topographic map). Includes all area above The Crater apparently tributary to Sheep Creek. About 30 per cent of area above timber line; remainder sparsely timbered.

RECORDS AVAILABLE.—April 1, 1908, to September 30, 1927.

DETERMINATION OF DISCHARGE.—Flow measured by sharp-crested weir, 30 inches long, with complete end contractions. A stake is driven into bed of stream in pool above weir, so that its head is level with crest of weir; depth of water over stake is measured by steel scale. Discharge is computed by Francis formula.

DIVERSIONS AND REGULATION.—None.

COOPERATION.—Monthly discharge computed from records furnished by Colorado Springs Water Department.

Monthly discharge of Lion Creek near Halfway, Colo., for the year ending September 30, 1927

[Drainage area, 2.0 square miles]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	1.30	1.03	1.15	0.575	0.66	70.7
November	1.03	.61	.872	.436	.49	51.9
December	.73	.46	.606	.303	.35	37.3
January	.91	.79	.864	.432	.50	53.1
February	.79	.41	.558	.279	.29	31.0
March	1.17	.36	.508	.254	.29	31.2
April	1.30	.56	.744	.372	.42	44.3
May	.97	.41	.641	.320	.37	39.4
June	1.17	.41	.569	.284	.32	33.9
July	.79	.32	.502	.251	.29	30.9
August	1.90	.61	1.41	.705	.81	86.7
September	2.10	1.60	1.74	.870	.97	104
The year	2.10	.32	.847	.424	5.76	614

SHEEP CREEK NEAR HALFWAY, COLO.

LOCATION.—In SW. ¼ sec. 11, T. 14 S., R. 68 W., a quarter of a mile west of Halfway, El Paso County. No tributary between station and mouth, a short distance below. Sheep Creek enters Ruxton Creek from west a short distance above Halfway. Altitude of station, 9,100 feet.

DRAINAGE AREA.—0.73 square mile (measured on topographic map). Does not include any area above The Crater as this is most probably tributary to Lion Creek. Practically all below timber line, but sparsely timbered.

RECORDS AVAILABLE.—April 1, 1908, to September 30, 1927.

DETERMINATION OF DISCHARGE.—Flow measured by sharp-crested weir, 30 inches long, with complete end contractions. A stake is driven into bed of stream in pool above weir, so that its head is level with crest of weir; depth of water over stake is measured by steel scale. Discharge is computed by Francis formula.

DIVERSIONS AND REGULATION.—None.

COOPERATION.—Monthly discharge computed from records furnished by Colorado Springs Water Department.

Monthly discharge of Sheep Creek near Halfway, Colo., for the year ending September 30, 1927

[Drainage area, 0.73 square mile]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	0.36	0.22	0.283	0.388	0.45	17.4
November	.23	.23	.230	.315	.35	13.7
December	.23	.20	.222	.304	.35	13.6
January	.20	.13	.175	.240	.28	10.8
February	.13	.08	.093	.127	.13	5.2
March	.36	.08	.130	.178	.21	8.0
April	.46	.20	.275	.377	.42	16.4
May	.61	.13	.305	.418	.48	18.8
June	.46	.10	.215	.295	.33	12.8
July	.46	.14	.268	.367	.42	16.5
August	1.90	.46	1.17	1.60	1.84	71.9
September	1.03	.61	.786	1.08	1.20	46.8
The year	1.90	.08	.348	.477	6.46	252

SOUTH RUXTON CREEK AT HALFWAY, COLO.

LOCATION.—In SW. ¼ sec. 11, T. 14 S., R. 68 W., just above hydroelectric intake at Halfway, El Paso County. No tributary between station and mouth, a short distance below. South Ruxton Creek enters Ruxton Creek from south of Halfway. Altitude of station, 9,000 feet.

DRAINAGE AREA.—3.95 square miles (measured on topographic map). Practically all below timber line and heavily timbered.

RECORDS AVAILABLE.—June 1, 1906, to September 30, 1927.

DETERMINATION OF DISCHARGE.—Flow measured by two sharp-crested weirs, with complete end contractions. Discharge is computed by Francis formula. The main weir is one-third of a mile above mouth of creek and a short distance above hydroelectric intake, which has a capacity of 4.63 feet. The second weir is halfway between main weir and mouth of creek and measures inflow chiefly from springs below intake and a small amount of seepage. At all times, except during high water, capacity of intake is sufficient to take entire flow passing main weir, and flow at two weirs is combined to give total run-off of the basin. During high water excess passing intake and recorded at the lower weir does not represent increased flow between weirs and is discarded. In its place is used a constant quantity based on inflow and seepage at other times.

DIVERSIONS AND REGULATION.—None.

COOPERATION.—Monthly discharge computed from records furnished by Colorado Springs Water Department.

Monthly discharge of South Ruxton Creek at Halfway, Colo., for the year ending September 30, 1927

[Drainage area, 3.95 square miles]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	1.60	1.17	1.49	0.377	0.43	91.6
November	1.30	.97	1.09	.276	.31	64.9
December	.97	.79	.896	.227	.26	55.1
January	.91	.79	.869	.220	.25	53.4
February	.85	.79	.844	.214	.22	46.9
March	1.30	.79	.891	.226	.26	54.8
April	1.30	.79	.934	.236	.26	55.6
May	1.52	.91	1.20	.304	.35	73.8
June	1.63	.85	1.19	.301	.34	70.8
July	1.75	1.30	1.52	.385	.44	93.5
August	4.95	1.75	3.65	.924	1.07	224
September	3.50	1.45	2.18	.552	.62	130
The year	4.95	.79	1.40	.354	4.81	1,010

CABIN CREEK NEAR HALFWAY, COLO.

LOCATION.—In SW. ¼ NW. ¼ sec. 11, T. 14 S., R. 68 W., just above hydroelectric intake, three-eighths of a mile north of Halfway, El Paso County. Cabin Creek enters Ruxton Creek half a mile below Halfway. Altitude of station, about 9,000 feet.

DRAINAGE AREA.—2.4 square miles (measured on topographic map). About 15 per cent of area above timber line; remainder sparsely timbered.

RECORDS AVAILABLE.—October 1, 1906, to September 30, 1927.

DETERMINATION OF DISCHARGE.—Flow measured by two sharp-crested weirs with complete end contractions. Discharge computed by Francis formula. The main weir is about one-third of a mile above mouth of creek and just above hydroelectric intake. The second weir is 50 feet above mouth of creek and measures flow from springs and small tributaries entering below intake. Except during high water measured flow at weirs is combined to give run-off from basin. During high water, record from lower weir is discarded and inflow estimated. (See description of South Ruxton Creek at Halfway, Colo.)

DIVERSIONS AND REGULATION.—None.

COOPERATION.—Monthly discharge computed from records furnished by Colorado Springs Water Department.

Monthly discharge of Cabin Creek near Halfway, Colo., for the year ending September 30, 1927

[Drainage area, 2.4 square miles]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	1.17	0.67	0.923	0.385	0.44	56.8
November	.67	.56	.617	.257	.29	36.7
December	.56	.46	.531	.221	.25	32.6
January	.46	.36	.423	.176	.20	26.0
February	.36	.27	.293	.122	.13	16.3
March	.79	.27	.400	.167	.19	24.6
April	1.03	.61	.810	.338	.38	48.2
May	1.17	.67	.913	.380	.44	56.1
June	2.13	.67	1.01	.421	.47	60.1
July	1.90	.79	1.12	.467	.54	68.9
August	5.40	1.75	4.05	1.69	1.95	249
September	4.00	2.10	2.89	1.20	1.34	172
The year	5.40	.27	1.17	.488	6.62	847

SUTHERLAND CREEK NEAR MANITOU, COLO.

LOCATION.—In SW. ¼ sec. 9, T. 14 S., R. 67 W., 1½ miles southeast of Manitou, El Paso County. No large tributary between station and mouth, 1 mile below. Altitude of station, 6,600 feet.

DRAINAGE AREA.—4.4 square miles (measured on topographic map). Practically all below timber line.

RECORDS AVAILABLE.—January 1, 1918, to September 30, 1927.

DETERMINATION OF DISCHARGE.—Flow measured by sharp-crested weir, 30 inches long, with complete end contractions. A stake is driven into bed of stream in pool above weir, so that its head is level with crest of weir; depth of water over stake is measured by steel scale. Discharge is computed by Francis formula.

DIVERSIONS AND REGULATION.—None.

COOPERATION.—Monthly discharge computed from records furnished by Colorado Springs Water Department.

Monthly discharge of Sutherland Creek near Manitou, Colo., for the year ending September 30, 1927

[Drainage area, 4.4 square miles]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	0.56	0.46	0.476	0.108	0.12	29.3
November	.56	.36	.433	.098	.11	25.8
December	.46	.36	.373	.085	.10	22.9
January	.56	.36	.405	.092	.11	24.9
February	.36	.36	.360	.082	.09	20.0
March	.56	.36	.447	.102	.12	27.5
April	.91	.79	.798	.181	.20	47.5
May	.79	.36	.637	.145	.17	39.2
June	1.03	.46	.777	.177	.20	46.2
July	.79	.56	.692	.157	.18	42.5
August	1.63	.79	1.29	.293	.34	79.3
September	1.30	.79	1.03	.234	.26	61.3
The year	1.63	.36	.644	.146	2.00	466

BEAR CREEK NEAR COLORADO SPRINGS, COLO.

LOCATION.—In NE. ¼ sec. 21, T. 14 S., R. 67 W., 3½ miles west of Colorado Springs, El Paso County. Nearest tributary, Hunters Run, enters a short distance above. Altitude of station 6,615 feet.

DRAINAGE AREA.—6.9 square miles (measured on topographic map). Practically all below timber line.

RECORDS AVAILABLE.—March 1, 1918, to September 30, 1927.

DETERMINATION OF DISCHARGE.—Flow measured by sharp-crested weir, 30 inches long, with complete end contractions. A stake is driven into bed of stream in pool above weir, so that its head is level with crest of weir; depth of water over stake is measured by steel scale. Discharge is computed by Francis formula.

DIVERSIONS AND REGULATION.—None.

COOPERATION.—Monthly discharge computed from records furnished by Colorado Springs Water Department.

Monthly discharge of Bear Creek near Colorado Springs, Colo., for the year ending September 30, 1927

[Drainage area, 6.9 square miles]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	0.97	0.79	0.887	0.129	0.15	54.5
November	1.10	.56	.801	.116	.13	47.7
December	.79	.27	.649	.094	.11	39.9
January	.67	.51	.583	.084	.10	35.8
February	.51	.46	.483	.070	.07	26.8
March	1.10	.51	.758	.110	.13	46.6
April	1.63	.85	1.14	.165	.18	67.8
May	1.03	.61	.753	.109	.13	46.3
June	3.12	.67	1.53	.222	.25	91.0
July	2.75	1.03	1.36	.197	.23	83.6
August	5.62	2.07	4.06	.588	.68	250
September	3.80	1.83	2.33	.338	.38	139
The year	5.62	.27	1.28	.186	2.54	929

WILD HORSE CREEK NEAR HOLLY COLO.

LOCATION.—In sec. 15, T. 23 S., R. 42 W., one-quarter of a mile southeast of Holly, Prowers County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—October 1, 1922, to September 30, 1927.

EQUIPMENT.—Staff gage on highway bridge. Discharge measurements made from bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of sand, which shifts at intervals. No definite control.

EXTREMES OF DISCHARGE.—Not available.

DIVERSIONS AND REGULATION.—Small diversions above station. Flow regulated at intervals by waste water from Amity and Buffalo Canals.

ACCURACY.—Stage-discharge relation not permanent; affected by ice. Rating curves are not well defined. Twelve to sixteen current-meter measurements are obtained each year. Records considered fair.

COOPERATION.—Complete records furnished by State engineer.

Daily discharge, in second-feet, of Wild Horse Creek near Holly, Colo., for the years ending September 30, 1923–1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1922–23												
1				4	6	5	1	14	11	3.4	66	1.8
2				4	6		1	10	9.2	1.3	53	.1
3				4	6		1	7.2	6.6	.5	73	0
4				4	6		.5	9.4	5.2	.1	74	0
5				4	6		.4	9.2	2.7	.1	172	.1
6				29	6		.2	10	.7	.1	154	.1
7				24	38		.2	9.2	5.2	.1	107	.1
8				34	51		.2	7.2	96	.5	201	.1
9				12	26		.2	6.6	20	9.7	74	0
10			6	7	26		.2	5.8	14	.5	54	0
11				4	7		.2	5	43	2.5	19	0
12				4	8		.2	3.2	62	3.6	15	0
13				4	9		.4	5.8	76	.5	17	0
14				4	10		.2	31	97	1.6	48	0
15				4	10		1.5	11	62	17	42	0
16				4	10		2.7	7.2	98	6.6	32	.1
17				4	10		.5	4.4	98	17	43	5.2
18			50	4	10		.2	5.8	106	21	74	75
19				4	20		1.6	4.4	114	50	67	48
20			62	4	20		.5	5.2	70	55	48	137
21			60	4	25		.2	6.1	84	40	4.7	67
22			60	4	14		.2	7.5	99	55	6.1	119
23			60	4	8		1.6	36	45	55	2.2	119
24				4	8		5	7.5	51	49	2	136
25				4	6		1.3	8	57	36	2	59
26				4	6		10	7.5	51	14	8.6	47
27			30	5	6		9.7	6.4	91	36	6.9	31
28				5	6		41	6.4	34	36	6.9	19
29				5			31	8.6	23	62	5.5	14
30				5			22	15	12	66	6.6	12
31				5				27		66	5.2	
1923–24												
1	30	9.2	79			0	1	6	6	0	0	0
2	43	9.2	52			0	4	0	10	0	0	0
3	35	9.2	18			0	2	0	4	0	0	0
4	43	9.2	13			0	2	4	4	0	0	0
5	112	9.2	3.9			0	2	0	2	0	0	0
6	128	6.4	3.9			0	1	4	1	0	0	0
7	64	6.1	6.1			0	0	0	0	0	0	0
8	63	3.4	9.4			0	0	0	0	5	0	0
9	77	3.4	6.6			0	0	0	0	82	0	0
10	216	5.8	6.6			0	0	0	0	6	2	0

Daily discharge, in second-feet, of Wild Horse Creek near Holly, Colo., for the years ending September 30, 1923–1927—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1923-24												
11	90	5.8	8			0	0	0	4	1	69	0
12	70	5.8	9.4			0	0	0	0	0	1	2
13	76	5.8	5			0	0	0	129	1	0	0
14	62	5.5	17			0	0	0	182	0	0	0
15	20	5.5	25			0	0	0	60	0	0	2
16	15	5.5	9.2			0	28	0	129	0	0	2
17	5.2	5.2	6.1			0	129	0	146	17	0	3
18	5.2	5.2	3.4			0	105	0	150	30	0	2
19	3.7	8	3.4			0	129	0	67	23	0	67
20	7.8	7.8	8.9			0	40	0	67	13	0	0
21	3.7	7.8	1.3			0	28	0	129	10	0	0
22	7.5	7.8	3.4			0	6	6	60	6	0	0
23	7.5	5	1			0	46	10	60	4	0	0
24	10	4.7	1			0	6	10	13	2	0	0
25	41	8.9	1			0	6	6	46	3	0	0
26	14	81	1			1	6	6	13	2	0	0
27	9.7	118	1			28	4	8	4	0	0	0
28	9.7	41	1			6	4	4	0	0	0	0
29	9.4	26	1			10	4	0	0	0	0	0
30	9.4	22	1			1	4	6	0	0	0	0
31	9.4		1			0		60		0	0	
1924-25												
1	0	16	34		4	12	0	0	0	0	37	0
2	0	13	89		3	0	0	0	0	0	37	0
3	0	6	2		2	3	0	0	0	5	49	0
4	0	0	10		2	15	0	0	0	62	36	0
5	0	13	34		2	7	0	0	0	27	43	0
6	2	6	13		2	4	0	0	0	3	36	0
7	1	10	16		2	8	0	0	0	9	2	49	0
8	13	13	10		2	4	0	0	15	0	34	0
9	10	6	10		2	5	0	0	13	0	16	0
10	6	6	6		2	5	0	0	0	0	12	1
11	2	6	8		2	2	0	0	0	0	12	12
12	13	6	6		2	9	0	0	0	0	16	8
13	10	10	2		0	4	0	0	0	0	8	26
14	6	6	0		2	10	0	0	0	0	8	49
15	6	6	3		5	1	0	0	0	0	10	105
16	2	4	6		0	1	0	0	0	0	16	70
17	2	4	0		0	4	0	0	0	0	0	43
18	6	6	7		0	5	0	0	0	0	0	41
19	10	6	7		0	1	0	0	0	0	0	1
20	13	6	6		0	2	0	0	0	0	12	1
21	13	6	6		0	3	0	0	1	0	0	1
22	8	6	5		5	1	0	0	0	20	0	1
23	2	4	5		17	4	0	0	0	26	0	12
24	13	6	0		17	1	0	0	0	18	0	16
25	6	6	5		44	1	0	0	0	37	0	26
26	6	22	5		44	3	0	0	0	14	0	26
27	4	108	6		13	2	0	0	0	4	1	16
28	1	47	5		13	0	0	0	0	56	1	26
29	0	23	4			0	0	0	0	49	8	20
30	6	0	4			0	0	0	0	37	0	12
31	18		4			0		0		43	0	
1925-26												
1	11	24	11	0	0	0	0	8	0	0	0	0
2	11	1	7	0	0	0	0	18	9	0	0	0
3	10	20	48	0	0	0	0	15	0	0	0	0
4	8	0	115	0	0	0	0	12	9	0	0	0
5	5	0	140	0	0	0	0	15	0	0	0	0
6	0	0	62	0	0	0	0	12	0	0	0	0
7	1	0	107	0	0	0	10	33	0	0	0	0
8	8	0	83	0	0	0	11	6	41	0	0	0
9	7	0	83	0	0	0	15	18	41	0	0	0
10	4	0	42	0	0	0	18	59	51	14	0	0
11	5	15	7	0	0	0	15	52	70	41	0	0
12	7	20	1	0	0	0	84	52	41	48	0	0
13	1	7	1	0	0	0	6	45	70	14	0	0
14	1	15	0	0	0	0	75	102	85	28	0	0
15	20	1	25	0	0	0	52	38	200	20	0	0

Daily discharge, in second-feet, of Wild Horse Creek near Holly, Colo., for the years ending September 30, 1923–1927—Continued

Day	Oct.	Nov	Dec.	Jan	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1925-26												
16	24	0	30	0	0	0	84	130	93	6	0	0
17	1	0	11	0	0	0	67	102	32	0	9	0
18	20	1	15	0	0	0	1	120	120	6	6	0
19	65	0	20	0	0	0	0	51	93	0	0	0
20	103	0	24	0	0	0	0	102	17	9	0	0
21	62	42	6	0	15	0	67	93	32	7	0	0
22	48	42	30	0	49	0	6	63	24	6	0	0
23	30	42	25	0	0	0	0	56	14	0	0	0
24	1	83	10	0	0	0	6	56	3	0	0	0
25	15	76	5	0	0	0	59	14	0	1	0	0
26	42	76	5	0	0	0	15	14	6	0	0	0
27	99	68	0	0	0	0	28	9	0	0	0	0
28	42	62	0	0	0	38	15	12	0	0	0	0
29	7	62	0	0	------	52	21	46	7	0	0	0
30	76	36	0	0	------	52	15	9	3	0	0	0
31	30	------	0	0	------	0	------	9	------	0	0	------
1926-27												
1	0	0	30	0	0	0	0	0	0	0	20	0
2	0	12	28	0	0	24	0	0	0	0	16	0
3	0	14	32	0	0	24	0	0	0	0	3	0
4	0	12	30	0	0	9	0	0	0	0	16	0
5	0	14	14	0	0	6	0	0	0	0	36	0
6	0	12	12	0	0	5	0	0	0	0	2	0
7	0	7	0	0	0	24	0	0	0	0	2	0
8	0	4	0	0	0	6	12	0	0	0	0	0
9	0	6	7	0	0	3	9	24	0	0	9	0
10	0	9	0	0	0	0	0	9	0	150	0	0
11	0	7	0	0	0	0	0	0	0	100	3	0
12	0	9	0	0	0	0	0	0	0	9	0	0
13	0	9	0	0	0	0	0	0	9	0	0	0
14	0	12	0	0	0	0	0	0	14	77	0	0
15	0	17	0	0	0	0	0	0	14	20	0	0
16	0	1	0	0	0	0	0	0	0	0	0	0
17	0	4	0	0	0	0	0	0	0	0	0	0
18	0	5	0	0	0	0	0	0	0	0	0	0
19	0	5	0	0	0	0	0	0	0	0	0	0
20	0	46	0	0	0	0	0	0	0	0	0	0
21	0	24	0	0	0	0	0	0	0	0	2	0
22	0	9	0	0	0	0	0	0	0	9	2	0
23	3	7	0	0	0	0	0	0	0	6	1	0
24	4	0	0	0	0	0	0	0	0	6	2	0
25	7	7	0	0	0	0	0	0	0	3	1	0
26	0	6	0	0	0	0	0	0	0	2	1	0
27	0	6	0	0	5	0	0	0	0	0	1	0
28	0	24	0	0	24	0	0	0	0	150	0	0
29	0	24	0	0	------	0	0	0	0	100	0	0
30	0	30	0	0	------	0	0	0	0	20	0	0
31	0	------	0	0	------	0	------	0	------	2	0	------

NOTE.--Flow includes waste from Amity and Buffalo Canals.

Monthly discharge of Wild Horse Creek near Holly, Colo., for the years ending September 30, 1923–1927

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
1922–23				
October			6.20	381
November			7.50	446
December			16.6	1,020
January	34	4	6.93	426
February	51	6	13.2	733
March			3.00	184
April	41	.2	4.50	268
May	36	3.2	9.92	610
June	114	.7	51.5	3,060
July	66	.1	22.8	1,400
August	201	2	48.1	2,960
September	137	0	29.7	1,770
The year	201	0	18.3	13,300
1923–24				
October	216	3.7	41.8	2,570
November	118	3.4	15.1	898
December	79	1	9.92	610
January			3.29	202
February			.69	40
March	28	0	1.48	91
April	129	0	18.6	1,110
May	60	0	4.19	258
June	182	0	42.9	2,550
July	82	0	6.61	406
August	69	0	2.32	143
September	67	0	2.60	155
The year	216	0	12.4	9,030
1924–25				
October	18	0	5.77	355
November	108	0	12.6	750
December	89	0	10.3	633
January			4.0	246
February	44	0	6.68	371
March	15	0	3.77	232
April	0	0	.00	0
May	0	0	.00	0
June	15	0	1.27	76
July	62	0	13.0	799
August	49	0	14.2	873
September	105	0	17.1	1,020
The year	108	0	7.39	5,360
1925–26				
October	103	0	24.6	1,510
November	83	0	23.1	1,370
December	140	0	29.5	1,810
January	0	0	.00	0
February	49	0	2.29	127
March	52	0	4.58	282
April	84	0	22.3	1,330
May	130	6	44.2	2,720
June	200	0	35.4	2,110
July	48	0	6.45	397
August	9	0	.48	29
September	0	0	.00	0
The year	200	0	16.1	11,700
1926–27				
October	7	0	0.45	28
November	46	0	11.4	678
December	32	0	4.94	304
January	0	0	.00	0
February	24	0	1.04	58
March	24	0	3.26	200
April	12	0	.70	42
May	24	0	1.06	65
June	14	0	1.23	73
July	150	0	21.1	1,300
August	36	0	3.77	232
September	0	0	.00	0
The year	150	0	4.11	2,980

NOTE.—Mean discharge estimated for October, November, and December, 1922; January and February, 1924; January, April, and May, 1925; January and September, 1926; and January and September, 1927.

HOLLY DRAIN NEAR COOLIDGE, KANS.

LOCATION.—In sec. 16, T. 23 S., R. 43 W., where Santa Fe Railroad crosses Cheyenne Creek, half a mile above mouth and 3 miles southeast of Coolidge, Hamilton County.

RECORDS AVAILABLE.—January 1, 1924, to September 30, 1927.

EQUIPMENT.—Water-stage recorder; discharge measurements made from footbridge over wooden rating flume.

CHANNEL AND CONTROL.—Excavated channel. Bed composed of sand and clay, which shifts slightly.

EXTREMES OF DISCHARGE.—1924–1927: Maximum stage recorded, 6.5 feet July 29, 1927 (discharge, 390 second-feet).

ACCURACY.—Stage-discharge relation slightly shifting. Not affected by ice except at rare intervals. Rating curves well defined by 12 to 16 current meter measurements each year. Records considered good.

COOPERATION.—Complete records furnished by State engineer of Colorado.

Drain is for purpose of removing excess irrigation water from land lying on north side of Arkansas River between this gaging station and point several miles above Holly, Colo. It was built in 1923; flow prior to January, 1924, was negligible. Water for irrigation is diverted from Arkansas River. Flow of Holly drain is returned to Arkansas River half a mile below station.

Daily discharge, in second-feet, of Holly drain near Coolidge, Kans., for the years ending September 30, 1924–1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1924												
1								33	56	39	36	29
2								33	61	34	34	34
3								34	54	34	36	35
4								34	46	33	38	33
5								35	44	36	38	30
6								35	48	38	38	30
7								36	46	34	36	34
8								39	44	33	39	31
9								38	48	42	40	34
10								40	42	37	35	36
11								42	46	36	77	40
12								40	47	38	37	42
13								40	67	36	42	37
14								45	54	38	50	40
15								45	74	36	53	41
16								42	91	44	57	40
17						17		43	70	59	52	42
18								50	68	62	42	48
19								48	65	48	38	50
20								51	62	45	34	38
21								53	62	40	26	39
22								48	58	44	29	38
23				12				46	51	43	24	38
24							24	44	48	47	27	38
25								42	40	45	30	38
26								42	33	42	30	38
27								49	37	40	30	40
28								48	38	40	32	41
29								52	37	38	33	42
30								59	39	36	32	40
31								55		38	31	
1924–25												
1	40	35	29	33	33	31	32	26	34	30	47	28
2	42	35	30	33	33	32	32	26	33	30	47	29
3	42	34	32	32	32	33	32	26	34	30	54	29
4	43	42	30	33	31	32	32	26	34	42	47	31
5	42	39	33	33	31	31	31	26	33	40	39	31

Daily discharge, in second-feet, of Holly drain near Coolidge, Kans., for the years ending September 30, 1924–1927—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1924–25												
6	40	35	35	32	31	31	31	29	32	32	35	33
7	42	36	38	32	31	31	30	32	33	28	35	32
8	45	35	37	32	31	32	30	33	37	28	37	34
9	41	34	34	33	31	30	30	30	36	27	33	36
10	42	34	31	32	31	30	30	29	34	27	31	37
11	48	33	31	33	31	31	29	28	33	27	29	36
12	43	34	31	33	31	32	29	29	31	27	29	33
13	42	36	31	32	37	33	29	30	30	26	28	33
14	43	36	32	31	34	33	28	31	29	26	31	50
15	44	35	32	32	32	34	28	31	30	27	31	38
16	41	35	31	33	31	33	28	32	31	31	31	33
17	36	34	32	32	37	34	28	32	32	33	31	34
18	34	35	33	32	38	36	28	32	33	33	31	30
19	35	42	32	32	36	36	28	33	32	34	29	28
20	34	44	32	31	37	37	28	33	32	37	31	26
21	36	40	32	31	34	36	29	33	34	33	32	26
22	34	33	32	32	35	34	28	30	30	38	30	27
23	36	30	32	32	33	35	28	31	29	37	30	26
24	36	31	32	32	32	34	27	32	29	37	29	21
25	36	34	32	32	34	34	26	36	30	36	30	19
26	36	35	32	33	36	34	26	34	30	32	31	23
27	38	40	31	32	31	34	26	32	30	33	30	24
28	43	32	32	32	31	34	26	32	30	38	29	24
29	46	29	31	33	------	33	26	36	30	44	29	21
30	57	28	31	33	------	34	26	35	32	39	28	27
31	36	------	31	33	------	32	------	35	------	42	28	------
1925–26												
1	27	28	27	32	27	24	26	38	60	37	33	22
2	27	32	27	32	26	25	26	41	65	32	33	22
3	26	35	25	32	27	25	27	39	70	33	32	26
4	26	31	27	31	26	28	26	38	70	31	31	32
5	26	32	27	31	26	40	27	41	55	32	32	34
6	26	32	27	31	26	38	26	48	40	32	30	34
7	25	32	28	31	25	40	26	53	45	39	31	28
8	26	32	28	31	25	44	26	52	45	36	33	26
9	25	32	29	31	25	47	25	39	50	45	30	25
10	26	32	31	31	26	46	26	41	59	115	30	31
11	26	32	30	31	26	47	25	42	50	60	30	31
12	26	32	31	31	26	49	27	35	53	55	29	34
13	26	31	31	32	25	49	28	33	40	75	28	37
14	33	31	29	32	25	49	31	39	47	99	33	38
15	26	31	30	31	25	50	32	43	113	75	40	32
16	26	31	30	32	25	45	35	40	58	57	43	37
17	27	31	32	32	25	41	34	40	84	53	45	38
18	29	31	32	32	25	41	42	49	116	52	43	35
19	29	31	32	32	25	38	46	42	93	46	35	34
20	31	30	31	31	25	37	42	50	78	36	29	30
21	31	33	31	30	25	38	48	50	65	34	29	27
22	31	38	31	29	25	40	56	44	70	31	28	26
23	28	27	31	29	25	58	44	48	66	31	32	25
24	28	27	31	29	25	48	36	49	62	31	28	25
25	28	28	31	28	25	43	34	42	57	30	26	30
26	25	28	32	28	25	42	35	32	64	31	26	31
27	28	28	31	28	25	46	37	31	59	31	27	32
28	29	28	31	28	25	30	49	32	62	33	25	32
29	27	28	31	28	------	28	38	50	55	32	26	33
30	29	27	32	28	------	28	38	65	44	30	25	33
31	29	------	31	28	------	27	------	60	------	32	23	------
1926–27												
1	32	27	42	25	27	26	24	26	30	19	30	16
2	33	23	42	26	28	25	24	26	41	19	26	16
3	31	22	41	25	27	24	24	27	38	19	22	16
4	33	21	40	26	28	25	23	28	32	20	20	16
5	38	21	40	27	30	24	24	27	37	19	18	15

Daily discharge, in second-feet, of Holly drain near Coolidge, Kans., for the years ending September 30, 1924–1927—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1926-27												
6	37	22	39	26	29	24	24	30	39	19	16	16
7	36	22	32	26	28	23	32	30	43	23	16	18
8	35	21	32	26	28	28	28	31	40	18	15	20
9	32	22	35	26	28	41	29	29	32	19	15	17
10	32	21	33	25	28	28	35	30	32	100	16	16
11	32	22	31	25	27	25	39	30	32	90	16	16
12	32	22	30	26	27	26	32	33	36	38	16	16
13	32	22	29	25	28	26	29	34	28	32	16	16
14	30	23	27	25	27	29	38	32	26	150	16	16
15	29	30	27	25	27	30	42	34	29	19	16	18
16	32	42	26	25	26	27	41	32	39	17	13	18
17	30	26	26	25	24	26	33	30	32	17	12	18
18	25	24	27	25	24	38	39	30	29	16	12	17
19	25	25	27	25	26	64	43	32	34	16	13	17
20	24	29	27	24	26	25	46	32	32	15	12	17
21	24	36	27	24	26	25	41	30	25	20	12	17
22	24	26	27	25	25	24	42	30	35	22	14	17
23	23	25	26	25	24	24	43	29	35	17	15	17
24	22	24	25	25	46	24	42	29	34	23	15	18
25	24	23	26	25	47	23	40	29	32	15	16	20
26	26	23	26	26	49	24	38	27	24	15	17	25
27	29	23	26	26	38	24	36	28	22	15	15	30
28	26	30	26	26	26	24	30	29	19	90	16	40
29	29	42	25	26	------	24	30	29	18	225	17	45
30	31	42	25	26	------	24	28	30	19	42	19	44
31	32	------	25	26	------	23	------	30	------	30	17	------

NOTE.—Table includes some waste water and discharge from Cheyenne Creek, which is dry except after infrequent heavy rains.

Monthly discharge of Holly drain near Coolidge, Kans., for the years ending September 30, 1924–1927

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
1924				
January	----------	----------	12.0	738
February	----------	----------	14.0	805
March	----------	----------	19.0	1,170
April	----------	----------	29.0	1,730
May	59	33	43.3	2,660
June	91	33	52.5	3,120
July	62	33	40.5	2,490
August	77	24	37.9	2,330
September	50	29	37.9	2,260
The period	----------	----------	----------	17,300
1924-25				
October	57	34	40.4	2,480
November	44	28	35.2	2,090
December	38	29	32.1	1,970
January	33	31	32.3	1,990
February	38	31	33.0	1,830
March	37	30	33.1	2,040
April	32	26	28.7	1,710
May	36	26	31.0	1,910
June	37	29	31.9	1,900
July	44	26	33.0	2,030
August	54	28	33.3	2,050
September	50	19	30.0	1,790
The year	57	19	32.8	23,800

Monthly discharge of Holly drain near Coolidge, Kans., for the year ending September 30, 1924–1927—Continued

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
1925–26				
October	33	25	27.5	1,690
November	35	27	30.7	1,830
December	32	25	29.9	1,840
January	32	28	30.4	1,870
February	27	25	25.4	1,410
March	58	24	39.7	2,440
April	56	25	33.9	2,020
May	65	31	43.4	2,670
June	116	40	63.2	3,760
July	115	30	44.7	2,750
August	45	23	31.1	1,910
September	38	22	30.7	1,830
The year	116	22	35.9	26,000
1926–27				
October	38	22	29.7	1,830
November	42	21	26.0	1,550
December	42	25	29.9	1,840
January	27	24	25.4	1,560
February	49	24	29.4	1,630
March	64	23	27.3	1,680
April	46	23	34.0	2,020
May	34	26	29.8	1,830
June	43	18	31.5	1,870
July	225	15	38.7	2,380
August	30	12	16.4	1,010
September	45	15	20.3	1,210
The year	225	12	28.2	20,400

NOTE.—Holly drain built during 1923. Flow therein before January, 1924, was negligible. Mean discharge for January, February, March, and April, 1924, is estimated.

PAWNEE RIVER NEAR LARNED, KANS.

LOCATION.—In sec. 33, T. 21 S., R. 18 W., at Moffet Dam, 11½ miles west of Larned, Pawnee County.

DRAINAGE AREA.—About 2,300 square miles.

RECORDS AVAILABLE.—November 21, 1924, to September 30, 1927.

EQUIPMENT.—Water-stage recorder attached to downstream side of right abutment of Moffet Dam. Discharge measurements made by wading at low stages.

CHANNEL AND CONTROL.—Channel straight for about 200 feet above and below gage. An artificial low-water control exists 190 feet below gage. Banks high, covered with heavy growth of trees.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 10.4 feet at 2 p. m. April 9 (discharge, 864 second-feet); minimum discharge, 1 second-foot October 1–20, 26–31, and November 1–7.

1925–1927: Maximum stage recorded, 17.95 feet April 4, 1925 (discharge, 2,150 second-feet); no flow May 5–7 and July 16, 1926.

DIVERSIONS AND REGULATION.—Small amounts pumped from river for irrigating adjacent lands. Moffet Dam used for impounding water within river banks.

ACCURACY.—Stage-discharge relation permanent. Rating curve fairly well defined, checked by eight discharge measurements, covering a range from 7 to 862 second-feet. Operation of water-stage recorder satisfactory except as indicated in footnote to table of daily discharge. Daily discharge ascertained by applying to rating table mean daily gage height obtained by inspecting graph. Records fair.

Daily discharge, in second-feet, of Pawnee River near Larned, Kans., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1	1	5	4	5	5		20	4		47	26
2	1	1	5	4	5	4		17	138		37	26
3	1	1	5	4	5	5		15	-------		31	21
4	1	1	4	4	5	5	10	15	-------		70	50
5	1	1	4	4	5	5		13	-------		468	59
6	1	1	3	4	5	5		22	-------		342	52
7	1	1	4	4	8	5	12	190	-------		77	43
8	1	3	3	4	5	5	301	468	-------	15	67	25
9	1	4	4	5	4	5	766	190	-------		68	28
10	1	6	4	4	4	6	690	59	-------		52	17
11	1	8	4	4	4	22	656	51	-------		50	14
12	1	9	4	5	4	25	210	40	-------		56	14
13	1	9	3	4	5	15	65	37	-------		99	12
14	1	9	3	4	4	58	90	35	-------		290	10
15	1	8	3	4	4	37	65	32	-------	16	272	9
16	1	7	3	4	4	22	57	29	-------	14	342	8
17	1	6	3	4	5	17	39	29	-------	13	148	8
18	1	5	4	4	4	12	33	27	-------	13	80	7
19	1	5		4	3	10	29	23	-------	10	58	7
20	1	5		4	3	7	83	22	-------	4	54	20
21	2	5		4	4	6	70	20	-------	5	44	31
22	2	5		4	5	7	39	17	-------	4	36	16
23	2	5		4	6	7	35	18	-------	36	34	17
24	2	5	4	4	5	7	29	18	-------	95	31	13
25	2	5		4	6	7	29	15	-------	32	29	11
26	1	5		4	7	7	25	10	-------	16	33	211
27	1	5		4	7	7	23	10	-------	8	40	108
28	1	5		4	6	9	25	9	-------	8	40	44
29	1	5	11	5	-------	9	23	9	-------	30	35	39
30	1	5	15	5	-------	10	22	7	-------	236	31	31
31	1	-------	4	5	-------	10	-------	5	-------	67	26	------

NOTE.—No gage-height record Dec. 19–28, Mar. 30 to Apr. 6, June 3 to July 5, and July 7–14; discharge based on climatic data and observer's notes. Braced figures show mean discharge for periods indicated.

Monthly discharge of Pawnee River near Larned, Kans., for the year ending September 30, 1927

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	2	1	1.16	71
November	9	1	4.70	280
December	15	3	4.45	274
January	5	4	4.16	256
February	8	3	4.89	272
March	58	4	11.6	713
April	766	-------	116	6,900
May	468	5	47.5	2,920
July	236	4	26.4	1,620
August	468	26	99.6	6,120
September	211	7	32.6	1,940

LITTLE ARKANSAS RIVER AT VALLEY CENTER, KANS.

LOCATION.—In SW. ¼ sec. 1, T. 26 S., R. 1 W., at highway bridge half a mile west of Goodrich station on the Arkansas Valley Interurban Railroad, 1 mile south of Valley Center, Sedgwick County, and 14 miles above mouth.

DRAINAGE AREA.—1,340 square miles (measured on topographic map).

RECORDS AVAILABLE.—June 10, 1922, to September 30, 1927.

EQUIPMENT.—Chain gage on upstream handrail of bridge. Discharge measurements made from upstream side of bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of silt and gravel. Lodged snags and driftwood are frequent. Control is sand and gravel bar under bridge; fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 17.00 feet at 6.30 a. m. August 17 (discharge, 9,200 second-feet); minimum stage, 0.90 foot at 8 a. m. October 2 (discharge, 30 second-feet).

1922–1927: Maximum stage recorded, 18.02 feet on June 10, 1923 (discharge, 10,500 second-feet); minimum discharge, 4 second-feet on December 17, 1922.

ACCURACY.—Stage-discharge relation permanent. Rating curve fairly well defined to 3,500 second-feet; checked by discharge measurements of 35, 56, and 3,200 second-feet during year. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good.

Daily discharge, in second-feet, of Little Arkansas River at Valley Center, Kans., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	33	46	49	42	46	42	66	82	40	70	60	1,220
2	30	46	49	42	46	42	120	74	40	66	82	653
3	388	46	49	42	42	42	82	70	56	74	66	388
4	5,850	46	46	42	46	42	70	66	388	66	63	298
5	2,870	46	49	42	49	42	60	63	701	56	56	232
6	753	46	49	42	46	42	52	70	492	52	49	780
7	248	46	49	42	46	42	49	74	144	49	42	2,250
8	162	56	49	42	42	42	60	120	100	46	46	980
9	100	1,330	49	42	42	46	753	264	74	46	49	630
10	96	1,220	52	41	42	49	864	350	63	42	46	515
11	115	676	52	41	41	49	980	298	52	42	42	217
12	162	449	49	40	38	52	428	162	56	42	49	202
13	2,660	248	49	38	46	52	188	105	60	42	653	162
14	1,110	162	41	36	46	49	162	82	63	42	2,590	138
15	653	126	41	41	46	49	144	70	281	42	1,590	120
16	162	100	39	42	49	49	248	70	100	41	6,030	110
17	150	87	41	39	46	49	217	66	105	41	8,190	105
18	110	74	42	36	46	49	162	63	96	42	5,850	100
19	100	70	42	39	42	52	1,540	60	202	41	3,300	92
20	175	66	46	38	42	138	1,460	56	780	38	2,130	87
21	120	63	46	42	41	162	1,110	56	920	36	1,460	87
22	74	63	49	46	42	120	1,080	92	864	35	607	82
23	66	60	49	42	42	82	332	52	1,080	34	264	87
24	60	60	49	42	42	66	188	49	1,080	33	607	87
25	56	56	49	41	42	56	150	49	350	32	864	87
26	56	56	49	39	42	49	126	46	175	32	561	87
27	52	52	46	39	42	46	110	46	132	31	892	87
28	52	52	46	41	41	42	105	41	105	30	5,850	87
29	49	49	49	41	------	42	92	40	82	39	3,700	92
30	49	49	46	42	------	49	87	39	78	82	2,380	87
31	49	------	46	46	------	49	------	39	------	49	2,010	------

Monthly discharge of Little Arkansas River at Valley Center, Kans., for the year ending September 30, 1927

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	5,850	30	536	33,000
November	1,330	46	185	11,000
December	52	39	47.0	2,890
January	46	36	41.0	2,520
February	49	38	43.7	2,430
March	162	42	57.5	3,540
April	1,540	49	370	22,000
May	350	39	90.8	5,580
June	1,080	40	292	17,400
July	82	30	45.6	2,800
August	8,190	42	1,620	99,600
September	2,250	82	338	20,100
The year	8,190	30	308	223,000

WALNUT RIVER AT WINFIELD, KANS.

LOCATION.—In NE. ¼ sec. 33, T. 32 S., R. 4 E., at concrete highway bridge 1 mile south of Winfield, Cowley County, 1 mile above Black Creek and 3 miles below Timber Creek.

DRAINAGE AREA.—1,860 square miles.

RECORDS AVAILABLE.—November 14, 1921, to September 30, 1927.

EQUIPMENT.—Chain gage on upstream handrail of bridge. Discharge measurements made from downstream side of bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of silt, sand, and rock; shifting. Control is gravel bar 500 feet below gage; shifting.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 33.88 feet at 11 a. m. April 20 (discharge, 24,100 second-feet); minimum stage, 3.57 feet 7 a. m. on July 28 (discharge, 119 second-feet).

1921–1927: Maximum stage recorded, 38.7 feet on June 10, 1923 (discharge, 76,000 second-feet); minimum discharge, 0.5 second-foot on September 8, 1925.

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent between shifts; not affected by ice. Rating curve used to October 4 well defined; curve used after October 4 well defined to 13,000 second-feet by three discharge measurements of 189, 2,110, and 6,060 second-feet and merging with previous curve above discharge of 8,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

Daily discharge, in second-feet, of Walnut River at Winfield, Kans., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	305	338	285	285	410	184	8,450	785	255	320	270	970
2	7,210	302	255	255	338	184	13,500	725	475	302	1,380	785
3	18,800	285	270	270	355	171	6,380	620	1,520	302	5,800	725
4	22,900	285	255	255	302	184	2,120	595	338	270	3,140	620
5	22,500	285	255	255	285	171	905	545	725	255	1,300	545
6	16,900	285	255	255	285	197	725	1,960	410	255	475	2,980
7	5,760	285	338	255	240	197	620	2,980	302	211	338	5,680
8	1,520	2,270	595	240	240	184	16,000	2,270	255	197	338	5,020
9	1,160	2,610	670	240	225	197	20,000	845	225	197	1,380	1,660
10	970	2,040	570	240	225	302	6,280	620	211	184	845	670
11	1,100	970	498	225	211	320	2,700	545	211	171	372	570
12	4,740	620	452	240	225	338	1,740	545	197	225	2,520	498
13	4,140	390	410	225	225	390	5,200	498	3,800	225	6,550	452
14	3,860	620	372	240	225	452	5,280	475	1,160	905	5,980	410
15	1,380	725	338	225	211	355	8,530	670	410	725	4,790	372
16	905	725	320	211	225	320	11,300	410	338	302	6,080	355
17	720	410	302	211	225	270	4,740	372	2,120	302	10,200	320
18	670	338	302	211	211	225	3,800	372	6,550	430	14,100	302
19	620	390	302	225	211	595	18,800	372	5,900	498	13,900	285
20	725	372	320	225	225	3,860	23,100	372	7,510	211	5,640	270
21	475	320	320	184	211	2,700	20,700	338	8,530	197	1,240	270
22	620	355	320	197	211	670	6,440	338	5,320	430	1,040	270
23	520	320	302	197	197	595	2,120	338	1,380	302	785	338
24	430	320	320	225	184	372	1,660	338	905	225	2,800	302
25	430	302	320	255	211	355	1,520	338	452	159	1,380	355
26	390	320	302	285	197	320	1,380	320	520	147	785	355
27	372	320	285	302	197	285	1,960	302	430	159	905	320
28	390	320	285	320	197	285	1,040	285	390	136	10,000	338
29	390	320	285	320	-------	570	905	255	372	372	10,600	410
30	430	285	285	372	-------	785	845	255	338	785	8,000	430
31	390	-------	270	355	-------	430	-------	255	-------	338	1,440	-------

Monthly discharge of Walnut River at Winfield, Kans., for the year ending September 30, 1927

[Drainage area, 1,860 square miles]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	22,900	305	3,930	2.11	2.43	242,000
November	2,610	285	591	.318	.35	35,200
December	670	255	344	.185	.21	21,200
January	372	184	252	.135	.16	15,500
February	410	184	239	.128	.13	13,300
March	3,860	171	531	.285	.33	32,600
April	23,100	620	6,620	3.56	3.97	394,000
May	2,980	255	643	.346	.40	39,500
June	8,530	197	1,720	.925	1.03	102,000
July	905	136	314	.169	.19	19,300
August	14,100	270	4,010	2.16	2.49	247,000
September	5,680	270	896	.482	.54	53,300
The year	23,100	136	1,680	.903	12.23	1,210,000

VERDIGRIS RIVER AT INDEPENDENCE, KANS.

LOCATION.—In NE. ¼ sec. 31, T. 32 S., R. 16 E., at highway bridge 1 mile east of Independence, Montgomery County, 2½ miles below Elk River, and 4½ miles above Drum Creek.

DRAINAGE AREA.—2,800 square miles.

RECORDS AVAILABLE.—November 14, 1921, to September 30, 1927. Intermittent records of stage were obtained April 24 to September 24, 1904.

EQUIPMENT.—Chain gage on upstream side of bridge. Discharge measurements made from upstream side of bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of silt and rock; permanent. Control is rock riffle 30 feet below gage; permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 45.24 feet at 8.45 p. m. April 20 (discharge, 101,000 second-feet); minimum stage, 2.07 feet 3.30 p. m. May 4 (discharge, 124 second-feet).

1921–1927: Maximum stage recorded, 45.24 feet April 20, 1927 (discharge, 101,000 second-feet); minimum stage, 0.42 foot on August 11, 1926 (discharge, 0.1 second-foot).

1904: Maximum stage recorded, 46.7 feet on July 8 referred to present gage datum.

ACCURACY.—Stage-discharge relation permanent; not affected by ice. Rating curve well defined throughout; checked by discharge measurement of 330 second-feet made June 9. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good.

Daily discharge, in second-feet, of Verdigris River at Independence, Kans., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	990	360	275	390	1,420	450	14,100	1,470	1,470	600	2,270	1,150
2	14,800	345	275	390	810	950	9,600	1,720	2,220	540	1,940	950
3	27,600	330	262	390	950	1,280	13,000	635	1,570	510	6,290	740
4	40,600	300	262	390	1,070	1,670	8,720	124	1,150	420	2,710	740
5	42,300	288	262	360	1,420	480	5,870	570	810	390	1,420	540
6	34,700	275	600	360	845	360	3,910	705	450	345	705	1,470
7	29,400	315	1,030	360	600	315	8,100	1,670	360	288	950	5,590
8	19,400	360	1,470	345	880	262	17,000	4,120	330	212	2,540	3,910
9	3,580	635	1,670	330	705	330	28,100	6,080	300	315	7,600	2,220
10	3,980	600	1,880	315	1,070	480	41,700	2,050	288	262	11,200	1,520
11	5,030	540	1,280	330	1,070	990	27,900	1,330	225	262	1,720	740
12	5,030	480	1,070	345	1,670	510	21,400	635	250	238	1,720	570
13	8,160	480	845	390	880	480	21,800	990	600	262	7,520	420
14	2,980	450	670	345	950	330	27,800	570	1,420	250	3,400	390
15	2,220	420	600	330	880	300	29,400	810	990	238	4,400	390
16	1,470	420	540	345	600	315	35,000	450	600	450	11,300	390
17	1,280	450	420	345	570	262	27,500	670	740	360	15,900	330
18	1,030	480	420	360	510	1,070	25,000	570	17,600	345	18,400	315
19	880	480	420	360	480	7,840	27,200	990	23,300	288	8,800	288
20	810	450	420	360	450	6,990	71,600	915	31,200	238	1,880	275
21	775	420	450	345	390	4,750	42,900	480	36,600	212	1,330	250
22	740	390	600	315	360	3,340	27,300	480	33,300	1,330	1,030	238
23	705	360	740	360	315	2,760	17,500	345	17,900	420	1,420	238
24	635	345	740	315	390	1,520	16,900	1,470	6,640	330	5,030	250
25	570	330	705	390	450	1,280	10,200	2,200	1,780	238	2,710	345
26	540	315	635	705	390	1,070	3,100	810	1,380	212	1,330	635
27	540	315	570	775	360	810	1,200	390	1,110	200	1,150	480
28	480	315	390	1,420	360	670	635	315	915	162	8,400	420
29	450	300	450	5,800	-------	950	360	390	775	1,720	8,640	330
30	420	288	420	3,340	-------	510	330	288	670	635	2,600	262
31	390	-------	420	1,570	-------	2,880	-------	275	-------	2,000	1,570	-------

Monthly discharge of Verdigris River at Independence, Kans., for the year ending September 30, 1927

[Drainage area, 2,800 square miles]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	42,300	390	8,140	2.91	3.36	501,000
November	635	275	395	.141	.16	23,500
December	1,880	262	671	.240	.28	41,300
January	5,800	315	725	.259	.30	44,600
February	1,670	315	747	.267	.28	41,500
March	7,840	262	1,490	.532	.61	91,600
April	71,600	330	19,500	6.97	7.78	1,160,000
May	6,080	124	1,110	.396	.46	68,200
June	36,600	225	6,230	2.23	2.49	371,000
July	2,000	162	460	.164	.19	28,300
August	18,400	705	4,770	1.70	2.00	293,000
September	5,590	238	879	.314	.35	52,300
The year	71,600	124	3,750	1.34	18.26	2,720,000

NEOSHO RIVER NEAR IOLA, KANS.

LOCATION.—In NE. ¼ sec. 9, T. 25 S., R. 18 E., 3 miles southwest of Iola, Allen County, half a mile below Elm Creek, and 8 miles above Owl Creek.

DRAINAGE AREA.—3,800 square miles.

RECORDS AVAILABLE.—October 12, 1917, to September 30, 1927. August 1, 1895, to November 30, 1903, at city water and power dam 4 miles upstream.

EQUIPMENT.—Water-stage recorder on left bank three-fourths of a mile above pipe-line ford. Discharge measurements made from cable at gage or by wading.

CHANNEL AND CONTROL.—Bed composed of shale, gravel, and silt; permanent. Control is a long shale riffle half a mile below gage; practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage during year, 29.8 feet at 10.30 a. m. April 19 (discharge, 34,000 second-feet); minimum stage, 3.45 feet 1 a. m. January 23 (discharge, 214 second-feet).

1917–1927: Maximum stage recorded, 33.2 feet September 13, 1926 (discharge, 46,000 second-feet); minimum stage, 1.9 feet on June 23, 1920 (discharge, 1 second-foot).

1895–1903: Maximum stage recorded on Weather Bureau gage, 22.0 feet on June 3, 1903 (discharge, 39,100 second-feet); minimum discharge, no flow on several days in September and October, 1897.

REGULATION.—Low-water flow regulated by dams upstream.

ACCURACY.—Stage-discharge relation permanent except when affected by ice. Well-defined rating curve used; checked by four discharge measurements made during year and covering a range from 500 to 18,300 second-feet. Water-stage recorder operated satisfactorily except as indicated in footnote to table of daily discharge. Daily discharge ascertained by applying to rating table mean daily gage height determined by inspecting recorder graph. Records for periods recorder was operating, good; for other periods, fair.

Daily discharge, in second-feet, of Neosho River near Iola, Kans., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	885	584	450	374	1,680	305	18,000	2,000	715	920	815	3,870
2	8,320	551	440	356	1,360	286	16,500	2,000	850	920	551	2,610
3	22,100	530	426	360	1,060	278	14,300	1,760	1,600	780	1,640	1,130
4	26,500	510	402	347	885	274	14,100	1,600	5,520	780	1,160	1,130
5	27,000	485	392	365	885	282	10,500	3,550	5,300	780	655	1,020
6	26,900	475	397	356	794	266	2,700	12,000	2,970	780	540	1,600
7	23,500	465	625	347	673	297	2,120	16,300	2,250	655	490	2,700
8	19,300	490	1,360	347	601	2,430	9,060	15,500	1,130	595	5,960	4,090
9	17,900	633	1,360	326	540	1,960	18,800	14,400	829	540	2,120	6,520
10	4,090	1,020	1,160	326	520	1,020	16,500	14,900	741	440	955	4,090
11	2,340	1,920	955	297	480	655	9,190	15,200	643	440	655	2,120
12	2,200	2,080	815	305	465	885	11,000	9,450	562	392	595	1,240
13	2,880	1,440	715	326	465	2,000	13,700	3,250	613	392	728	955
14	4,420	1,060	613	318	470	1,320	13,900	2,200	619	392	10,500	836
15	5,630	1,200	515	313	515	1,130	18,200	1,880	1,520	495	14,900	748
16	3,650	1,560	515	347	535	836	18,200	1,640	3,450	715	16,300	655
17	2,040	1,200	397	313	495	631	16,400	1,400	990	920	16,500	584
18	1,560	885	397	305	480	546	18,200	1,320	1,680	1,100	16,100	562
19	1,360	774	392	322	445	9,970	31,900	1,200	7,720	955	14,900	515
20	2,880	691	388	297	402	14,600	31,700	1,100	21,400	767	12,700	485
21	5,630	637	397	305	379	4,310	28,600	1,020	23,500	584	11,500	455
22	3,650	584	435	305	365	2,520	24,400	955	18,000	584	11,000	440
23	1,760	540	470	259	352	1,920	21,800	955	13,400	540	5,850	440
24	1,240	535	485	262	343	1,160	21,800	1,020	14,600	540	4,310	440
25	1,060	535	460	293	339	607	10,200	1,020	16,000	440	4,090	430
26	955	520	440	313	326	540	3,650	885	12,700	370	2,520	440
27	850	510	430	430	297	540	3,060	829	2,340	360	1,840	495
28	780	500	426	715	266	540	2,610	734	1,440	347	1,600	510
29	734	490	406	1,880	-------	540	2,300	667	1,130	505	1,480	728
30	667	475	392	2,300	-------	540	2,120	595	1,060	1,840	3,250	613
31	637	-------	383	1,920	-------	8,200	-------	655	-------	1,160	4,860	------

NOTE.—No gage-height record Mar. 27, 28, May 31 to June 8, June 16 to July 14, July 30 to Aug. 4, and Sept. 9; discharge based on study of United States Weather Bureau gage-height record for station 4 miles upstream.

Monthly discharge of Neosho River near Iola, Kans., for the year ending September 30, 1927

[Drainage area, 3,800 square miles]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	27,000	637	7,210	1.90	2.19	443,000
November	2,080	465	796	.209	.23	47,400
December	1,360	383	563	.148	.17	34,600
January	2,300	259	504	.133	.15	31,000
February	1,680	266	586	.154	.16	32,500
March	14,600	266	1,980	.521	.60	122,000
April	31,900	2,120	14,200	3.74	4.17	845,000
May	16,300	595	4,260	1.12	1.29	262,000
June	23,500	562	5,510	1.45	1.62	328,000
July	1,840	347	678	.178	.21	41,700
August	16,500	490	5,520	1.45	1.67	339,000
September	6,520	430	1,410	.371	.41	83,900
The year	31,900	259	3,600	.947	12.87	2,610,000

NEOSHO RIVER NEAR PARSONS, KANS.

LOCATION.—In NW. ¼ sec. 22, T. 31 S., R. 21 E., at bridge on Parsons-Pittsburg highway, 500 feet above St. Louis-San Francisco Railroad bridge, 800 feet below Hickory Creek, and 10 miles east of Parsons, Labette County.

DRAINAGE AREA.—4,860 square miles.

RECORDS AVAILABLE.—October 18, 1921, to September 30, 1927.

EQUIPMENT.—Chain gage on upstream handrail of bridge. Discharge measurements made from downstream side of bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of flat solid rock; permanent. No well-defined control. Bank-full stage, 24 feet.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 27.45 feet at 5 p. m. April 22 (discharge, 47,800 second-feet); minimum stage, 2.85 feet on January 26 (discharge, 468 second-feet).

1921–1927: Maximum stage recorded, 27.45 feet at 5 p. m. April 22, 1927 (discharge, 47,800 second-feet); minimum stage, 1.12 feet December 3, 1921 (discharge, 18 second-feet).

REGULATION.—Low-water flow regulated by dams upstream.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined throughout; checked by discharge measurement of 2,540 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

Daily discharge, in second-feet, of Neosho River near Parsons, Kans., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,540	850	630	558	2,860	490	18,000	2,540	1,080	1,560	2,380	3,500
2	12,300	795	580	558	2,460	490	21,400	2,380	6,340	1,380	2,020	4,180
3	22,600	740	558	558	2,020	490	21,600	2,230	4,630	1,200	1,440	2,230
4	26,900	685	512	558	1,760	490	21,200	1,820	2,090	1,200	1,440	1,560
5	27,400	685	490	535	1,630	535	19,100	1,960	2,940	1,200	1,140	1,380
6	29,000	630	630	535	1,500	558	14,700	7,600	5,400	1,140	1,320	1,890
7	31,600	630	1,960	535	1,380	580	3,910	16,200	4,450	1,080	2,780	1,820
8	33,800	630	1,960	535	1,260	580	22,400	19,000	2,780	960	7,240	1,700
9	33,800	740	2,780	512	1,080	1,960	38,000	19,500	2,230	850	19,100	1,630
10	31,100	795	3,020	512	960	1,890	36,200	17,900	1,260	795	15,800	5,100
11	27,400	960	1,960	468	1,080	1,560	33,800	15,800	960	740	3,660	5,700
12	13,400	1,560	1,560	468	1,500	1,200	32,700	15,400	905	685	2,090	2,620
13	4,900	2,300	1,380	685	1,560	1,020	33,300	14,100	850	630	1,200	1,700
14	4,720	3,100	1,140	740	1,200	1,700	32,200	5,500	960	905	7,600	1,560
15	4,900	1,700	960	468	1,020	1,820	30,600	2,620	960	850	22,600	1,440

Daily discharge, in second-feet, of Neosho River near Parsons, Kans., for the year ending September 30, 1927—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
16	6,120	1,560	685	468	905	1,500	28,300	2,300	1,080	740	26,300	1,080
17	4,540	1,820	630	468	850	1,320	26,100	2,000	4,540	850	27,400	850
18	3,500	1,500	630	468	795	1,080	25,300	1,820	6,670	1,020	26,900	795
19	2,090	1,200	630	468	685	5,100	25,100	1,890	20,700	1,080	25,600	740
20	1,820	1,080	630	468	685	19,000	25,800	1,890	23,400	1,140	23,200	685
21	2,540	960	630	468	630	20,200	28,000	1,500	26,300	1,080	18,500	630
22	5,400	850	685	468	630	13,700	46,000	1,380	25,800	1,440	14,400	580
23	4,540	740	740	558	580	3,820	42,600	1,200	25,800	1,020	11,900	558
24	2,860	740	905	535	558	2,780	37,400	5,300	25,300	685	7,120	535
25	1,700	740	905	468	558	1,820	33,300	6,670	23,700	685	5,600	580
26	1,320	685	795	468	535	1,440	29,300	3,580	19,000	630	4,720	580
27	1,320	685	740	558	512	1,320	21,900	1,320	12,200	630	3,340	630
28	1,200	740	740	1,700	512	1,140	10,700	1,020	5,200	490	2,380	630
29	1,080	685	630	3,910	-------	1,080	3,740	960	2,860	580	2,090	740
30	960	685	630	4,630	-------	1,440	2,940	905	1,960	685	1,820	6,120
31	905	-------	630	4,090	-------	4,270	-------	795	-------	1,700	1,700	------

Monthly discharge of Neosho River near Parsons, Kans., for the year ending September 30, 1927

[Drainage area, 4,860 square miles]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	33,800	905	11,200	2.29	2.64	689,000
November	3,100	630	1,050	.216	.24	62,500
December	3,020	490	1,010	.208	.24	62,100
January	4,630	468	917	.189	.22	56,400
February	2,860	512	1,130	.233	.24	62,800
March	20,200	490	3,110	.640	.74	191,000
April	46,000	2,940	25,500	5.25	5.85	1,520,000
May	19,500	795	5,780	1.19	1.37	355,000
June	26,300	850	8,740	1.80	2.00	520,000
July	1,700	490	956	.197	.23	53,800
August	27,400	1,140	9,510	1.96	2.26	585,000
September	6,120	535	1,790	.368	.41	107,000
The year	46,000	468	5,880	1.21	16.44	4,270,000

NEOSHO RIVER NEAR GROVE, OKLA.

LOCATION.—In SE. ¼ sec. 27, T. 25 N., R. 23 E., at bridge on State highway No. 25, 3 miles below Spring Branch, and 3½ miles northwest of Grove, Delaware County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—February 21, 1925, to September 30, 1927.

EQUIPMENT.—Chain gage on upstream side of bridge. Discharge measurements made from downstream side of bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of gravel; practically permanent. No well-defined control.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 34.6 feet at 11 p. m. April 15 (discharge, 133,000 second-feet; determined from extension of rating curve); minimum stage, 1.85 feet at 6 a. m. September 23 (discharge, 1,530 second-feet).

1925–1927: Maximum stage recorded, that of April 15, 1927; minimum discharge, about 250 second-feet during first week in September, 1925.

DIVERSIONS AND REGULATION.—Slight diurnal fluctuation at low stages is caused by operation of power plants upstream.

ACCURACY.—Stage-discharge relation changed April 15; not affected by ice. Rating curve used to April 15 well defined below 100,000 second-feet by 12 discharge measurements, 2 of which were made during year. Curve used after April 15 merges with previous curve at 11,000 second-feet and is well defined below this point by seven discharge measurements made during and after the current year. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good between 2,500 and 100,000 second-feet; fair beyond these limits.

Daily discharge, in second-feet, of Neosho River near Grove, Okla., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	29,700	3,470	3,040	3,930	13,900	2,900	70,600	10,200	4,020	5,490	6,290	5,690
2	44,000	3,470	2,900	3,620	9,980	3,040	71,100	8,020	5,490	4,550	11,800	9,960
3	53,200	3,320	2,770	3,620	9,030	3,180	60,200	7,570	12,300	4,020	10,500	8,960
4	58,800	3,040	2,770	2,770	8,120	2,380	36,700	6,920	13,600	3,370	23,400	6,290
5	78,800	2,900	2,640	2,640	7,250	3,040	29,300	6,920	8,480	3,530	13,900	4,920
6	67,200	2,510	2,900	2,770	6,830	3,320	26,500	12,300	8,020	3,070	8,960	4,020
7	47,700	2,770	4,250	3,040	6,630	5,280	23,400	26,100	9,460	2,920	6,710	4,370
8	42,300	2,510	17,700	3,040	6,230	15,300	17,400	28,200	7,790	2,920	28,200	4,730
9	36,700	4,750	13,600	2,770	8,570	9,260	45,400	25,800	6,090	2,640	53,600	5,110
10	36,700	3,930	17,400	2,770	6,830	7,250	61,100	27,200	4,730	2,500	59,200	5,490
11	40,900	3,770	13,100	2,770	6,030	7,900	67,700	25,800	4,020	1,990	40,100	7,790
12	40,500	3,470	9,740	2,260	6,030	6,830	62,500	22,800	3,070	2,240	17,700	7,570
13	44,900	4,410	7,460	5,280	9,030	6,030	74,000	20,200	3,070	1,990	9,710	5,110
14	35,900	15,300	6,430	18,300	10,200	5,460	108,000	18,900	12,300	7,350	7,570	3,850
15	14,200	26,100	5,280	12,600	9,260	5,100	128,000	12,300	6,090	9,460	29,300	3,070
16	11,000	14,200	4,410	8,800	6,830	5,460	114,000	7,130	4,370	5,110	50,000	2,780
17	11,000	11,800	4,090	6,630	5,840	5,280	91,000	5,690	3,220	3,530	59,700	2,500
18	9,740	11,500	3,470	6,430	4,920	5,100	70,600	5,300	19,600	8,960	81,600	2,370
19	7,460	9,740	3,620	6,630	4,580	4,580	85,500	4,730	34,700	10,200	81,200	2,240
20	6,430	7,460	3,930	7,040	4,090	19,200	84,500	4,920	50,400	4,550	55,000	1,990
21	5,100	6,630	4,250	6,630	3,930	46,300	65,300	5,690	63,000	4,190	34,700	1,870
22	5,100	5,650	5,460	6,230	3,770	40,100	47,700	4,730	65,800	12,000	30,400	1,750
23	7,680	5,650	6,030	6,430	3,620	33,900	39,700	4,020	52,700	21,800	24,400	1,750
24	8,340	4,250	9,740	6,430	3,620	16,500	39,200	3,850	41,800	18,900	18,300	1,870
25	5,840	4,580	9,260	9,260	3,320	9,030	50,900	7,570	35,100	7,350	14,800	1,870
26	4,920	3,930	7,040	14,200	3,180	7,680	50,900	18,000	30,100	4,730	11,000	1,750
27	4,090	4,410	5,650	17,700	2,900	6,430	45,400	8,720	28,600	3,850	9,460	1,990
28	3,770	3,930	5,280	15,900	3,040	5,650	40,500	5,490	23,400	4,020	8,720	2,240
29	3,620	3,320	4,580	30,100	-------	7,250	32,300	4,190	14,800	3,530	6,920	2,110
30	4,250	2,900	4,580	27,900	-------	7,250	12,000	3,690	6,290	14,200	5,890	2,240
31	3,930	-------	3,930	21,500	-------	12,800	--------	3,370	-------	6,710	5,300	------

Monthly discharge of Neosho River near Grove, Okla., for the year ending September 30, 1927

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	78,800	3,620	25,000	1,540,000
November	26,100	2,510	6,190	368,000
December	17,700	2,640	6,360	391,000
January	30,100	2,260	8,710	536,000
February	13,900	2,900	6,340	352,000
March	46,300	2,380	10,300	633,000
April	128,000	12,000	58,400	3,480,000
May	28,200	3,370	11,500	707,000
June	65,800	3,070	19,400	1,150,000
July	21,800	1,990	6,180	380,000
August	81,600	5,300	26,600	1,640,000
September	9,960	1,750	3,940	234,000
The year	128,000	1,750	15,700	11,400,000

COTTONWOOD RIVER AT ELMDALE, KANS.

LOCATION.—In NW. ¼ sec. 26, T. 19 S., R. 7 E., at highway bridge one-fourth of a mile above Middle Creek, 1 mile east of Elmdale, Chase County, and 2 miles above Diamond Creek.

DRAINAGE AREA.—1,040 square miles.

RECORDS AVAILABLE.—May 9, 1922, to September 30, 1927.

EQUIPMENT.—Chain gage on upstream handrail of bridge. Discharge measurements made from downstream side of bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of clean coarse sand, gravel, and rock; practically permanent. Control is gravel and rock riffle extending from 200 feet above to 100 feet below gage. Dam at Cottonwood Falls may affect stage-discharge relation at medium and high stages. Bank-full stage, 32 feet.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 34.46 feet at 1.30 p. m. June 20 (discharge, 13,800 second-feet); minimum stage, 3.29 feet at 5 p. m. December 6 (discharge, 6 second-feet).

1922–1927: Maximum stage recorded, 35.5 feet at 4 p. m. June 11, 1923 (discharge, 14,800 second-feet); minimum discharge, 1 second-foot July 9, 1926.

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined below 200 second-feet and fairly well defined from 200 to 13,000 second-feet; checked by two discharge measurements of 10,000 and 12,000 second-feet made in June and one of 138 second-feet made in July. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table; shifting-control method used July 1 to August 11 and September 21–30.

Daily discharge, in second-feet, of Cottonwood River at Elmdale, Kans., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	56	103	12	68	135	57	5,000	521	132	280	132	691
2	54	96	10	68	135	58	1,290	463	1,360	365	126	579
3	6,860	94	8	60	135	57	608	433	1,680	302	119	521
4	11,500	92	7	54	121	57	325	345	970	302	116	492
5	4,470	90	6		121	57	280	608	280	258	113	521
6	945	81	6		108	57	302	6,990	172	240	106	3,680
7	132	433	9		108	240	280	6,200	138	235	116	3,930
8	74	174	157		103	248	2,940	6,650	119	231	126	1,900
9	65	1,140	433	30	98	94	5,120	3,900	106	227	129	795
10	433	463	400		85	79	1,070	2,060	101	215	126	664
11	400	382	382		85	85	400	1,220	101	203	126	492
12	1,240	244	365		85	400	463	769	94	184	608	433
13	2,980	235	200		67	400	433	769	382	148	2,120	354
14	1,590	184	100		67	382	3,110	743	1,040	167	5,000	280
15	492	151	50		67	365	9,180	717	717	769	6,000	253
16	400	132			63	365	2,910	691	521	743	8,380	235
17	325	124			63	365	1,140	636	995	181	10,300	235
18	235	116			67	365	920	521	1,220	160	11,700	235
19	1,340	106			58	325	10,500	463	3,860	151	6,950	215
20	1,440	92			58	1,270	7,200	345	12,900	148	1,860	227
21	463	88		10	58	280	1,650	240	12,000	141	743	192
22	211	76			67	164	970	199	8,230	141	691	174
23	181	63	20		67	126	870	199	1,680	138	845	244
24	164	56			67	111	820	192	995	138	945	302
25	157	44			62	108	795	192	769	138	795	244
26	144	38			62	106	769	148	636	144	691	187
27	135	31			62	94	636	138	492	148	1,470	215
28	116	24			58	83	550	132	463	138	5,270	258
29	99	18		13	-------	83	579	132	433	135	4,160	258
30	119	14	12	35	-------	83	550	132	400	207	1,220	215
31	106	-------	70	80	-------	945	-------	132	-------	151	845	-------

NOTE.—Stage-discharge relation affected by ice Dec. 13–29 and Jan. 5–31; discharge based on observer's notes and climatic data.

Monthly discharge of Cottonwood River at Elmdale, Kans., for the year ending September 30, 1927

[Drainage area, 1,040 square miles]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	11,500	54	1,190	1.14	1.31	73,200
November	1,140	14	166	.160	.18	9,880
December	433		80.9	.078	.09	4,970
January	80		25.1	.024	.03	1,540
February	135	58	83.3	.080	.08	4,630
March	1,270	57	242	.233	.27	14,900
April	10,500	280	2,060	1.98	2.21	123,000
May	6,990	132	1,190	1.14	1.31	73,200
June	12,900	94	1,770	1.70	1.90	105,000
July	769	135	230	.221	.25	14,100
August	11,700	106	2,320	2.23	2.57	143,000
September	3,930	174	634	.610	.68	37,700
The year	12,900		835	.803	10.88	605,000

SPRING RIVER NEAR WACO, MO.

LOCATION.—On line between SE. ¼ sec. 7 and NE. ¼ sec. 18, T. 29 N., R. 33 W., at highway bridge 1 mile below Blackberry Creek and 1½ miles east of Waco, Jasper County.

DRAINAGE AREA.—1,160 square miles (measured on topographic maps).

RECORDS AVAILABLE.—April 25, 1924, to September 30, 1927.

EQUIPMENT.—Chain gage on downstream side of bridge. Zero of gage is 835.25 feet above mean sea level. Discharge measurements made from bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of gravel and rock. Left bank is overflowed at stage of 19 feet; overflow on right bank is small. Control is coarse gravel bar 1,000 feet below gage; practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage during year determined from levels to floodmarks, 28.6 feet at 9 a. m. August 17 (discharge, 57,400 second-feet); minimum stage, 2.22 feet at 5.40 p. m. July 12 (discharge, 296 second-feet).

1924–1927: Maximum stage, that of August 17, 1927; minimum stage, 0.90 foot September 8, 1925 (discharge, 22 second-feet).

DIVERSIONS AND REGULATION.—No diversions. Flow during low stages is subject to slight diurnal fluctuation from gristmills above.

ACCURACY.—Stage-discharge relation changed during high water August 17; not affected by ice. Rating curve October 1 to August 17 well defined below and fairly well defined above 22,000 second-feet by 25 discharge measurements, 6 of which, between 654 and 47,900 second-feet, were made during this period. Curve used after August 17 fairly well defined by two discharge measurements and shape of previous curve. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

Daily discharge, in second-feet, of Spring River near Waco, Mo., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5,450	710	430	575	1,520	470	25,300	1,080	552	510	1,130	810
2	9,900	575	430	552	1,590	470	14,900	1,020	710	490	810	760
3	7,260	470	430	530	1,660	470	6,850	910	710	470	1,130	710
4	12,300	450	390	530	1,520	490	2,150	1,020	810	450	1,800	710
5	11,000	430	370	510	1,020	620	1,590	2,710	710	430	1,250	710

Daily discharge, in second-feet, of Spring River near Waco, Mo., for the year ending September 30, 1927—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
6	6,050	410	575	470	910	575	1,250	10,000	665	410	910	710
7	3,710	390	2,390	450	860	2,710	1,450	8,586	575	390	12,300	665
8	1,450	510	3,350	430	1,080	3,190	8,910	4,970	552	350	16,600	620
9	1,380	665	3,980	390	1,020	2,630	17,000	3,350	530	330	17,400	575
10	3,710	530	2,710	370	910	1,020	20,400	2,470	490	330	9,900	552
11	2,710	490	590	370	910	810	9,790	3,190	470	313	4,250	510
12	2,390	410	860	350	1,020	910	5,650	2,790	490	313	2,870	510
13	3,270	390	860	4,340	1,800	860	9,790	2,550	5,450	350	1,870	510
14	1,800	9,460	710	4,430	2,230	710	14,500	2,390	1,800	390	14,900	490
15	1,380	5,950	620	4,160	1,130	620	18,200	965	860	390	18,400	430
16	910	4,250	530	2,310	965	575	14,500	860	575	510	26,100	410
17	810	2,390	490	575	665	620	3,890	810	4,610	5,450	47,900	390
18	810	1,190	430	760	710	665	4,430	760	3,110	4,430	25,300	390
19	760	760	430	1,310	470	2,470	14,200	710	7,480	2,080	16,200	370
20	710	760	530	910	620	10,100	10,900	665	6,750	860	6,150	350
21	620	665	1,020	860	575	8,580	5,350	710	9,680	3,980	2,790	330
22	575	620	1,800	810	620	4,610	2,950	710	6,750	11,200	1,800	330
23	575	620	1,870	860	575	1,450	2,080	665	2,870	13,900	1,590	330
24	575	620	1,870	810	575	1,080	1,870	810	1,310	4,160	1,520	330
25	390	575	1,730	1,190	575	910	1,800	3,890	1,080	1,800	1,380	330
26	330	575	860	3,620	470	810	1,590	2,550	910	860	1,190	330
27	510	552	810	3,890	430	710	1,380	965	810	1,590	1,020	330
28	450	510	665	6,550	450	665	1,310	760	665	965	1,020	350
29	450	530	620	6,050	-------	760	1,190	710	575	1,520	910	350
30	760	450	575	4,790	-------	6,250	1,080	665	530	1,590	910	530
31	810	-------	620	3,190	-------	19,000	-------	620	-------	1,590	860	------

NOTE.—Result of discharge measurement used Aug. 17.

Monthly discharge of Spring River near Waco, Mo., for the year ending September 30, 1927

[Drainage area, 1,160 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	12,300	330	2,700	2.33	2.69
November	9,460	390	1,230	1.06	1.18
December	3,980	370	1,080	.931	1.07
January	6,550	350	1,840	1.59	1.83
February	2,230	430	960	.828	.86
March	19,000	470	2,450	2.11	2.43
April	25,300	1,080	7,540	6.50	7.25
May	10,000	620	2,090	1.80	2.08
June	9,680	470	2,100	1.81	2.02
July	13,900	313	2,010	1.73	1.99
August	47,900	810	7,810	6.73	7.76
September	810	330	491	.423	.47
The year	47,900	313	2,710	2.34	31.63

SHOAL CREEK NEAR JOPLIN, MO.

LOCATION.—In S. ½ sec. 28, T. 27 N., R. 33 W., at Grand Falls hydroelectric plant of Empire District Electric Co. in Newton County, 2 miles below Silver Creek and 4 miles south of Joplin, Jasper County.

DRAINAGE AREA.—458 square miles (measured on topographic maps).

RECORDS AVAILABLE.—April 1, 1924, to September 30, 1927.

EQUIPMENT.—Gage consists of float in tailrace connected with indicator on scale-board in power plant. Discharge measurements made by wading 300 feet below gage during ordinary stages and from highway bridge 2½ miles above gage during high stages.

CHANNEL AND CONTROL.—Bed composed of clean gravel. Banks are overflowed at stage of 9 feet. Control is coarse gravel bar 400 feet below gage; practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 12.42 feet at 8 a. m. April 19 (discharge, 12,900 second-feet); minimum discharge, 22 second-feet during numerous short periods when plant was shut down and water stored.

1924–1927: Maximum stage recorded, 13.1 feet July 13, 1924 (discharge determined from extension of rating curve, 14,200 second-feet); minimum discharge, 13 second-feet numerous short periods during 1924 and 1925 when plant was shut down.

DIVERSIONS AND REGULATION.—No diversions. During ordinary stages flow is controlled completely by plant, which is run until pond is drawn down to a certain elevation and then shut down until it is filled, when operation is resumed. During high stages water flows over dam and regulation is small.

ACCURACY.—Stage-discharge relation changed slightly during year; not affected by ice. Rating curve used October 1 to April 19 and August 9 to September 30 fairly well defined below 7,000 second-feet; checked during the periods by four discharge measurements between 386 and 1,950 second-feet. Curve used April 20 to August 8 based on one discharge measurement and shape of previous curve; fairly well defined. Gage read to inches hourly. Daily discharge ascertained by applying hourly gage heights to rating table. Records fair.

COOPERATION.—Gage-height record furnished by Empire District Electric Co., P. J. Sergeant, chief engineer.

Daily discharge, in second-feet, of Shoal Creek near Joplin, Mo., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,070	357	351	385	769	375	1,900	910	490	583	749	583
2	2,050	356	347	373	740	387	1,320	862	653	565	636	583
3	1,320	353	324	354	694	381	1,050	831	724	536	724	570
4	3,960	340	346	341	666	342	941	802	631	466	1,160	539
5	4,330	346	322	282	638	333	852	1,000	539	466	864	525
6	1,840	314	310		617	341	760	2,180	519	466	767	510
7	1,400	294	405		579	629	757	1,220	502	466	1,460	502
8	1,170	365	503		539	1,080	1,680	993	502	443	5,680	502
9	1,050	755	500		539	725	1,440	1,080	482	408	3,240	464
10	1,070	604	502		513	642	1,140	1,400	463	427	1,740	427
11	910	484	502		502	624	1,040	857	427	398	1,640	427
12	814	446	502		502	612	1,040	758	414	386	1,240	427
13	769	419	462		433	524	2,560	758	424	391	1,010	411
14	714	672	434		405	502	6,180	758	504	620	1,370	396
15	682	499	405		487	502	9,690	738	437	749	3,280	396
16	666	466	381	600	466	462	4,590	662	404	520	3,580	396
17	607	581	396		466	493	2,350	624	421	856	4,260	381
18	581	616	346		466	502	5,570	624	593	2,910	4,990	366
19	560	628	370		437	502	9,000	624	1,180	708	2,060	366
20	502	591	373		452	880	3,530	648	3,190	557	1,370	366
21	476	550	364		427	1,050	2,980	592	3,830	548	1,200	366
22	466	513	396		427	826	2,190	583	2,210	736	1,040	324
23	466	478	426		409	742	1,880	546	1,130	872	970	306
24	438	478	455		381	676	1,650	566	948	554	928	270
25	427	438	466		366	624	1,480	638	882	520	900	252
26	412	436	472		366	606	1,350	609	797	504	900	257
27	389	408	466	1,140	366	565	1,200	548	749	447	830	257
28	358	396	451	1,100	355	525	1,110	510	684	427	714	268
29	396	390	427	1,000	-------	582	1,040	472	624	678	678	290
30	365	395	424	943	-------	721	959	466	607	1,390	666	319
31	380	-------	396	895	-------	1,240	-------	466	-------	1,030	626	-------

NOTE.—Gage not read Jan. 6–26; mean discharge shown by braced figure estimated from rainfall records and discharge of Spring River near Waco.

Monthly discharge of Shoal Creek near Joplin, Mo., for the year ending September 30, 1927

[Drainage area, 458 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	4,330	358	988	2.16	2.49
November	755	294	466	1.02	1.14
December	503	310	414	.904	1.04
January			626	1.37	1.58
February	769	355	500	1.09	1.14
March	1,240	333	613	1.34	1.54
April	9,690	757	2,440	5.33	5.95
May	2,180	466	785	1.71	1.97
June	3,830	404	865	1.89	2.11
July	2,910	386	665	1.45	1.67
August	5,680	626	1,650	3.60	4.15
September	583	252	402	.878	.98
The year	9,690		869	1.90	25.76

RED RIVER BASIN

RED RIVER NEAR DENISON, TEX.

LOCATION.—At Denison-Colbert toll bridge, half a mile below the Missouri, Kansas & Texas Railroad bridge, 4½ miles northeast of Denison, Grayson County, and 10 miles below mouth of Washita River.

DRAINAGE AREA.—39,400 square miles, a large part of which is probably noncontributing (measured on topographic maps, Oklahoma post route map, and base maps of Texas and New Mexico).

RECORDS AVAILABLE.—October 9, 1923, to September 30, 1927.

EQUIPMENT.—Chain gage attached to downstream side of bridge. Discharge measurements made from bridge or from Missouri, Kansas & Texas Railroad bridge, half a mile upstream.

CHANNEL AND CONTROL.—Channel straight for half a mile above and below station. Bed composed of sand; shifts. Banks of sand and subject to shift. Left bank is not subject to overflow. Right bank covered with trees and brush and subject to overflow at highway bridge at extremely high stages. Control is indefinite; shifts badly.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 16.72 feet at 7 a. m. October 6 (discharge, 84,400 second-feet); minimum stage, 1.80 feet at 7 a. m. and 6 p. m. September 22 (discharge, 1,000 second-feet).

1923–1927: Maximum stage recorded, 19.4 feet at 8.15 a. m. October 17, 1923 (discharge, 132,000 second-feet); minimum stage, 0.50 foot on several days in March, 1926 (discharge, 315 second-feet).

DIVERSIONS AND REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent. Rating curve fairly well defined from 500 to 30,000 second-feet by 24 discharge measurements, and poorly defined between 30,000, and 130,000 second-feet by 6 measurements, computed partly by surface or float method. Five of the measurements were made during year, and indicate considerable changes in stage-discharge relation. Gage read to hundredths twice daily. Daily discharge determined by shifting-control method and by averaging discharge for intervals of the day on days of considerable fluctuation. Owing to changing stage-discharge relation and poor distribution of measurements daily discharge not sufficiently accurate for publication. Monthly records fair.

Monthly discharge of Red River near Denison, Tex., for the year ending September 30, 1927

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	74,900	4,300	19,400	1,190,000
November	4,140	1,630	2,540	151,000
December	13,000	1,450	5,100	314,000
January	12,700	2,140	4,490	276,000
February	8,350	2,530	4,740	263,000
March	10,900	2,010	4,590	282,000
April	55,700	2,670	19,300	1,150,000
May	7,380	2,400	4,070	250,000
June	12,400	2,950	5,780	344,000
July	27,300	1,060	7,270	447,000
August	10,000	1,880	4,290	264,000
September	3,820	1,000	1,770	106,000
The year	74,900	1,000	6,960	5,040,000

PEASE RIVER NEAR CROWELL, TEX.

LOCATION.—At toll bridge on the Quanah-Crowell highway, 1 mile below mouth of Devils Creek and 8 miles north of Crowell, Foard County.

DRAINAGE AREA.—2,940 square miles, a large part of which probably noncontributing (measured on base map of Texas).

RECORDS AVAILABLE.—January 8, 1924, to September 30, 1927.

EQUIPMENT.—Chain gage attached to downstream handrail of bridge. Discharge measurements made by wading or from bridge to which gage is attached. Measurements at low stages are poor, owing to poor measuring section.

CHANNEL AND CONTROL.—Channel straight for half a mile above and below gage. Bed of stream composed of sand; shifts. Banks not subject to overflow. Control is bed of stream, which is of deep sand and shifts badly.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 9.92 feet at 5 p. m. October 3 (discharge not determined); no flow for several periods. 1924–1927: Maximum stage recorded, that of October 3, 1927 (discharge not determined); no flow several periods.

DIVERSIONS AND REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent. Rating curve poorly defined from 0 to 4,000 second-feet by 72 measurements, 5 of which were made during current year and indicate considerable changes in stage-discharge relation. Gage read to tenths twice daily. Daily discharge determined by shifting-control method and by averaging discharge for intervals of the day on days of considerable fluctuation; not sufficiently accurate for publication. Monthly records very poor.

Monthly discharge of Pease River near Crowell, Tex., for the year ending September 30, 1927

Month	Mean discharge in second-feet	Run-off in acre-feet	Month	Mean discharge in second-feet	Run-off in acre-feet
October 4–10	1,480	20,600	May	117	7,170
January 15–31	64.6	2,180	June	161	9,570
February	18.7	1,040	July	18.9	1,160
March	6.25	384	August	7.16	440
April	47.8	2,840	September	74.2	4,420

KIAMICHI RIVER NEAR BELZONI, OKLA.

LOCATION.—At Antlers-Rattan highway bridge, 1¾ miles northwest of Belzoni, Pushmataha County, and 6 miles below mouth of Cedar Creek.

DRAINAGE AREA.—1,420 square miles (measured on topographic maps and post-route map of Oklahoma).

RECORDS AVAILABLE.—December 4, 1925, to September 30, 1927.

EQUIPMENT.—Chain gage bolted to downstream handrail of bridge. Discharge measurements made from upstream side of bridge or by wading near control.

CHANNEL AND CONTROL.—Channel straight for half a mile above and one-fourth of a mile below gage. Bed of stream composed of rock and earth; permanent. Banks wooded. Left bank subject to overflow at high stages. At extremely high stages bridge is completely surrounded by water. Control is boulder and gravel shoal 1 mile below gage; permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 39.60 feet at 6.02 a. m. April 15 (discharge, 50,300 second-feet; determined from extension of rating curve and subject to error); minimum stage, 3.71 feet at 6.10 p. m. October 3 (discharge, 7.3 second-feet).

1926–1927: Maximum stage, that of April 15, 1927; minimum stage, 3.69 feet at 6.29 a. m. September 29, 1926 (discharge, 6.8 second-feet).

DIVERSIONS AND REGULATION.—Small amount diverted by the city of Antlers. No regulation.

ACCURACY.—Stage-discharge relation permanent during current year. Rating curve well defined between 5 and 8,000 second-feet, by 20 discharge measurements, fairly well defined between 8,000 and 36,000 second-feet by 9 measurements, and poorly defined above 36,000 second-feet by 1 slope measurement of 62,000 second-feet. Seven of the measurements, covering a range from 17 to 25,200 second-feet, were made during the current year, and check the curve closely; the measurements are well distributed throughout the year. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table or by averaging discharge for intervals of the day on days of considerable fluctuations. Records good.

Daily discharge, in second-feet, of Kiamichi River near Belzoni, Okla., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7.9	1,560	281	1,000	1,740	8,660	1,800	905	219	85	2,920	400
2	7.9	855	265	855	1,620	5,880	2,100	755	173	72	1,440	313
3	7.3	575	249	805	1,560	3,120	1,620	661	168	60	855	390
4	263	455	234	705	905	2,100	1,160	575	151	50	755	892
5	366	366	219	617	1,220	1,620	1,800	515	151	53	617	418
6	955	313	213	575	1,380	1,560	2,160	705	162	72	455	383
7	495	281	234	535	1,500	2,520	1,500	1,330	184	51	366	330
8	297	1,030	313	475	1,380	1,680	1,220	1,380	173	43	366	219
9	219	905	436	436	1,280	1,220	1,330	6,540	146	38	418	170
10	4,420	705	755	383	2,280	1,060	1,110	7,440	135	30	1,160	140
11	2,640	575	805	366	3,360	1,110	4,330	7,440	135	25	1,740	112
12	1,500	455	1,160	330	2,820	1,280	3,840	3,480	114	20	855	85
13	3,780	366	905	1,270	2,400	2,460	8,230	1,500	104	20	535	62
14	3,480	2,630	705	2,700	2,160	1,980	30,600	1,060	99	39	383	55
15	3,480	3,120	617	2,220	1,800	1,330	48,500	855	95	8,510	330	39
16	2,040	4,560	515	1,330	1,440	1,060	39,600	705	95	10,100	249	39
17	1,220	2,400	455	1,000	1,220	1,000	24,100	617	190	3,940	204	26
18	805	1,280	418	905	1,000	4,020	10,400	535	234	1,160	170	23
19	575	955	383	855	855	5,760	25,700	962	216	617	143	24
20	436	755	3,180	955	805	4,080	30,200	1,800	184	436	122	15

Daily discharge, in second-feet, of Kiamichi River near Belzoni, Okla., for the year ending September 30, 1927—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
21	348	661	12,200	2,400	705	4,020	20,500	1,920	202	330	92	13
22	281	575	11,700	6,240	661	3,180	17,900	1,000	265	265	87	13
23	297	495	7,800	10,700	617	2,280	23,800	705	219	234	79	12
24	313	455	4,080	20,800	575	1,740	13,000	755	383	1,070	68	11
25	249	436	2,640	24,600	515	1,380	6,540	1,980	297	962	62	10
26	234	383	2,040	20,800	436	1,160	4,380	661	219	515	132	10
27	196	330	1,680	8,730	436	1,000	2,880	495	179	348	109	12
28	165	281	2,040	4,620	1,780	1,060	2,100	400	146	265	1,280	13
29	297	281	1,680	3,480	-------	955	1,500	330	119	213	1,300	14
30	2,220	281	1,500	2,880	-------	1,680	1,160	297	99	559	496	12
31	3,000	-------	1,160	2,220	-------	1,980	-------	249	-------	3,020	313	-------

Monthly discharge of Kiamichi River near Belzoni, Okla., for the year ending September 30, 1927

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	4,420	7.3	1,120	68,600
November	4,560	281	944	56,200
December	12,200	213	1,960	121,000
January	24,600	330	4,060	249,000
February	3,360	436	1,370	76,300
March	8,660	955	2,390	147,000
April	48,500	1,110	11,200	665,000
May	7,440	249	1,570	96,300
June	383	95	175	10,400
July	10,100	20	1,070	65,900
August	2,920	62	584	35,900
September	892	10	142	8,440
The year	48,500	7.3	2,210	1,600,000

SULPHUR RIVER NEAR DARDEN, TEX.

LOCATION.—At St. Louis Southwestern Railroad bridge, 1 mile south of Darden, Bowie County, and 2 miles below mouth of White Oak Creek.

DRAINAGE AREA.—2,750 square miles (measured on base map of Texas).

RECORDS AVAILABLE.—October 1, 1923, to September 30, 1927.

EQUIPMENT.—United States Weather Bureau staff gage, attached to downstream side of center pile bent of bridge. Discharge measurements made by wading 1,000 feet above gage or from bridge.

CHANNEL AND CONTROL.—Bed of stream composed of mud and sunken logs; fairly permanent. Channel curved above and straight for a short distance below gage. Banks of earth, and subject to overflow at high stages. Low-water control consists of old piles and drift immediately below gage; shifts during floods. Medium and high stage control is bed and banks of stream and will probably shift. Above a 22-foot stage river overflows its banks for 4,000 feet and divides into two channels 4 or 5 miles above gage, and water runs through Fish Lake, an old river channel; at these times control is indefinite.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 29.0 feet at 7 a. m. December 26 (discharge, 29,600 second-feet, determined from extension of rating curve and subject to error); minimum stage, 1.0 foot at 7 a. m. October 2–9 and August 25–27 (discharge, 14 second-feet).

1923–1927: Maximum stage, that of December 26, 1926; minimum stage, 0.10 foot August 12–18, 31, and September 1–13, 1924 (discharge, 0.2 second-foot).

DIVERSIONS AND REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent. On December 24 a levee broke a few miles below gage, causing river to fall 2 or 3 feet. Rating curve used to December 24 poorly defined to 17,000 second-feet by 10 discharge measurements, the 2 measurements of 2,410 and 2,580 second-feet made during the current year do not check the curve very closely. Rating curve used December 25 to September 30 is poorly defined to 17,000 second-feet by 20 discharge measurements, 2 of which, covering a range of 1,460 to 16,700 second-feet, were made during the current year. Gage read to tenths once daily. Daily discharge ascertained by applying mean daily gage height to rating table, or, on days of considerable fluctuation, by averaging discharge for intervals of the day. The daily records are not sufficiently accurate for publication. Monthly records poor.

COOPERATION.—Records of stage furnished by the United States Weather Bureau.

Monthly discharge of Sulphur River near Darden, Tex., for the year ending September 30, 1927

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	6,310	14	1,850	114,000
November	1,680	81	537	32,000
December	29,600	76	5,780	355,000
January	10,700	289	3,340	205,000
February	8,990	241	3,360	186,000
March	22,800	297	9,430	580,000
April	26,200	297	9,770	581,000
May	6,180	150	1,450	89,400
June	3,080	76	774	46,100
July	2,450	29	961	59,100
August	708	14	146	9,000
September	359	21	108	6,430
The year	29,600	14	3,130	2,260,000

CYPRESS CREEK NEAR JEFFERSON, TEX.

LOCATION.—At Farrell Bridge on Jefferson-Harleton highway, 8 miles west of Jefferson, Marion County, and 14 miles above mouth of Black Cypress Creek.

DRAINAGE AREA.—848 square miles (measured on base map of Texas).

RECORDS AVAILABLE.—July 19, 1924, to September 30, 1927.

EQUIPMENT.—Staff gage in two sections on the right bank, attached to tree and to trestle of bridge. Discharge measurements made from highway bridge or by wading near gage.

CHANNEL AND CONTROL.—Channel straight for 250 feet above and half a mile below gage. Bed of stream composed of earth and large gravel. Left bank is not subject to overflow. Right bank, which is covered with grass and trees, is overflowed at a stage of 14 feet for a distance of 1,000 feet. Control is earth rapids half a mile below gage; fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 17.3 feet at 9.30 a. m. April 11 (discharge, 6,820 second-feet, determined from extension of rating curve and subject to considerable error); minimum stage, 0.94 foot at 7 a. m. October 2 (discharge, 4.4 second-feet).

1924–1927: Maximum stage, that of April 11, 1927; no flow for several periods.

DIVERSIONS AND REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined below 4,800 second-feet by 46 discharge measurements and extended above to cover range of stage for year. Thirty measurements made during current year used to define curve between 400 and 4,800 second-feet; these measurements were not distributed uniformly throughout year. Gage read to hundredths once daily, but readings of observer doubtful. Daily discharge ascertained by applying mean daily gage height to rating table or, on days of considerable fluctuation, by averaging discharge for intervals of the day. Daily discharge records not sufficiently accurate for publication. Monthly records fair.

Monthly discharge of Cypress Creek near Jefferson, Tex., for the year ending September 30, 1927

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	747	4.4	266	16,400
November	196	60	107	6,380
December	3,120	73	1,150	71,000
January	2,560	424	1,310	80,300
February	2,050	484	1,300	72,000
March	6,200	448	2,090	128,000
April	6,820	412	2,720	162,000
May	1,230	210	412	25,400
June	720	68	341	20,300
July	357	29	145	8,890
August	280	11	52.6	3,230
September	460	14	92.6	5,510
The year	6,820	4.4	828	599,000

OUACHITA RIVER NEAR HOT SPRINGS, ARK.

LOCATION.—In SW. ¼ sec. 29, T. 3 S., R. 19 W., at Smith Ferry highway bridge, half a mile below Fourche a Loup Creek, 1 mile above Hot Springs Creek, and 5 miles south of Hot Springs, Garland County.

DRAINAGE AREA.—1,420 square miles (measured on base map of Arkansas).

RECORDS AVAILABLE.—June 27, 1922, to September 30, 1927.

EQUIPMENT.—Chain gage on downstream side of bridge. Discharge measurements made from bridge or by wading.

CHANNEL AND CONTROL.—Bed of stream composed of gravel and rock. Channel is obstructed by outcropping rock dikes on which small trees grow. Control is series of rock dikes 1,000 feet below gage; practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage during year determined from levels to floodmarks, 42.4 feet at noon April 21 (discharge determined by extending rating curve for main channel and computing overflow by Kutter's formula, 134,000 second-feet); minimum stage recorded, 5.17 feet at 6 p. m. September 24 (discharge, 71 second-feet).

1922–1927: Maximum stage determined by levels to floodmarks, 43.9 feet May 16, 1923 (discharge determined by extending rating curve for main channel and computing overflow by Kutter's formula, 143,000 second-feet); minimum discharge, 42 second-feet for several periods in September, 1922.

DIVERSIONS AND REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent during year. Rating curve well defined below 60,000 second-feet by 16 discharge measurements, 5 of which, ranging from 84 to 16,500 second-feet, were made during current year. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good below 60,000 second-feet; fair above.

Daily discharge, in second-feet, of Ouachita River near Hot Springs, Ark., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	250	4,470	738	1,170	2,250	700	2,800	1,170	3,270	529	211	292
2	214	1,530	665	2,470	1,920	1,170	2,580	970	18,000	469	195	267
3	182	1,170	630	2,250	1,6.0	1,720	2,360	850	5,030	440	179	243
4	182	970	595	1,9?0	1,260	1,530	2,360	930	2,250	386	164	218
5	214	738	560	1,820	1,090	1,440	10,700	850	1,720	362	288	201
6	292	595	560	1,440	4,440	1,350	5,180	930	23,100	338	243	185
7	292	560	529	1,260	5,510	20,000	3,520	775	5,830	315	284	170
8	232	498	738	1,170	4,580	19,400	2,470	738	3,520	271	263	158
9	214	498	1,260	1,170	3,910	12,100	20,000	775	2,580	243	246	144
10	338	498	2,690	1,090	3,520	5,180	6,170	1,170	1,820	214	440	135
11	560	440	3,650	930	3,390	6,340	3,390	1,530	1,090	185	1,090	127
12	1,440	413	2,470	775	3,270	8,030	3,270	1,720	850	170	700	119
13	1,260	362	1,920	700	2,800	6,340	9,570	1,260	700	149	386	1
14	890	775	1,620	630	2,470	4,580	50,100	1,090	700	135	315	101
15	890	4,170	1,260	630	2,140	3,390	72,800	700	4,440	130	275	94
16	738	4,040	1,090	560	1,920	3,150	42,800	560	3,910	127	246	89
17	529	2,800	930	498	1,720	2,800	12,300	498	2,800	119	228	85
18	498	1,530	850	469	1,620	11,600	6,700	440	1,920	146	211	80
19	440	1,720	775	775	1,530	19,200	6,700	560	1,350	176	195	91
20	338	1,350	1,720	8,450	1,350	12,800	36,600	1,440	1,350	228	179	85
21	292	1,170	75,900	5,830	1,260	6,880	115,000	4,040	10,000	338	164	80
22	250	1,010	42,400	12,600	1,170	4,730	56,400	21,900	6,520	362	141	76
23	271	930	16,100	30,800	1,090	3,390	12,100	12,100	4,300	1,620	124	72
24	850	850	13,500	28,300	970	2,800	6,000	6,520	2,690	1,090	108	72
25	1,010	775	8,240	22,800	850	2,360	4,040	7,060	1,720	2,140	96	72
26	1,090	775	5,350	17,500	812	2,030	3,150	3,910	1,260	2,360	89	76
27	890	775	4,880	13,300	700	1,820	2,470	2,910	930	1,620	83	80
28	738	775	6,000	7,630	700	1,720	2,030	2,470	850	812	108	94
29	775	850	6,170	4,730	-------	2,140	1,720	1,720	700	362	665	284
30	7,830	850	4,170	3,910	-------	2,580	1,440	1,010	595	284	930	201
31	3,520	-------	3,780	2,910	-------	2,360	--------	1,720	-------	236	440	------

Monthly discharge of Ouachita River near Hot Springs, Ark., for the year ending September 30, 1927

[Drainage area, 1,420 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	7,830	182	887	0.625	0.72
November	4,170	362	1,200	.845	.94
December	75,900	529	6,830	4.81	5.54
January	30,800	469	5,820	4.10	4.73
February	5,510	700	2,140	1.51	1.57
March	20,000	700	5,670	3.99	4.60
April	115,000	1,440	16,900	11.90	13.28
May	21,900	440	2,720	1.92	2.21
June	23,100	595	3,860	2.72	3.04
July	2,360	119	528	.372	.43
August	1,090	83	300	.211	.24
September	292	72	137	.096	.11
The year	115,000	72	3,910	2.75	37.41

OUACHITA RIVER AT REMMEL DAM, NEAR MALVERN, ARK.

LOCATION.—In SW. ¼ NW. ¼ sec. 36, T. 3 S., R. 18 W., 700 feet below Remmel Dam of Arkansas Power & Light Co., three-fourths of a mile above Cove Creek, and 9 miles northwest of Malvern, Hot Springs County.

DRAINAGE AREA.—1,540 square miles (measured on base map of Arkansas).

RECORDS AVAILABLE.—January 30, 1925, to April 8, 1927, when station was temporarily discontinued.

EQUIPMENT.—Water-stage recorder in concrete well and house on right bank. Discharge measurements made from cable at gage or by wading.

CHANNEL AND CONTROL.—Bed of stream composed of clean gravel. Control is coarse gravel bar 1,000 feet below gage; practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage during period, from water-stage recorder, 30.7 feet at 2 p. m. December 21 (discharge from extension of rating curve, 97,400 second-feet); minimum stage, 1.65 feet several times during October while power plant was shut down (discharge, 24 second-feet).

1925–1927: Maximum stage, 35.7 feet April 21, 1927, determined from high-water mark (discharge, from extension of rating curve, 138,000 second-feet); minimum stage, from water-stage recorder, 1.52 feet September 12 and 13, 1925 (discharge, 15 second-feet).

Flood of May 16, 1923, reached a stage of 36.3 feet, as determined by levels to floodmarks (discharge determined from extension of rating curve, 140,000 second-feet; revised).

DIVERSIONS AND REGULATION.—Flow is regulated almost completely by power plant 700 feet above gage.

ACCURACY.—Stage-discharge relation permanent during year. Rating curve fairly well defined between 200 and 70,000 second-feet; extended above; not checked by discharge measurements during the current year. Operation of water-stage recorder satisfactory. Daily discharge ascertained by use of discharge integrator. Records good for discharge between 200 and 70,000 second-feet; others fair.

Daily discharge, in second-feet, of Ouachita River at Remmel Dam, near Malvern, Ark., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
1	180	2,650	802	3,880	3,070	1,160	3,830
2	94	2,670	659	3,290	2,600	884	3,150
3	102	2,530	656	2,670	2,550	1,400	3,020
4	92	1,000	381	2,620	2,510	1,120	3,200
5	88	644	647	2,550	2,540	940	9,480
6	84	318	374	2,240	4,270	2,140	4,790
7	80	676	476	1,680	8,740	17,300	3,280
8	106	724	972	1,980	6,260	23,500	3,840
9	112	1,180	1,190	1,690	4,230	11,200	-------
10	208	982	1,310	1,550	2,890	6,170	-------
11	115	458	2,570	1,250	3,850	5,410	-------
12	522	484	2,400	500	4,030	8,340	-------
13	866	257	2,750	1,850	2,710	8,780	-------
14	880	1,550	2,880	1,040	3,370	4,460	-------
15	554	2,740	1,430	763	2,740	4,080	-------
16	396	2,880	1,200	1,030	2,660	3,620	-------
17	429	2,790	1,070	850	2,620	3,010	-------
18	256	2,820	826	638	1,820	11,900	-------
19	526	2,480	1,350	970	1,740	20,400	-------
20	591	2,550	1,250	4,710	841	12,500	-------
21	588	1,810	70,700	8,180	1,610	7,640	-------
22	606	1,250	55,400	11,000	1,320	5,780	-------
23	286	1,030	20,500	31,000	1,320	4,120	-------
24	328	833	12,000	29,300	1,730	3,750	-------
25	454	664	7,480	24,600	2,380	3,300	-------
26	528	1,040	6,460	20,500	2,480	3,220	-------
27	102	650	6,540	13,000	608	3,160	-------
28	132	1,700	7,030	8,340	1,900	38,800	-------
29	964	196	7,480	6,140	-------	3,200	-------
30	3,890	646	7,100	5,370	-------	3,310	-------
31	3,730	-------	3,650	3,080	-------	3,220	-------

Monthly discharge of Ouachita River at Remmel Dam, near Malvern, Ark., for the year ending September 30, 1927

[Drainage area, 1,540 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	3,890	80	577	0.375	0.43
November	2,880	196	1,410	.916	1.02
December	70,700	374	7,400	4.80	5.53
January	31,000	638	6,400	4.16	4.80
February	8,740	608	2,840	1.84	1.92
March	23,500	884	6,220	4.04	4.66

MISCELLANEOUS DISCHARGE MEASUREMENTS

In addition to the records of stream flow obtained at gaging stations and reported in the preceding pages, measurements of flow were made at a number of other points as shown by the following table:

Miscellaneous discharge measurements in the lower Mississippi River Basin during the year ending September 30, 1927

Date	Stream	Tributary to—	Locality	Gage height	Discharge
				Feet	*Sec.-ft.*
Oct. 1	White River	Mississippi River	Forsyth, Mo.	17.69	35,600
2	do	do	do	16.71	32,100
3	do	do	do	12.08	16,500
Dec. 17	do	do	do	8.08	4,930
Mar. 30	do	do	do	9.08	7,660
31	do	do	do	10.82	12,200
Apr. 14	do	do	do	29.65	76,500
Oct. 8	Cold Spring	Mineral Fork	Near Floyd, Washington County, Mo.		3.3
Sept. 26	Spring Creek	North Fork of White River.	Just below Big Spring, 1 mile south of Roosevelt, Douglas County, Mo.		56
26	Big Spring	Spring Creek	1 mile south of Roosevelt, Mo.		27
Nov. 9	Blue Spring	North Fork of White River.	McCabe, Ozark County, Mo.		30
July 15	Spring River	Black River	Hardy, Ark.		1,570
Sept. 25	McCubben Spring	Jacks Fork	5 miles northeast of Mountain View, Mo.		2.4
25	Blue Spring	do	7 miles northeast of Mountain View, Mo.		7.9
Dec. 15	Elk River	Neosho River	Noel, Mo.		1,030

INDEX

	Page
Acre-foot, definition of	2
Appropriations, record of	1
Arkansas River at Arkansas City, Kans	56–57
at Canon City, Colo	46–47
at Garden City, Kans	51–53
at Granite, Colo	43–44
at Holly, Colo	49–50
at Larned, Kans	53–54
at Salida, Colo	45–46
at Syracuse, Kans	50–51
near Pueblo, Colo	47–48
near Wichita, Kans	54–56
Arkansas River Basin, Colo.-Kans.-Okla.-Mo., gaging-station records in	43–87
Bardley, Mo., Eleven Point River near	41–42
Battlefield, Mo., James River near	29–30
Bear Creek near Colorado Springs, Colo	65
Beaver, Ark., White River at	28–29
Belzoni, Okla., Kiamichi River near	89–90
Big River at Byrnesville, Mo	17–18
Big Spring, Mo., discharge measurement of	95
Big Spring near Van Buren, Mo	39–41
Black River at Leeper, Mo	33–35
Blue Spring at McCabe, Mo	95
Blue Spring near Mountain View, Mo	95
Boehmer Creek near Pikes Peak, Colo	59–60
Bourbeuse River at Union, Mo	16–17
Byrnesville, Mo., Big River at	17–18
Cabin Creek near Halfway, Colo	63–64
Canon City, Colo., Arkansas River at	46–47
Castor River at Zalma, Mo	19–20
Cold Spring, Mo., discharge measurement of	95
Colorado Springs, Colo., Bear Creek near	65
Computations, results of, accuracy of	4–5
Control, definition of	2
Coolidge, Kans., Holly drain near	70–73
Cooperation, record of	9
Cottonwood River at Elmdale, Kans	83–84
Current River at Doniphan, Mo	36–38
at Van Buren, Mo	35–36
Cypress Creek near Jefferson, Tex	91–92
Darden, Tex., Sulphur River near	90–91
Data, accuracy of	4–5
explanation of	2–4
Denison, Tex., Red River near	87–88
Doniphan, Mo., Current River at	36–38
Eleven Point River near Bardley, Mo	41–42
Elk River, Mo., discharge measurement of	95
Elmdale, Kans., Cottonwood River at	83–84
Eminence, Mo., Jacks Fork at	38–39
Eureka, Mo., Meramec River near	13–14
Galena, Mo., James River at	31–32
Garden City, Kans., Arkansas River at	51–53
Granite, Colo., Arkansas River at	43–44
Grape Creek near Westcliffe, Colo	57–58
Greer Spring at Greer, Mo	42–43
Grove, Okla., Neosho River near	81–82
Halfway, Colo., Cabin Creek near	63–64
Lion Creek near	61–62
Sheep Creek near	62
South Ruxton Creek at	63
Headwater Diversion Channel Basin, Mo., gaging-station record in	19–20
Holly, Colo., Arkansas River at	49–50
Wild Horse Creek near	66–69
Holly drain near Coolidge, Kans	70–73
Hot Springs, Ark., Ouachita River near	92–93
Independence, Kans., Verdigris River at	77–78
Iola, Kans., Neosho River near	78–80
Jacks Fork at Eminence, Mo	38–39
James River at Galena, Mo	31–32
near Battlefield, Mo	29–30
Jefferson, Tex., Cypress Creek near	91–92
Joplin, Mo., Shoal Creek near	85–87
Kennett, Mo., Little River ditch No. 81 near	20–21
Little River ditch No. 1 near	22–23
Little River ditch No. 66 near	23–24
Little River ditch No. 66–A near	24–25
Little River ditch No. 259 near	27–28
Little River ditch No. 251 near	26–27
Kiamichi River near Belzoni, Okla	89–90
Larned, Kans., Arkansas River at	53–54
Pawnee River near	73–74
Leeper, Mo., Black River at	33–35
Lion Creek near Halfway, Colo	61–62
Little Arkansas River at Valley Center, Kans	74–75
Little Beaver Creek near Pikes Peak, Colo	60
Little River ditch No. 81 near Kennett, Mo	20–21
Little River ditch No. 1 near Kennett, Mo	22–23
Little River ditch No. 66 near Kennett, Mo	23–24
Little River ditch No. 66–A near Kennett, Mo	24–25
Little River ditch No. 259 near Kennett, Mo	27–28
Little River ditch No. 251 near Kennett, Mo	26–27
McCabe, Mo., Blue Spring at	95
McCubben Spring, Mo., discharge measurement of	95
Malvern, Ark., Ouachita River near	93–95
Manitou, Colo., Sutherland Creek near	64–65

	Page
Meramec River near Eureka, Mo	13–14
near Steelville, Mo	10–11
near Sullivan, Mo	11–13
Meramec River Basin, Mo., gaging-station records in	10–18
Meramec Spring near St. James, Mo	14–15
Mountain View, Mo., Blue Spring near	95
Neosho River near Grove, Okla	81–82
near Iola, Kans	78–80
near Parsons, Kans	80–81
Ouachita River at Remmel Dam, near Malvern, Ark	93–95
near Hot Springs, Ark	92–93
Parsons, Kans., Neosho River near	80–81
Pawnee River near Larned, Kans	73–74
Pease River near Crowell, Tex	88
Pikes Peak, Colo., Boehmer Creek near	59–60
Little Beaver Creek near	60
Sackett Creek near	61
Publications, information concerning	5–9
obtaining or consulting of	6–7
on stream flow, lists of	7, 8
Pueblo, Colo., Arkansas River near	47–48
Red River near Denison, Tex	87–88
Red River Basin, Tex.-Ark., gaging-station records in	87–95
Run-off in inches, definition of	2
Sackett Creek near Pikes Peak, Colo	61
St. Francis River Basin, Mo., gaging-station records in	20–28
St. James, Mo., Meramec Spring near	14–15
Salida, Colo., Arkansas River at	45–46
Second-feet, definition of	2
Second-feet per square mile, definition of	2
Sheep Creek near Halfway, Colo	62
Shoal Creek near Joplin, Mo	85–87
South Ruxton Creek at Halfway, Colo	63
Spring Creek, Mo., discharge measurement of	95
Spring River, Ark., discharge measurement of	95
Spring River near Waco, Mo	84–85
Stage-discharge relation, definition of	2
Steelville, Mo., Meramec River near	10–11
Sullivan, Mo., Meramec River near	11–13
Sulphur River near Darden, Tex	90–91
Sutherland Creek near Manitou, Colo	64–65
Syracuse, Kans., Arkansas River at	50–51
Tecumseh, Mo., North Fork of White River at	32–33
Terms, definition of	2
Union, Mo., Bourbeuse River at	16–17
Valley Center, Kans., Little Arkansas River at	74–75
Van Buren, Mo., Big Spring near	39–41
Current River at	35–36
Verdigris River at Independence, Kans	77–78
Victor, Colo., West Beaver Creek near	59
Waco, Mo., Spring River near	84–85
Walnut River at Winfield, Kans	76–77
West Beaver Creek near Victor, Colo	59
Westcliffe, Colo., Grape Creek near	57–58
White River at Beaver, Ark	28–29
discharge measurements of	95
North Fork of, at Tecumseh, Mo	32–33
White River Basin, Mo.-Ark., gaging-station records in	28–43
Wichita, Kans., Arkansas River near	54–56
Wild Horse Creek near Holly, Colo	66–69
Winfield, Kans., Walnut River at	76–77
Work, authorization of	1
division of	9–10
scope of	1–2
Zalma, Mo., Castor River at	19–20
Zero flow, point of, definition of	2